

**BUREAU OF AVIATION (BOA)
MINISTRY OF PUBLIC, INFRASTRUCTURE, INDUSTRIES & COMMERCE (MPIIC)
REPUBLIC OF PALAU**

**PREPARATORY SURVEY FOR
RENOVATION AND EXPANSION OF
PALAU INTERNATIONAL AIRPORT
IN
THE REPUBLIC OF PALAU
(PPP INFRASTRUCTURE PROJECT)**

**FINAL REPORT
(PUBLIC VERSION)**

SEPTEMBER 2016

JAPAN INTERNATIONAL COOPERATION AGENCY

**SOJITZ CORPORATION
JAPAN AIRPORT TERMINAL CO., LTD.**

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Acronyms

AAC	Aircraft Approach Category
AC	Advisory Circular
ADB	Asian Development Bank
ADG	Airplane Design Group
AFIS	Aerodrome Flight Information Services
AIP	Aeronautical Information Publications
ARC	Airport Reference Code
ARFF	Airport Rescue and Fire Fighting
ARTCC	Air Route Traffic Control Center
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASPLA	Airai State Public Lands Authority
ATCT	Air Traffic Control Tower
ATM	Air Traffic Management
AWOS	Automated Weather Observation System
BOA	Bureau of Aviation
BOD	Biochemical Oxygen Demand
CAGR	Compound Annual Growth Rate
CCR	Constant Current Regulator
CCTV	Closed-Circuit Television
CIQ	Customs, Immigration and Quarantine
CNMI	Commonwealth of the Northern Mariana Islands
COD	Chemical Oxygen Demand
COFA	Compact of Free Association
CTAF	Common Traffic Advisory Frequency
DFS	Duty Free Shop
DME	Distance Measuring Equipment
DOPD	Department of Planning and Development
DOST&F	Department of State Treasury and Finance
DSCR	Debt Service Coverage Ratio
EA	Environmental Assessment
EBITDA	Earnings before Interest, Taxes, Depreciation, and Amortization
ECA	Export Credit Agency
EDS	Explosives Detection System
EIA	Environmental Impact Assessment

EIS	Environmental Impact Statement
ELV	Elevator
EMoP	Environmental Monitoring Plan
EMP	Environmental Management Plan
EPC	Engineering, Procurement and Construction
EQPA	Environmental Quality Protection Act
EQPB	Environmental Quality Protection Board
Equity IRR	Equity Internal Rate of Return
ETD	Explosives Trace Detector
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
FIAC	Foreign Investment Approval Certificate
FIB	Foreign Investment Board
FIDS	Flight Information Display System
FIR	Flight Information Region
FL	Flight Level
FRP	Fiber Reinforced Plastic
FY	Fiscal Year
GASB	Governmental Accounting Standards Board
GBAS	Ground Based Augmentation System
GDP	Gross Domestic Product
GL	Ground Level
GPS	Global Positioning System
GRT	Gross Revenue Tax
GSE	Ground Support Equipment
GTOW	Gross Takeoff Weight
HF	High Frequency
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IEE	Initial Environmental Examination
IFC	International Finance Corporation
IFR	Instrument Flight Rules
IMC	Instrument Meteorological Conditions
IMF	International Monetary Fund
IPP	Independent Power Producer
IUCN	International Union for Conservation of Nature and Natural Resources
JATCO	Japan Airport Terminal Co., Ltd.

JBIC	Japan Bank for International Cooperation
JIS	Japan Industrial Standards
JOIN	Japan Overseas Infrastructure Investment Corporation for Transport & Urban Development
JV	Joint Venture
LAN	Local Area Network
LCC	Low-cost Carrier
LED	Light Emitting Diode
LV	Low Voltage
MCAA	Ministry of Community and Cultural Affairs
MDF	Main Distribution Frame
MNRET	Ministry of Natural Resources, Environment and Tourism
MOF	Ministry of Finance
MPIIC	Ministry of Public Infrastructure, Industries and Commerce
NAVAID	Navigation Aids
Nav aids	Navigational Aids
NDB	Non-directional Beacon
NEPA	National Environmental Policy Act
NEXI	Nippon Export and Investment Insurance
NOAA	National Oceanic and Atmospheric Administration
OCA	Oceanic Control Area
OFA	Object Free Area
PA System	Public Address System
PALARIS	Palau Automated Land and Resource Information System
PAPI	Precision Approach Path Indicator Lights
PAX	Passenger
PCS	Palau Conservation Society
PIA	Palau International Airport
PIU	Project Implementation Unit
PNAA	Palau National Aviation Administration
PNC	Palau National Code
PNCC	Palau National Communication Corporation
PNMDP	Palau National Master Development Plan
PPP	Public Private Partnership
PPUC	Palau Public Utility Corporation
PSC	Passenger Service Charge
PTB	Passenger Terminal Building

PV Power System	Photovoltaic Power System
PVA	Palau Visitors Authority
RC	Reinforced Concrete
RED	Renewable Energy Division
REIL	Runway End Identification Lights
RFID	Radio Frequency Identification
RNAV	Area Navigation
RNP	Required Navigation Performance
ROP	Republic of Palau
RSA	Runway Safety Area
RVSM	Reduced Vertical Separation Minimum
RWY	Runway
SAWRS	Supplemental Aviation Weather Reporting Service
SPC	Special Purpose Company
SPTO	South Pacific Tourism Organization
SS	Suspended Solid
TDGs	Taxiway Design Groups
TS	Term Sheet
TSA	Transportation Security Administration
TSA	Tourism Satellite Account
TWY	Taxiway
UBC	Uniform Building Code
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNWTO	United Nations World Tourism Organization
US GAAP	United States Generally Accepted Accounting Principles
UXO	Unexploded Ordnance
VFR	Visual Flight Rules
VHF	Very High Frequency
VMC	Visual Meteorological Conditions
WTTC	World Travel and Tourism Council

Chapter 1

Existing Conditions of Aviation of Palau and the Necessity of the Project

Chapter 1 Existing Conditions of Aviation of Palau and the Necessity of the Project

1.1 Socioeconomic Conditions of Palau and the Project Site

1.1.1 Socioeconomic Conditions of Palau

(1) Overview of the Republic of Palau

Republic of Palau occupies a western part of the Caroline Island Group of Micronesia. Its territory extends from 2°N to 8°N and from 131°E to 135°E. Its total land area is 444 km², which is a little smaller than Yaemaya Islands (586km²) in Japan. Government of Palau moved its capital from Koror to Ngerulmud in the Melekeok State in the Babeldaob Island in 2006.



Source: PALARIS

Figure 1.1.1.1 Republic of Palau

The population of Palau was 17,501 in 2012¹ including 3,694 foreign workers, of which Filipinos constituted 71%. Table 1.1.1.1 shows the change in population by state. It had been on an increasing trend until 2005 but showed a decline in 2012. It may be a result of economic downturn in 2008 and 2009 since foreign workers tend to fluctuate according to economic conditions. Moreover, some 4000 Palauans have migrated to foreign countries, the most notably to Guam, and they also tend to move between Palau and their migrated country depending on the job availability in their home country. Under such a situation, the population may recover if the Palauan economy resumes to grow at a steady pace.

As of 2012, Koror State had a population of 11,665, which constitutes 66.7% of the nation's population. The second populous state is Airai, which is located to the northeast of Koror City just across a narrow water channel, with a population of 2,537 or 14.5% of the national population. Palau International Airport is located in the Airai State.

Table 1.1.1.1 Population in Palau

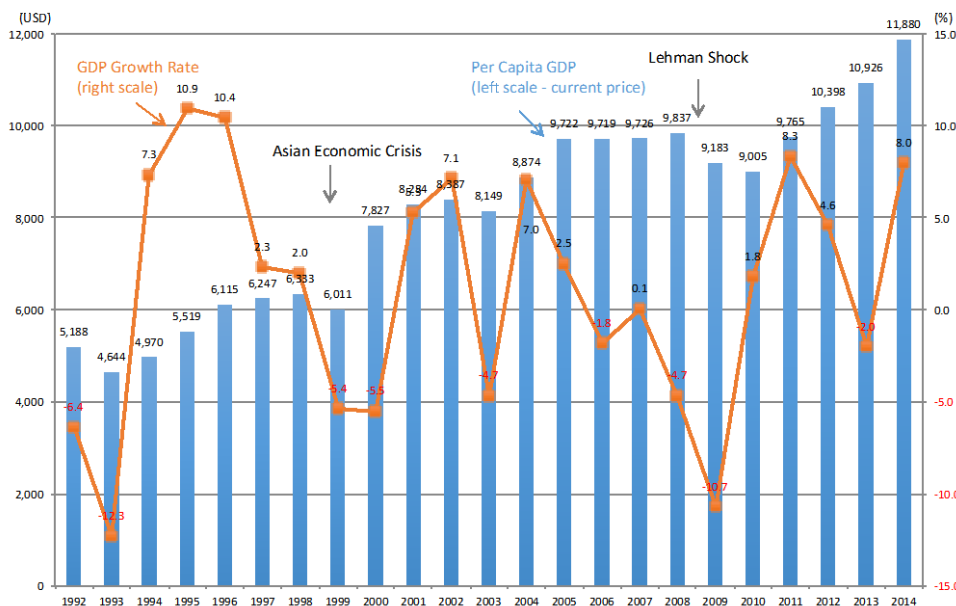
	1980	1990	1995	2000	2005	2012	CAGR 1980-2012
Total	12,116	15,122	17,225	19,129	19,907	17,501	1.2%
Aimeliik	273	439	419	272	270	281	0.1%
Airai	668	1,234	1,481	2,104	2,723	2,537	4.3%
Angaur	243	206	193	188	320	130	-1.9%
Hatohobei	74	22	51	23	44	10	-6.1%
Kayangel	140	137	124	138	188	76	-1.9%
Koror	7,625	10,501	12,299	13,303	12,676	11,665	1.3%
Melekeok	261	244	261	239	391	299	0.4%
Ngaraard	457	310	421	638	581	453	0.0%
Ngardmau	160	149	162	286	166	281	1.8%
Ngaremlengui	358	281	281	221	317	195	-1.9%
Ngatpang	166	62	221	367	464	309	2.0%
Ngchesar	364	287	228	280	254	257	-1.1%
Ngerchelong	372	354	253	267	488	287	-0.8%
Ngiwar	267	234	176	193	223	226	-0.5%
Peleliu	609	601	575	571	702	489	-0.7%
Sonsorol	79	61	80	39	100	6	-7.7%

Source: ROP Statistical Yearbooks

(2) Economy in Palau

Palau's nominal GDP recorded \$252 million USD in 2014. Per capita GDP more than doubled from \$4,970 in 1994 when Palau became independent to \$11,880 in 2014, which is the highest among the small island nations in the Pacific and the compound annual growth rate (CAGR) of GDP from 1994 to 2014 is 5.6%. Palau's social indices are relatively good according to UNDP's Human Development Report; the literacy rate in Palau is 99.5%, and the Human Development Index (HDI) is 0.775, which is the 60th among 187 countries/areas. However, the growth rates of GDP have been somewhat volatile; Palauan economy recorded negative growths several times in the past, including those during the Asian Economic Crisis in 1998-1999 and the Lehman Shock in 2008-2009.

¹ 2013 Statistical Yearbook, Ministry of Finance.



Source: World Bank Development Indicators

Figure 1.1.1.2 Growth Rate of GDP and Per Capita GDP in Palau

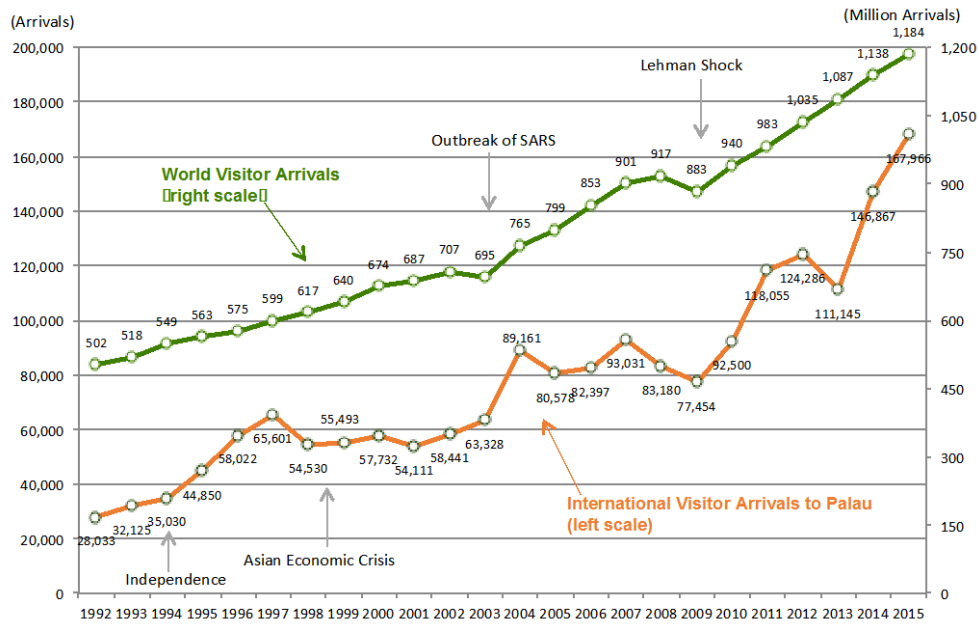
Palau had been a Japanese Mandate from 1914 to 1945, and became part of the Trust Territory of Pacific Islands from 1947, which had been administered by the USA. Palau finally achieved independence in 1994 after signing the Compact for Free Association (COFA) with the USA, in which the US Government provides subsidy for development in exchange for allowing the US to operate armed forces in Palauan territory, and for maintaining a coordinated diplomatic relations with the USA. The first phase of Compact Subsidy, which offered 537.3 million USD in total², had been completed in 2009. Although Palau successfully signed the second phase of the subsidy until 2024³, the total amount was almost halved to 250 million USD. The Government of Palau has depended heavily on the above-mentioned subsidy as well as assistance from international donors including Japan and Taiwan. Such situation would not last long considering that Palau's per capita GDP has already exceeded 10,000 USD. Financial self-sustainability is now a national agenda, for which incubation of the private sector is essential.

Palau is endowed with natural beauty, and its coral reefs, in particular, are internationally renowned. "Rock Islands Southern Lagoon," which is registered on UNESCO's list of World Heritage, is a competitive tourism resource for attracting general interest tourists. Palau also has coral sand beaches and unique cultural heritage. Recognizing the potential for tourism, Palau's national plans and strategies including the National Master Development Plan 2020 prepared in 1996 have positioned tourism as the main pillar for Palau's economic development. In this context, improvement of the airport facilities, which is crucial for tourism, has a strategic importance for the Republic.

As shown in Figure 1.1.1.3, the number of visitor arrivals to Palau has increased from 35,030 in 1994 to 146,867 in 2014. The compound annual growth rate (CAGR) during that period is 7.4%, which is much higher than the world average of 3.7% during the same period. The favorable trend continued into 2015, and Palau's statistics office reported that there were 167,966 non-resident arrivals in 2015, a 14.4% increase from the previous year.

² Ritsumeikan Asia Pacific University, http://www.apu.ac.jp/~nhatada/report/tourism_development/3.htm

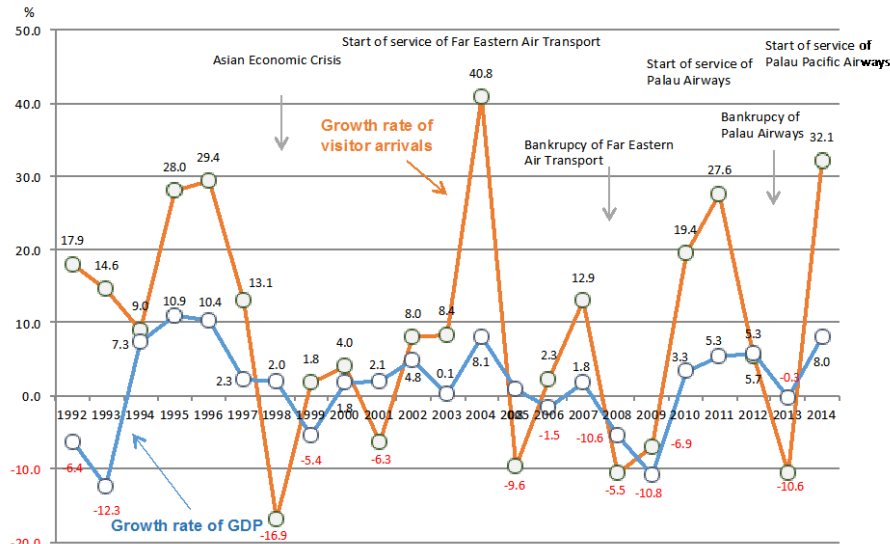
³ Ministry of Foreign Affairs of Japan, www.mofa.go.jp/mofaj/area/palau/data.html#section2



Source: ROP Statistical Yearbook, PVA

Figure 1.1.1.3 Visitor Arrivals to Palau

As shown in Figure 1.1.1.4, there is a clear correlation between the growth rates of GDP and those of visitor arrivals. Other than the above-mentioned global economic crises, launches of new charter flight services and the suspensions of the services due to the collapses of airline companies have affected Palauan economy considerably. Dependence on tourism is supposed to be a cause of volatile economy.



Source: ROP Statistical Yearbook, PVA

Figure 1.1.1.4 Correlation of GDP and visitor arrivals

World Travel and Tourism Council (WTTC) has been measuring economic impact of the travel and tourism industry with a standardized method called Tourism Satellite Account (TSA) that

measures the direct tourism impact deriving from hotel, tour businesses, restaurant, tourist transport, and commerce, and the total tourism impact consisting of the direct impact as well as the impact induced by the above-mentioned tourism related industries. Unfortunately, WTTC has not measured a tourism economic impact in Palau; but it is supposed that it should have an impact similar to those of small island nations that depend on tourism like Maldives and Seychelles. WTTC measured in 2013 that the direct/total tourism impact of Maldives and Seychelles are 41.5%/78.1% and 21.3%/56.9%, respectively.

1.1.2 Socioeconomic Conditions in the Airai State

Palau International Airport is situated on a hilltop location in the Airai State, which occupies the southernmost part of the Babeldaob Island. Airai State is located to the northeast of Koror City where the largest population of Palau is allocated, and is connected by the Koror-Babeldaob Bridge. The distance between the Koror City and the Airai State is 12km (the distance between the two state offices), which is a 15-minute drive by car. The total land area of Airai State is 44km² and has a population of 2,537. Airai is the second populous state in Palau only next to Koror State.



Source: PALARIS

Figure 1.1.2.1 Palau International Airport and its surrounding areas

Airai State has four protected areas, namely, Madal Ngediul Conservation Area, Ngcheschang Mangrove Conservation Area, Ngeruobel Mangrove Conservation Area, Oikul Conservation Area. They protect coral reefs, mangrove forests and spawning areas, and are located in coastal areas. The state also has cultural heritage/archaeological sites such as Yapese Quarry Sites, Airai Bai (traditional meeting house), War Canoe and Canoe House, Mechorei Causeway, and Ngeruobel Traditional Village. Yapese Quarry Sites are registered on the "temporary list" of UNESCO World Heritage, which is a list for the nomination candidates. Careful attentions have to be paid for the construction works not to affect these sites.

Since available lands are scarce in Koror City, there are plans for hotel development in the Airai State thanks to its proximity to the international airport and the Koror City. As of 2015, the state has only 190 hotel rooms but there are, at least, a few projects in the pipeline to construct large-scale hotels with a few hundreds rooms. If the projects are implemented, Airai State may have more than one thousand hotel rooms.

Water sources for the water supply network covering Koror City and Airai State are situated in the Airai State. Airai State does not have a sewerage system; sewerage is treated by septic tank. Although solid waste has been dumped in a state-run waste dump so far, a new waste landfill facility proposed in the Aimeliik State, for which schematic design and EIA are being conducted at present and a request of grant loan for its construction is being processed by the Government of Japan, will be used after its completion. An electricity network covering the urban area of Koror State and whole Babeldaob Island covers Airai State.

1.2 Current Situation of Aviation Sector of Palau

1.2.1 Organization of Aviation Sector of Palau

Air transportation is governed by the Bureau of Aviation (BOA) under Ministry of Public Infrastructure, Industries and Commerce (MPIIC). The organization of Government, MPIIC and BOA are illustrated in Figure 1.2.1.1

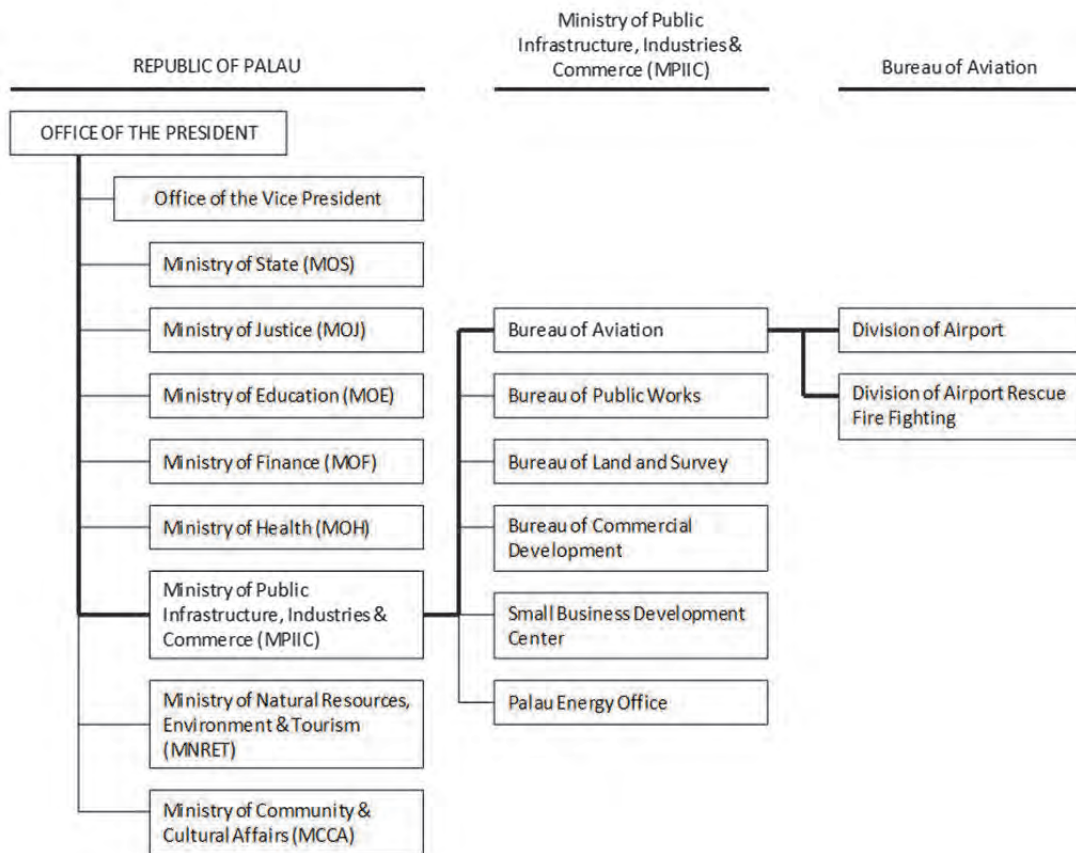
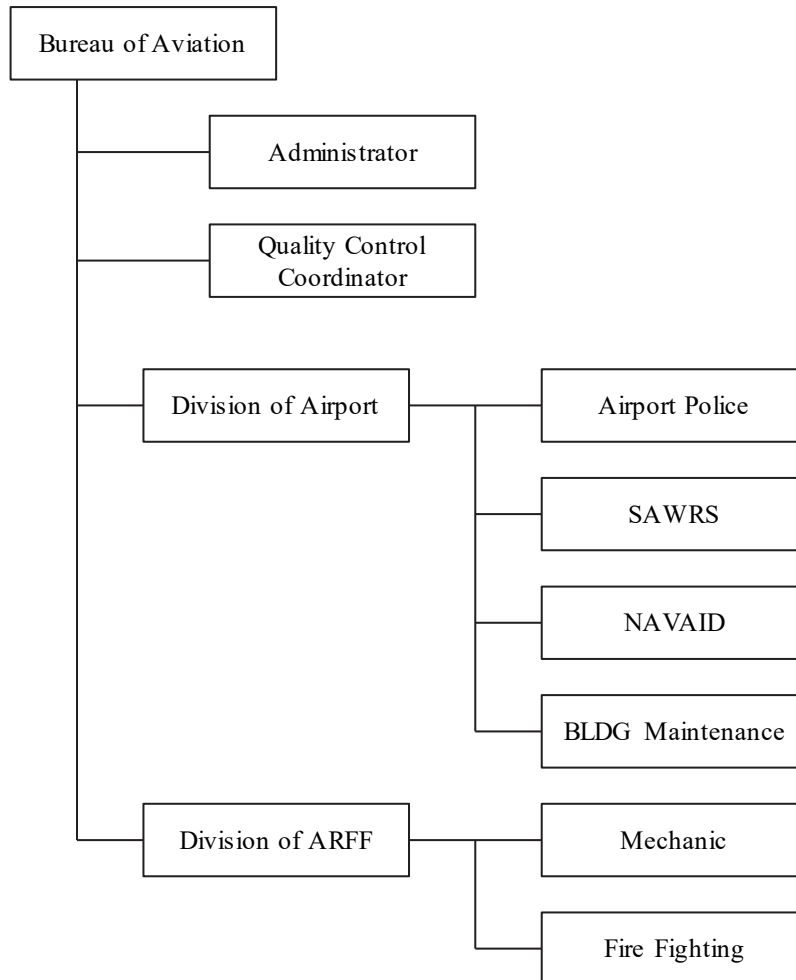


Figure 1.2.1.1 Organization Chart of MPIIC

Currently BOA has Administrator, Quality Control Coordinator and 2 divisions such as Division of Airport and Division of Airport Rescue Fire Fighting. Division of Airport is responsible for the management of entire Palau Airport with exception of firefighting facilities and activities. Division of Airport Rescue Fire Fighting is responsible for the management of rescue and firefighting. The organization chart of BOA is shown in Figure 1.2.1.2



Note: ARFF, Airport Rescue Fire Fighting
 SAWRS, Supplemental Aviation Weather Reporting Service
 NAV AID, Navigation Aids

Figure 1.2.1.2 Organization Chart of BOA

1.2.2 Policy and Development Plan for Aviation Sector of Palau

The Palau 2020 National Master Development Plan (PNMDP) that was formulated in 1996 is a long-term national development plan which was brought into view in 2020 with the goal of economic independence and protection of environment and culture. In order to achieve the vision of improving the quality of life of Palauan people over the future, it is targeted to achieve economic growth and to increase the income by a sustainable strategy, also including to enhance the Palau culture, to increase the public awareness and to protect natural environment.

For policy and development plans relating to the aviation sector, the following strategies have been risen for air transport in the PNMDP.

- Provide an internationally acceptable and economically efficient airport infrastructure system to cope with existing and project demands,
- Legislate to provide the necessary civil aviation law to replace US regulatory functions,
- Increase resources, and
- Enhance competition by encouraging other carriers to establish direct air services to Palau.

In addition, Asian Development Bank (ADB) has developed an action plan as a medium-term development strategy 2009-2014. The following were pointed out for Palau International Airport (PIA).

- There is no single source of information on costs and revenue, making it impossible to assess the cost efficiency of the operation.
- Tariffs were last adjusted in 2002, suggesting there is not full cost recovery.
- There is a large difference between the expenditure projected by the airport management and funding approved by Government of Palau (GOP).
- There is no recent assessment of opportunities to increase revenue from ancillary services.
- The present organization structure means that there is no focus on operating the airport as a business, or producing integrated development plans.

And as a high priority project, action plan cites “Airport operations and business leases”.

1.2.3 Income and Expenditure of PIA and Budget of BOA

(1) Income and Expenditure of PIA

Aviation revenues associated with the operation of PIA are shown in Table 1.2.3.1 Aviation Revenue of PIA. Aircraft charges are imposed for the use of the airside facilities such as runway and apron. Airport fees are imposed for the use of the airport equipment such as passenger boarding bridge. In addition, there is rents revenue for the use of office space and sign boards space in the terminal building.

Table 1.2.3.1 Aviation Revenue of PIA

	FY2013	FY2014	FY2015
1. Aircraft Charges (USD)	594,874	647,130	770,044
2. Airport Fees (USD)	1,448,365	1,618,856	2,113,035
3. Rents (USD)	391,393	398,815	402,132
Total (USD)	2,434,632	2,664,801	3,285,211

Source: Bureau of Aviation

Expenditure for airport operation is shown in Table 1.2.3.2. Others include salary, electricity, etc. and salary accounts for 70% of others.

Table 1.2.3.2 Expenditure of PIA

	FY2013	FY2014	FY2015
1. Depreciation (USD)	3,892,330	3,858,248	3,811,120
2. Interest (USD)	198,178	182,001	165,334
3. Others (USD)	1,514,518	1,608,143	1,570,270
Total (USD)	5,605,026	5,648,392	5,546,724

Source: Bureau of Aviation

(2) Budget of BOA

Annual budget of BOA in FY2014 and FY2015 are shown in Table 1.2.3.3

Table 1.2.3.3 Annual Budget of BOA

	FY2015	FY2016
Airport Operation (USD)	\$ 407,755	—
Rescue Fire Fighting (USD)	\$ 1,202,245	—
Total	\$ 1,610,000	\$ 1,810,000

Note: FY: Oct. to Sep.

Source: Bureau of Aviation

1.2.4 Airport

In addition to PIA, there are two airfields in Palau namely Peleliu and Angaur. Runway of each airport/ airfield are shown in Table 1.2.4.1

Management of airport/airfield has been carried out by GOP.

Table 1.2.4.1 Runway Facility

	Runway Direction	Runway Length	Runway Width	Surface
Palau International Airport	09/27	2,195 m	46m	Asphalt
Peleliu Airfield	04/22	1,829 m	12m	Gravel
Angaur Airfield	05/23	2,134 m	46m	Gravel

1.2.5 Air Transport Service

(1) International Passenger

a) Current Airline Services

Currently, PIA is the only international airport in Palau and five airlines has been operating 17 regular flights per week to 6 cities. Aircraft operated is a relatively small jet aircraft such as B757, B737 and A321 (see Table 1.2.5.1 - Table 1.2.5.2).

Table 1.2.5.1 Airline Services in PIA

Destination	Airline	Departure Date	Aircraft
Guam	United Airlines	Mon/Tue/Wed/Thu/Fri/Sat	B737-700/800
Manila	United Airlines	Tue/Fri	B737-700/800
Seoul/Incheon	Korean Air	Mon/Fri	B737-800
	Asiana Airlines	Mon/Fri	A321
Taipei/Taoyuan	China Airlines	Wed/Sat	B737-800
Tokyo/Narita	Delta Airlines	Wed/Sun	B757-200
Yap	United Airlines	Sun	B737-700

Table 1.2.5.2 Flight Date of Regular Flights

Destination	Airline	Service Date							No. of Flights
		Mon	Tue	Wed	Thu	Fri	Sat	Sun	
Guam	UA	○	○	○	○	○	○		6
Manila	UA		○			○			2
Seoul/Incheon	KE	○				○			2
	OZ	○				○			2
Taipei/Taoyuan	CI			○			○		2
Tokyo/Narita	DL			○				○	2
Yap	UA							○	1
No. of Flights		3	2	3	1	4	2	2	17
No. of Flights		3	2	3	1	4	2	2	17

Note: Flight date is based on the departure date.

Source: PIA, November 2015 Schedule

In addition, there is about 10 charter flights are operated in a week. Relatively large aircrafts are used compared to regular flights. Flight statuses in 2015 were as shown in Table 1.2.5.3.

Other charter flights by private jet can be seen a few flights a week.

Table 1.2.5.3 Charter Flight Services in PIA

Airline	Destination	Aircraft	Frequency
MEGA Maldives Airlines	Hong Kong	B767-300ER	8~9flights/month
Dynamic Airways	Hong Kong	B767-200/300ER	8~9flights/month
	Saipan	B767-200/300ER	
Palau Pacific Airways	Hong Kong	B737-800	about 17flights/month
Japan Airlines	Tokyo	B737-800	16 flights in 9 months
Asian Airlines	Macau	B767-200	6~7flights/month
Trans Asia Airways	Taipei	A320	2 flights/week

Note: Frequency is based on the services in 2015.

Source: PIA

b) Flight Schedule

Table 1.2.5.4 shows the time of arrival and departure of scheduled flights. All regular flights arrive and depart between 4 PM in the evening and 5 AM in the morning. No flights arrive and depart during the day.

The reason for such operation is that airlines want to increase production ratio of the aircraft by leaving base airport in midnight and returning to base airport before the other flights next morning, instead of staying overnight at base airport. Palau is in the good location for operating such flights.

Regarding charter flight, most of the flights are from Hong Kong, arrive in the evening and turn around for departure. A few charter flights can be seen arrival and departure during the day time.

Table 1.2.5.4 Flight Schedule of Regular Flights in PIA (1)

SUN-MON	16	17	18	19	20	21	22	23	24	1	2	3	4	5	
Guam						Arr	UA				Dep				
Manila															
Seoul										Arr	Dep		Arr	Dep	
										KE			OZ		
Taipei															
Tokyo															
Yap															
MON-TUE	16	17	18	19	20	21	22	23	24	1	2	3	4	5	
Guam						Arr	UA				Dep				
Manila															
Seoul															
Taipei															
Tokyo															
Yap															
TUE-WED	16	17	18	19	20	21	22	23	24	1	2	3	4	5	
Guam															
Manila				Arr from GUM		UA	Dep to MNL			Arr from MNL		UA	Dep to GUM		
Seoul															
Taipei															
Tokyo										Arr	DL		Dep		
Yap															

Table 1.2.5.4 Flight Schedule of Regular Flights in PIA (2)

WED-THU	16	17	18	19	20	21	22	23	24	1	2	3	4	5	
Guam						Arr	UA				Dep				
Manila															
Seoul															
Taipei			Arr Dep												
Tokyo															
Yap															
THU-FRI	16	17	18	19	20	21	22	23	24	1	2	3	4	5	
Guam						Arr	UA				Dep				
Manila															
Seoul										Arr Dep			Arr Dep		
Taipei															
Tokyo															
Yap															
FRA-SAT	16	17	18	19	20	21	22	23	24	1	2	3	4	5	
Guam															
Manila				Arr from GUM		Dep to MNL				Arr from MNL			Dep to GUM		
Seoul															
Taipei															
Tokyo															
Yap															
SAT-SUN	16	17	18	19	20	21	22	23	24	1	2	3	4	5	
Guam															
Manila															
Seoul															
Taipei			Arr Dep												
Tokyo										Arr	DL		Dep		
Yap										Arr Dep	UA				

Note: Flight schedule 8-15 November 2015

Source: PIA

c) Passenger Traffic

The number of international passengers (regular flights and charter flights) is shown in Figure 1.2.5.1. Annual average growth rate from 2010 to 2014 shows a very high growth rate of 12%. In addition, the passenger number in 9 months from January to September 2015 has become a 28% increase from that of the same period of previous year.

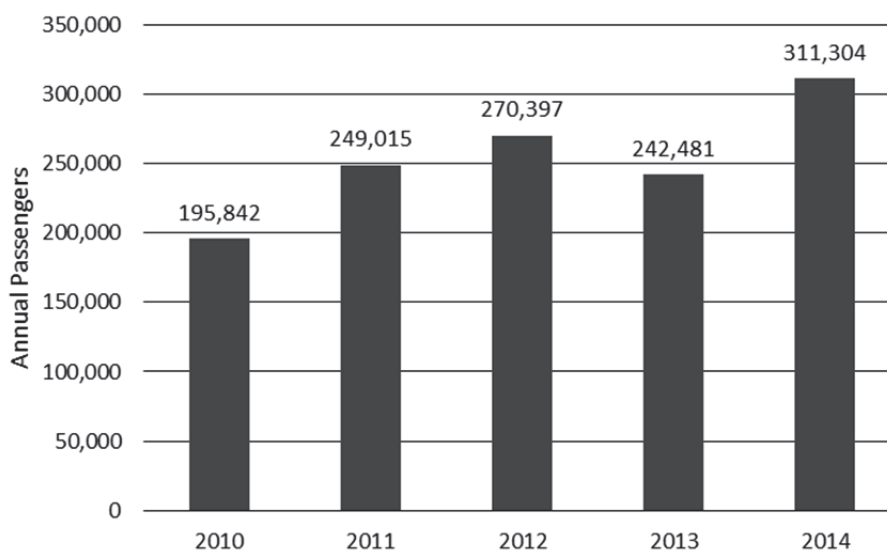


Figure 1.2.5.1 Trend of International Passenger in PIA

The passenger share transported by regular flights and charter flights are shown in Table 1.2.5.5. Up to 2013, regular flights accounted for 80-90%; however, the share of the charter flights increased to 45% in January-September 2015 due to the operation to/from Hong Kong started in 2014.

Table 1.2.5.5 Passenger Share Transported by Regular Flights and Charter Flights

	2010	2011	2012	2013	2014	2015
Regular Flight	84%	84%	79%	89%	75%	55%
Charter Flight	16%	16%	21%	11%	25%	45%

Note: Share in 2015 is based on the data in January-September 2015.

Source: PIA

As for the peak season, until 2012 there was a highest peak in August, however peak season was found in December-February in recent years (see Figure 1.2.5.2).

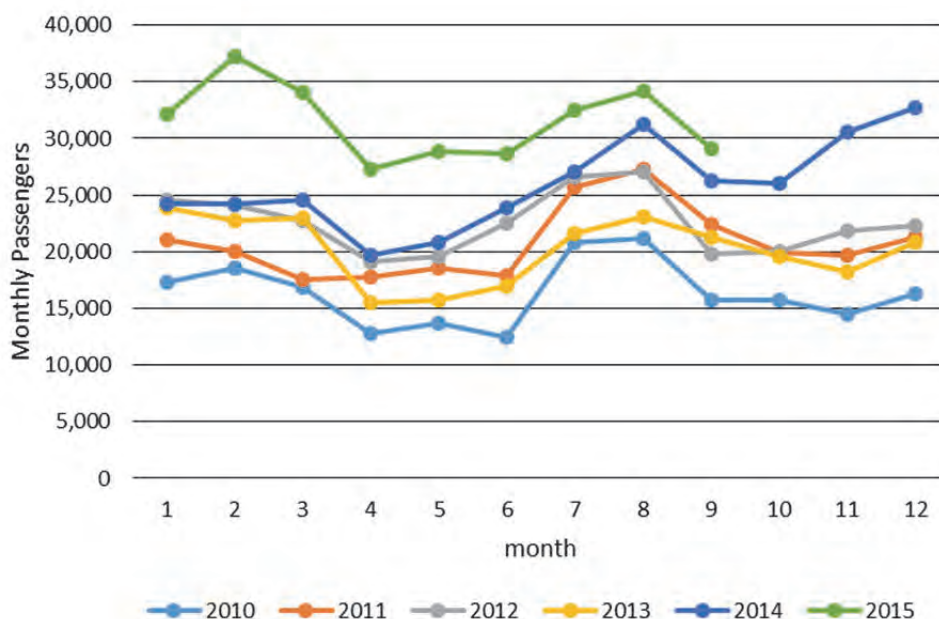


Figure 1.2.5.2 Monthly Fluctuation of International Passenger

d) Cargo Traffic

As for the international cargo, only cargo volume transported by United Airlines has been available at BOA, which is shown in Table 1.2.5.6.

Table 1.2.5.6 International Cargo Volume

	2010	2011	2012	2013	2014
Annual Cargo Volume (ton)	1,050	1,261	838	705	629

(2) Domestic Passenger

Until 2006, Belau Air has operated between PIA and Peleliu / Angaur Islands using Cessna 206, but was suspended in 2006.

Currently, Pacific Mission Aviation operates passenger transport services between Palau Airport and Peleliu Island twice a week.

1.3 Current Situation of Palau International Airport

1.3.1 Airside Facilities

Palau International Airport (PIA) is the only international airport in Palau, located at south of Babeldaob island which is the largest island in Palau, and is at a distance of approximately 15 minutes from Koror, the center of economic activity. The runway is located in the east-west direction (09/27) and at the altitude of 54 m. Taxiway is located at the western edge of the runway and led to the apron. Apron is located in the southwest of the runway, has three loading stand and one over-night stand. Using three loading stand, two B767 and one B737 can park simultaneously.

Currently, the north apron with four aircraft stand is under construction in the north of the runway, and is expected to be opened soon. At present, passenger boarding and disembarking are not expected in north apron, and it is assumed to be used for temporary parking and overnight parking, general aviation, freighter and so forth.

The development of airside facilities has been promoted by the fund of Federal Aviation Administration (FAA).

Current situation of airside facilities are shown in Table 1.3.1.1 - Table 1.3.1.3.

Table 1.3.1.1 Runway

Facility		Dimension	
		meter	feet
Runway	Length	2,195	7,200
	Width	46	150
Runway Shoulder	Width	7.6	25
Blast Pad	Length	61	200
	Width	61	200
Runway Safety Area	Length	2,317	7,600
	Width	152	500

Table 1.3.1.2 Taxiway

Facility		Dimension	
		meter	feet
Taxiway	Length	183	600
	Width	23	75
Taxiway Shoulder	Width	7.6	25
Taxiway Safety Area	Width	52	171

Table 1.3.1.3 Apron

Facility			Dimension	
			meter	feet
South Apron	Apron Area	Width	187	614
		Depth	115	377
	Loading Stand	B767	2 stands	
		B737	1 stand	
	Over-night Stand		1 stand	
North Apron	Apron Area	Width	259	850
		Depth	152	500
	Multipurpose Stand	B767	4 stands	

Figure 1.3.1.1, Figure 1.3.1.2 and Figure 1.3.1.3 illustrate the airport layout plan, south apron layout plan and north apron layout plan, respectively.

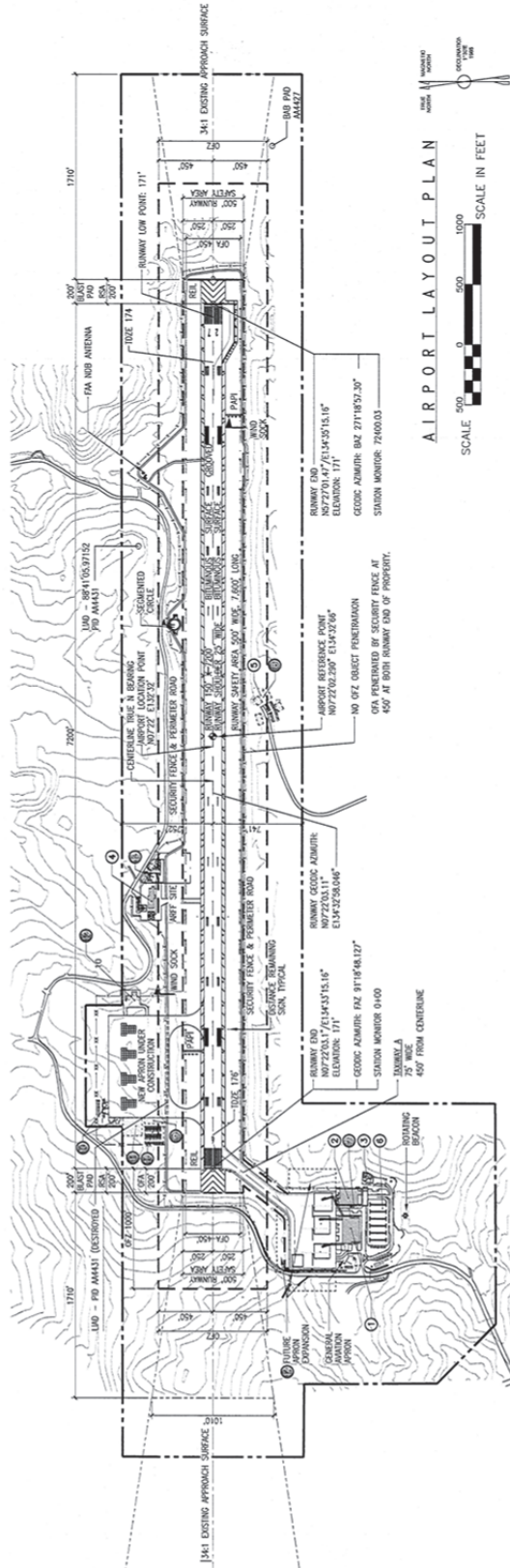


Figure 1.3.1.1 Airport Layout Plan

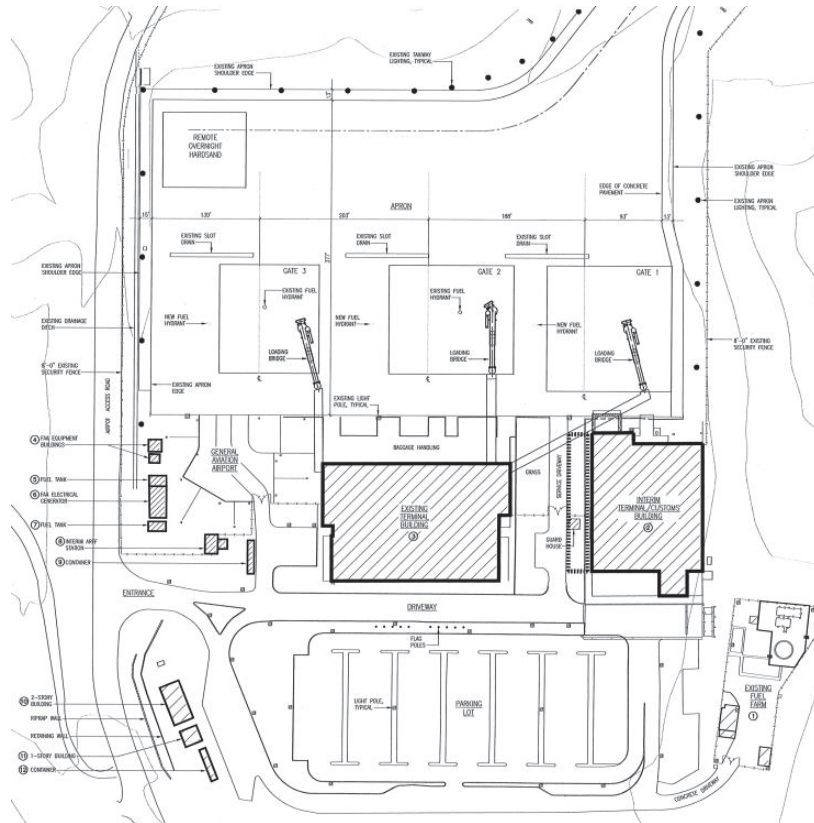


Figure 1.3.1.2 South Apron Layout Plan

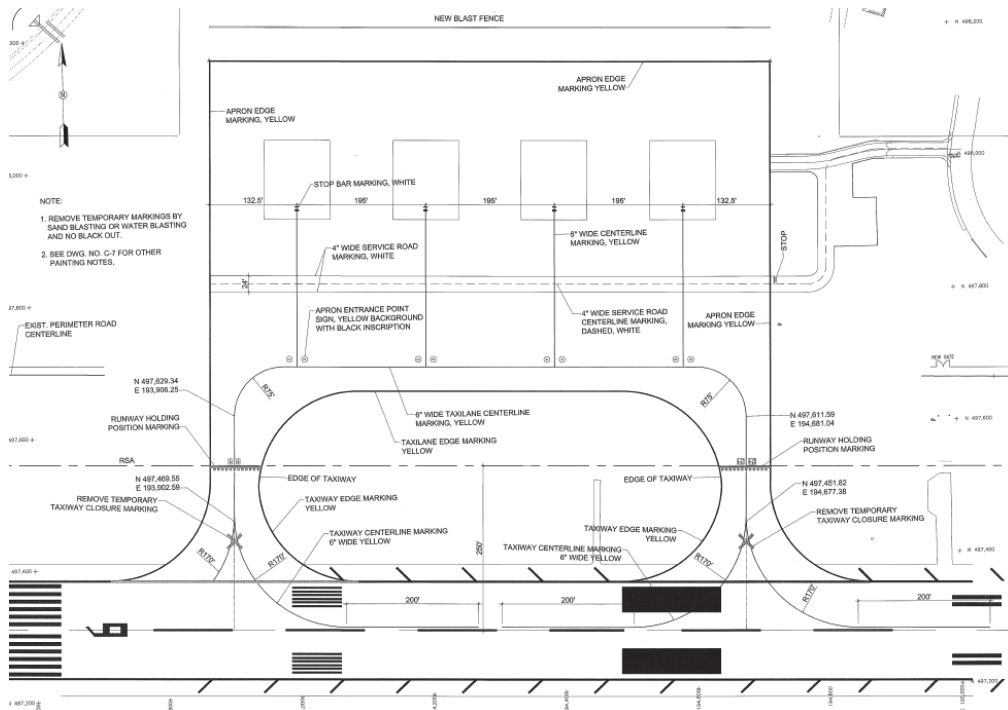


Figure 1.3.1.3 North Apron Layout Plan

1.3.2 Air Navigation Facilities

Air navigation facilities installed in PIA are listed in Table 1.3.2.1. In the same manner as the airside facilities, air navigation facilities have been developed by the fund of FAA.

Table 1.3.2.1 Air Navigation Facilities

	Facility
Navigational Aids	NDB、 DME
Airfield Lighting	Runway edge light, Precision approach path indicator (PAPI), Runway threshold identification light, Wind direction indicator light, Aerodrome beacon, Constant current regulator

1.3.3 Terminal Facilities

(1) Passenger Terminal Building

The passenger terminal building of PIA has been constructed with Japanese grant aid, and commenced its operation in 2003. The total floor space of two-stories with 3,900 m² with design throughput of 370 passengers per hour (both direction) or 240 passengers per hour (one-way) which can be translated to 230,000 passengers per annum.

The current situation of processing facilities in the terminal building is shown in Table 1.3.3.1.

Table 1.3.3.1 Processing Facilities in the Terminal Building

Processing Facilities		Size of Facilities
Check-in Counter		16 counters
Passport Control Departures		2 counters
Security Check	Gate	1 position
	Hand baggage X-ray	1 position
Gate Lounge		Around 200 seats 3 gates
Passenger Boarding Bridge		3 units
Passport Control Arrivals		6 counters
Baggage Conveyor		1 unit (for narrow body aircraft)
Arrival Customs		6 positions

(2) Temporary Terminal Building

The temporary terminal building which was previously used as passenger terminal, is located on the east side of the passenger terminal building. Tenants of temporary terminal are airline office, cargo handling facilities (United and Delta), ground service company office, lounge, custom office, quarantine office and so forth.

(3) Cargo Handling Facility

Cargo handling is carried out using a part of the temporary terminal in the east of the passenger terminal building.

(4) Car Park and Road System

Car Park is located in front of passenger terminal building. It has 206 parking spaces for passenger car including 34 parking spaces for rental car. Other 172 parking space are used for private car.

The solar panels installed in 2012 by Japanese grant aid are placed over the parking space.

On the west side of the car park, 6 spaces are provided for large buses waiting for arrival passengers.

Terminal frontage road has three lanes, and the lane of the building side is used for getting on and off. At the time of arrival of the aircraft, sidewalk is crowded with arrival tourists, and the lane of car park side is available to ride to the bus. About four buses are observed for picking up the arrival tourists from one arrival flight.

1.3.4 Other Facilities

(1) Rescue and Firefighting

The rescue and firefighting facility is located on the north side of the runway and office and garage that can accommodate the three vehicles are provided.

Two of the three are primary response vehicle, the remaining one is replacement.

(2) Fuel Facility

The fuel facility is located on the east side of the temporary terminal, and provided three refueling tank with the capacity of 8,396 gallon, 18,656 gallon and 27,897 gallon respectively that make a total of 54,949 gallon.

The fuel facility is operated by the private company Blue Bay.

1.4 Other Donor's Interest and Intention for Supports for PIA and the Project

1.4.1 Supports Provided for PIA

Typically the upgrade and infrastructure projects for PIA had been funded by FAA ACIP (Federal Aviation Administration Airports Capital Improvement Plan) grants by USA, with a cost sharing percentage covered by ROP (the Republic of Palau). This program, implemented by the FAA Airports Division, has literally transformed the airports in Micronesia, Marshall Islands, and Palau by improving the airport infrastructure, airfield paving, signage and lighting, ARFF facilities and upgraded firefighting trucks and equipment.

In the following paragraphs, such supports provided in the past or currently being implemented are summarized.

(1) FAA Funded (Grant Aid) Airport Upgrade Projects Already Completed

The following projects with funding assist by FAA have been completed:

- Runway rehabilitation, airfield lighting/signage, shoulder/turnaround/taxiway upgrades (2006)
- Airfield pavement management training (2006 to present, annually coordinated)
- ARFF facility, new ARFF trucks, and firefighter training (2008)
- Apron/hardstand expansion, including a Remain-Overnight apron (2008-2009)
- Addition of two new loading bridges and construction of an exterior passenger concourse to connect loading bridges (2009-2010)
- Airfield Perimeter fence & Perimeter Road (2008-2009)

(2) FAA Funded (Grant Aid) Airport Upgrade Projects Currently in Progress

The following project with funding assist by FAA is currently under construction:

- North apron including in-pavement fuel lines and hydrant pits. (expected to complete by Mar-Apr 2016)
- Re-pavement of south apron and building the fuel hydrant pits to all the contact gates. (expected to be completed by Jun-Jul 2016)

(3) Non-FAA Funded (Grant Aid) Airport Upgrade Projects Completed

The following non-FAA funded projects were recently completed at Palau International Airport:

- Development of the temporary Terminal by financial assist from Taiwan government. (2000)
- Interim Terminal Capacity Upgrades, undertaken and funded by ROP, completed and provided a much needed interim capacity boost for the terminal's check-in lobby and hold room areas. (2010)
- The Project for Introduction of Clean Energy by Solar Electricity Generation System, funded by Japanese grant aid. (2011)
- Security Measures Improvements including mobile X-ray screening machine and CCTV monitoring system by US Dpt. of Interior. (2011)

1.4.2 Other Donor's Interest and Intention for the Support of the Project

The soil improvement of Runway Safety Area on both side of the runway, which is currently too soft for RFF vehicle operation, is on wish list and waiting for FAA's funding.

There is no other support offered or expected other than above. No interest or discussion regarding the passenger terminal improvement was presented by any private company or donor country to ROP so far.

1.5 Current Situation and Issues for Palau International Airport (not disclosed)

1.6 Importance of this Project (not disclosed)

Chapter 2

Project Plan

Chapter 2 Project Plan

2.1 Objectives of the Project and Existing Development Plan (not disclosed)

2.2 Air Traffic Demand Forecast (not disclosed)

2.3 Scope of Project (not disclosed)

2.4 Conceptual Design (not disclosed)

2.5 Construction Plan (not disclosed)

2.6 Rough Cost Estimation for the Project Implementation (not disclosed)

2.7 Project Implementation Schedule (not disclosed)

2.8 Procurement Plan (not disclosed)

2.9 Environmental Social Consideration

2.9.1 Project Components requiring Environmental and Social Considerations (not disclosed)

2.9.2 Baseline of the Environmental and Social Consideration

(1) Project Site

Project Site is within the existing airport property site in Airai state which is located in the southern end of Babeldaob Island. The airport is constructed on the top of a hill. There are no residences adjacent to the terminal area which is the project site except airport related facilities and Airai state properties. There is no existing observation data for air condition, water condition and noise around the site. The significant impacts are not expected since there are no residences nearby the terminal area as mentioned above.

Most of the residences concentrate in southern plain at the foot of the hill where the airport is. Housing development is rapidly carried out around the area due to its good traffic accessibility. There exist some hotels and retailers but the area still rely on the facilities of Koror state.

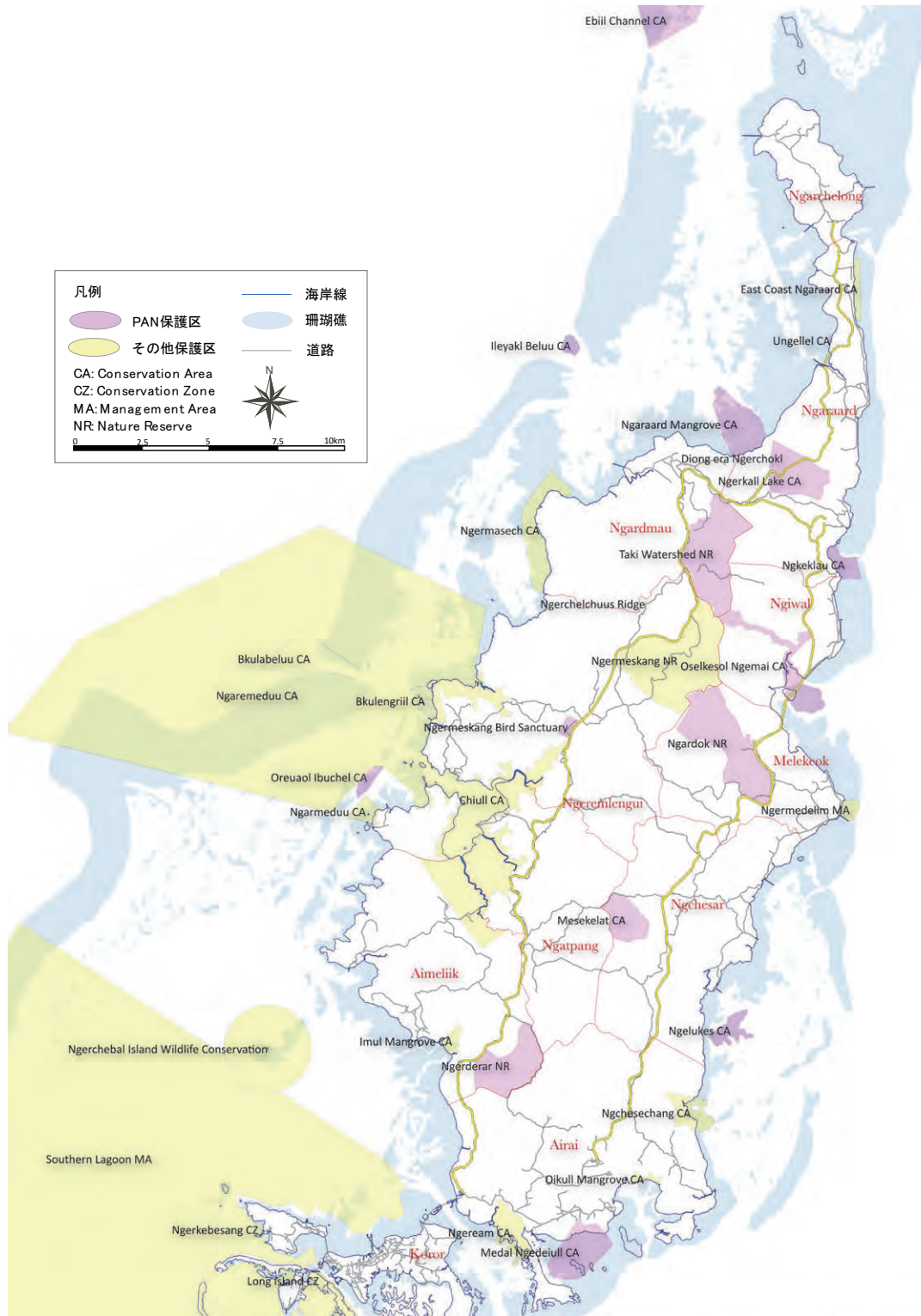
(2) Natural Environment

The climate in Palau is classified into tropical rainforest. Palau is rainy region and the annual range of the temperature is small shown in Figure 2.9.2.2. Palau is located south of regular typhoon routes therefore typhoon rarely hit the region previously. But typhoon often caused damage in recent years such as Typhoon Bopha in 2012, Haiyan in 2013 and Hagupit in 2014. Besides Palau is located on the border between Philippine Sea plate and Pacific Ocean plate and in close to earthquake-prone zone therefore there is a risk of earthquake and tidal wave.

There is neither designated natural conservation area nor identified rare species in the airport and the vicinity. Although Palau has ratified the Ramsar Convention (the Convention on Wetlands of International Importance, especially as Waterfowl Habitat) and one site have been registered in the country, however, it is away from the project area.

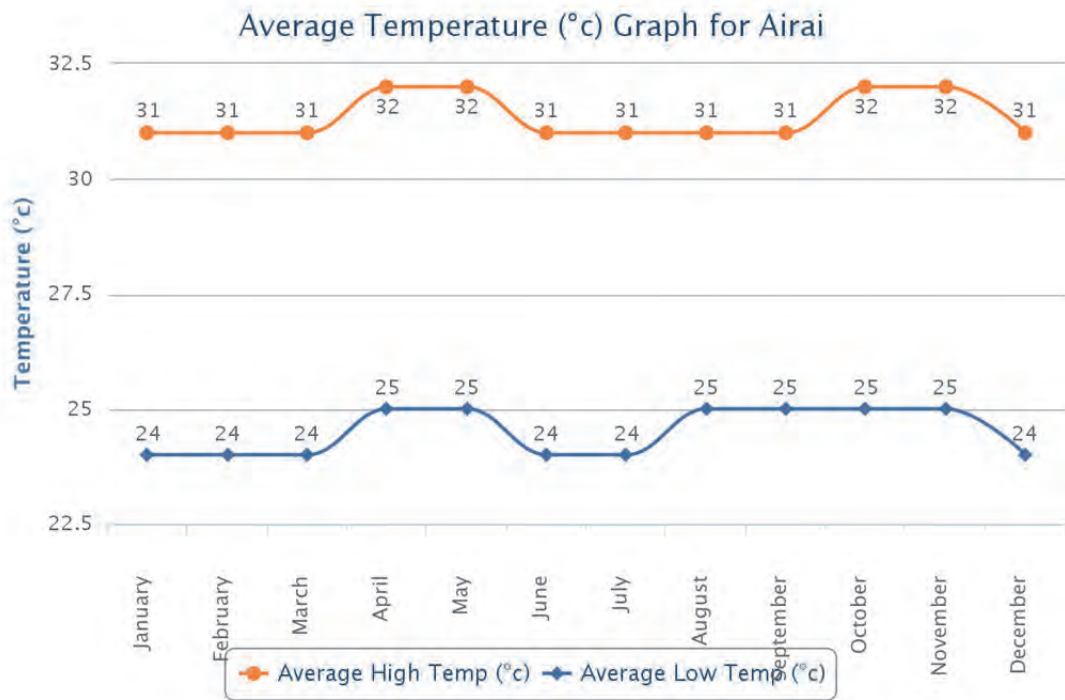
Satellite View of the Project Site





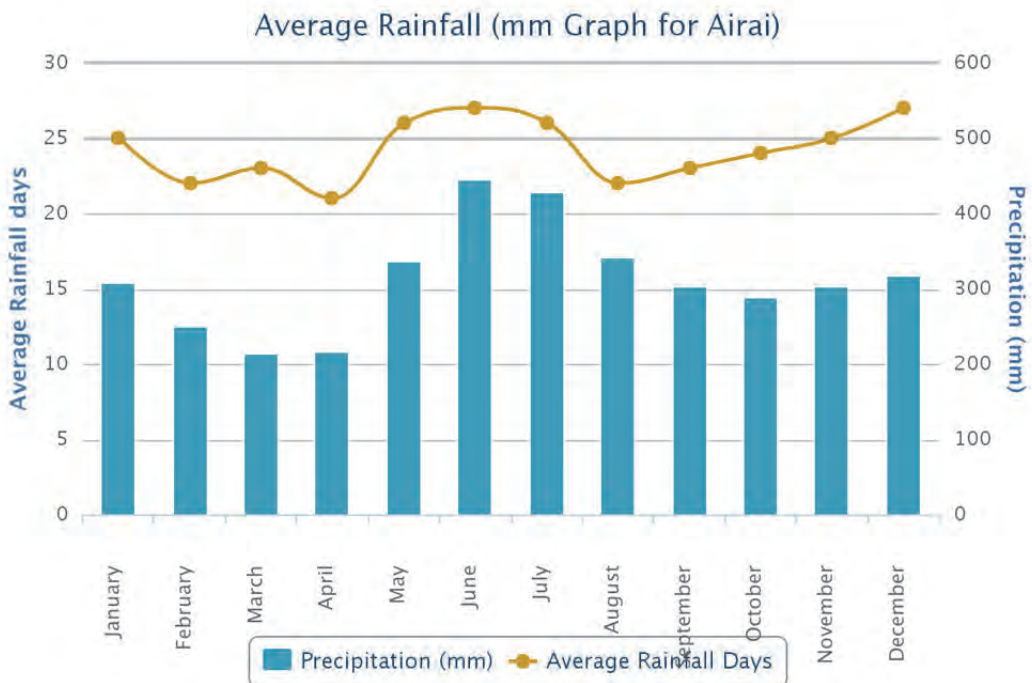
Source: PAN Office

Figure 2.9.2.1 Conservation Areas in Palau (Babeldaob Island)



Source: World Weather Online

Figure 2.9.2.2 Annual Average Temperature in Palau



Source: World Weather Online

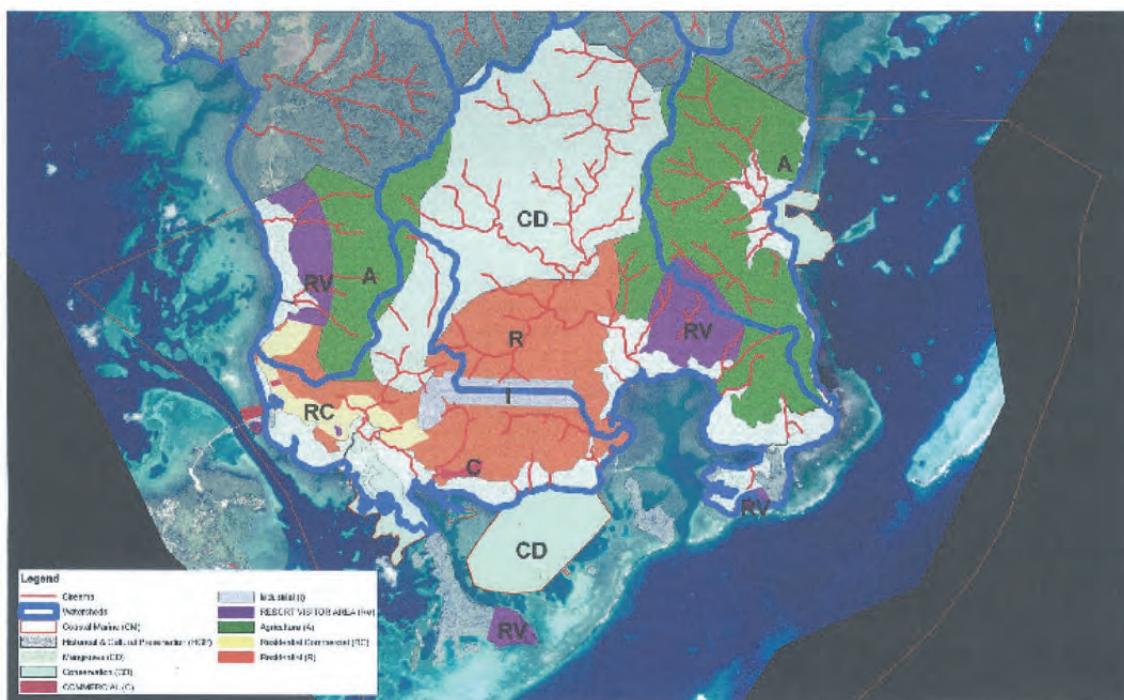
Figure 2.9.2.3 Annual Average Rainfall in Palau

(3) Social Environment

According to statistical yearbook in 2013, total population in Palau in 2012 was 17,501. Palau consists 16 states and 66.7% (11,665) of the population is concentrated in Koror state, and 14.5% (2,537) is concentrated in Airai state that is located in the southern end of Babeldaob Island.

While increasing of the population in Koror and Airai, depopulation is remarkable in remote islands such as Angaur, Hatohebei, Kayangel and Sonsorol. The population in Palau has been on a decreasing trend since its peak in 2005. It has more significant effect of population outflow due to emigration to overseas rather than natural decrease due to declining of birthrate. Palauan residents in Guam are exceeding 4,000.

There are no designated areas as cultural and historic heritage in the vicinity of the airport.



Source: Airai State

Figure 2.9.2.4 Land Use in the vicinity of the airport

2.9.3 Legislation and Institution for Environmental and Social Consideration

(1) Legislation for Environmental Consideration

Environmental Quality Protection Board (EQPB) was established in 1981 based on Palau National Code (PNC) Title 24, and the Environmental Quality Protection Act (EQPA) as semi-autonomous government organization in Palau is to preserve the environmental quality. PNC Title 24 authorizes EQPB to promulgate and enforce the following activities.

- Earthmoving Regulations
- Marine And Fresh Water Quality Regulations
- Toilet Facilities And Wastewater Disposal Systems Requirements
- Solid Waste Management Regulations
- Pesticide Regulations
- Public Water Supply System Regulations
- Environmental Impact Statement Regulations
- Air Pollution Control Regulations

- Ozone Layer Protection Regulations

EQPB has seven (7) board members and their term is three (3) years in principle.

The flowchart of environmental permit procedure is shown in Figure 2.9.3.1 and Figure 2.9.3.2. IEE and EIA corresponds EA and EIS in Palau respectively. Upon submission of the Environmental Assessment (EA), EQPB makes a determination as to whether the proposed activity may have a significant impact on the environment, based on criteria contained in the regulations. If it is determined that the project may have a significant impact on the environment, a full Environmental Impact Statement (EIS) will be required. An EIS is an informational document prepared in compliance with the laws and regulations which discloses the environmental effects of a proposed action, effects of a proposed action on the economic and social welfare of the community, effects of the economic activities arising out of the proposed action, measures proposed to minimize adverse effects and alternatives to the action and their environmental effects. The EIS development process includes specific content requirements, public notice and public participation requirements, and acceptability criteria.

EA are required for all projects which use:

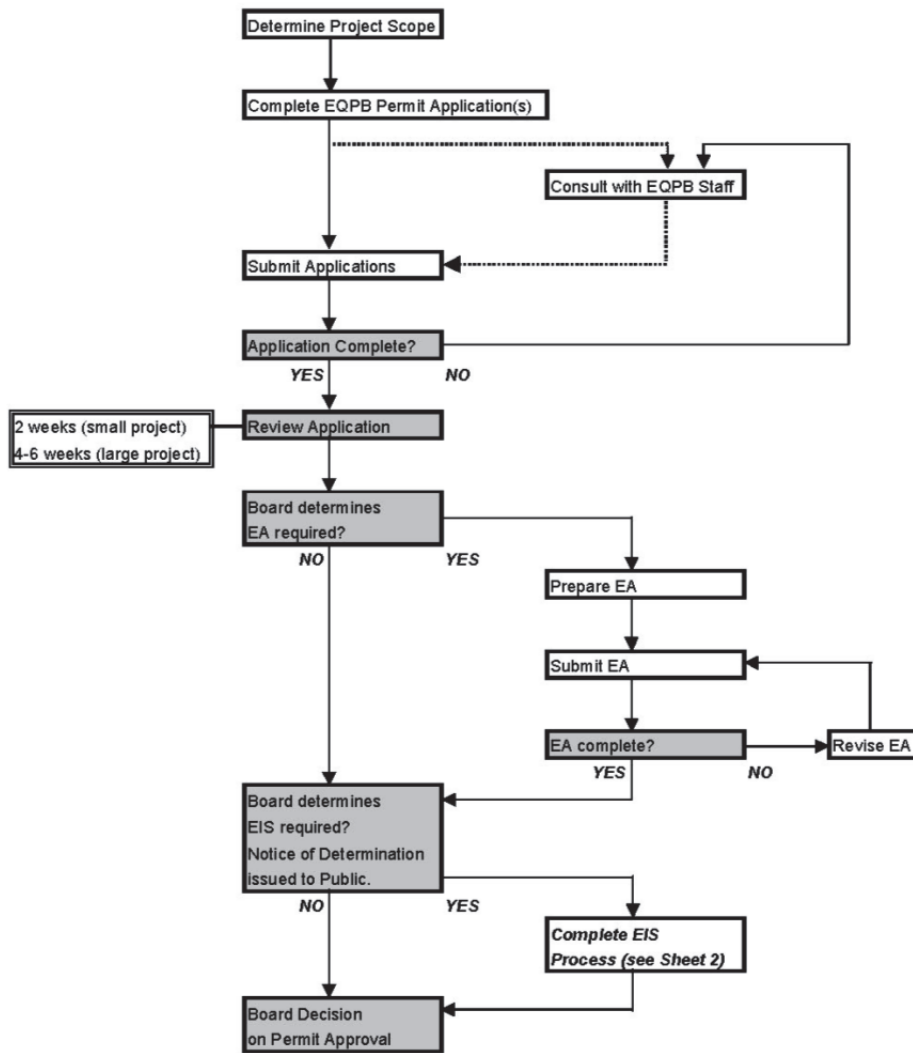
- National or State land
- National or State funds
- Any land which has been or may be classified as a Conservation Area
- Any directly or indirectly impacting coastal waters or wetlands
- Any use within any historic site
- Any action which EQPB determines may have significant impact on the environment

An EA must contain the following information:

- Identification of applicant
- Identification of agencies and organizations consulted in making the assessment
- A general description of the action's technical, economics, social, and environmental characteristics
- A summary description of the affected environment, including suitable and adequate location and site maps
- Identification and summary of major impacts and alternatives considered, if any
- Proposed mitigation measures, if any

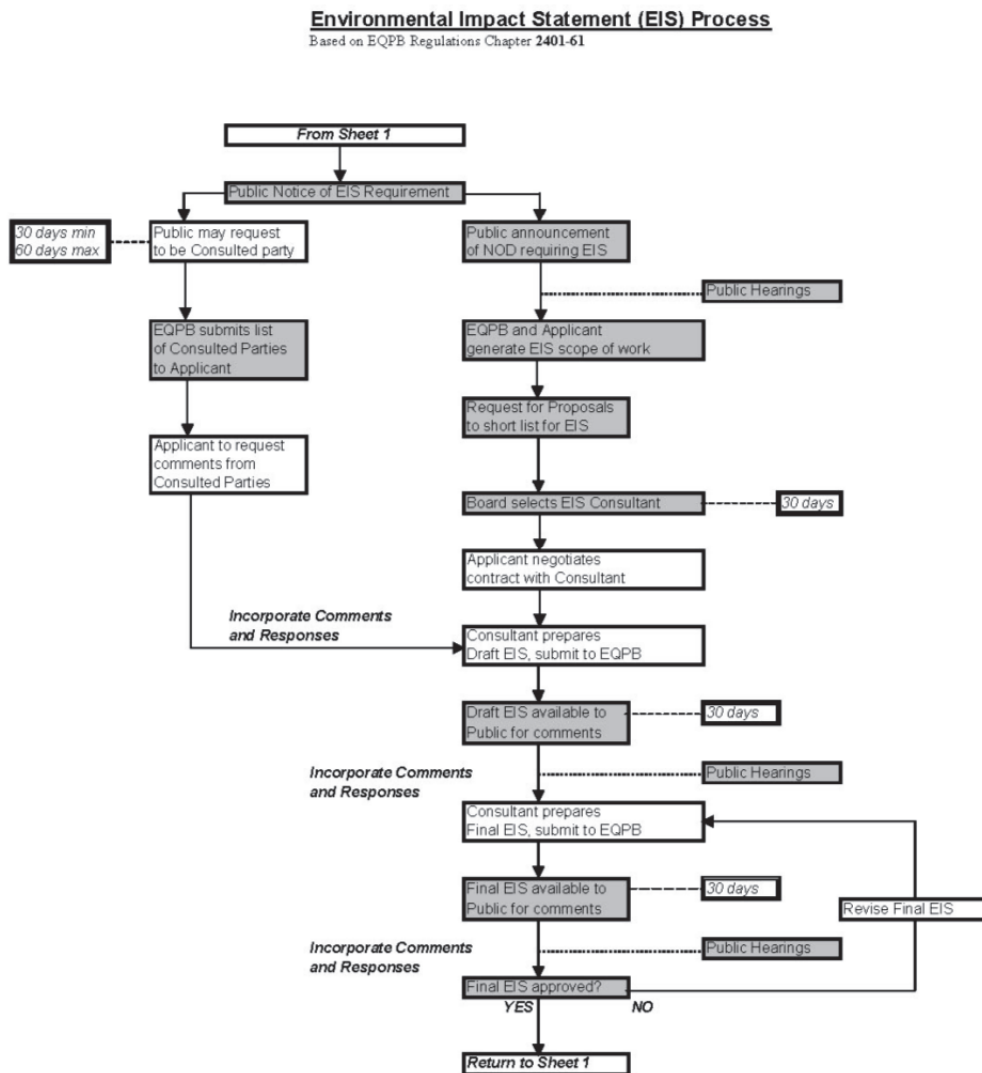
Palau EQPB Permit Application/Review Process

Based on EQPB Regulations Chapter 2401-61



Source: EQPB

Figure 2.9.3.1 Flowchart of Environmental Permit Procedure (1)



Source: EQPB

Figure 2.9.3.2 Flowchart of Environmental Permit Procedure (2)

(2) Gap from JICA Environmental guideline

This project is classified as category B of “Japan International Cooperation Agency, Guidelines for Environmental and Social Considerations (effective from April 2010, hereinafter referred to as JICA Guideline)” since the potential adverse impacts on the environment and society are site-specific; few if any are irreversible; and in most cases, normal mitigation measures can be designed more readily.

On the other hand, Palauan environmental administration is strongly influenced by the United States. Environmental Quality Protection Act (EQPA) of Palau corresponds to National Environmental Policy Act (NEPA) of the US, and Environmental Quality Protection Board Regulations of Palau also corresponds to Regulations for Implementing the Procedural Provisions of NEPA of the US. IEE and EIA in JICA Guideline corresponds EA and EIS in Palau respectively. The EIA system in Palau based on the US system is similar to JICA system on the procedure in terms of screening, scoping, implementation of EIA, and examination of environmental permit.

According to the above mentioned laws and regulations in Palau, EA process shall be required. Therefore, JICA Study Team conducts environmental and social surveys at the IEE level to re-assess the environmental and social impacts by this project for the preparation of the environmental permit process. JICA Study Team also prepares drafts of mitigation measures including avoidance, minimization, and compensation as well as drafts of monitoring plans and of institutional arrangements for environmental and social consideration.

(The latter subsections are not disclosed)

2.10 Organization Structure, Plan for Airport Management, and Operations and Facility Maintenance (not disclosed)

2.11 Considerations for Related Businesses

2.11.1 Tourism Development

This section aims to estimate the scale of tourism development that meets the forecasted air traffic demand and the requirement of infrastructure to support tourism development, and to discuss on measures necessary to ensure a sustainable growth of the tourism sector.

(1) Required hotel rooms in 2035

There are 1,578 hotels rooms in Palau as of September 2014. There are additional 58 rooms on live-aboard cruise boats that are used by divers; therefore the total number is 1,636 rooms. As shown in Table 2.11.1.1, there are 1,504 hotel rooms in Koror State, which constitutes 83.2% of the total hotel rooms in Palau, which is followed by the Airai State with 190 rooms or 11.2% of the total. 94.4% of the hotel rooms concentrate in the Koror and Airai States. During the 1998-2015 period, number of hotel rooms in Airai State increased at 5.4% annually, which is much higher than the national average of 3.7%. During the 16 years period, hotel rooms increased by 3.5% annually, while the number of visitor arrivals increased by 6.8%.

Table 2.11.1.1 Growth and distribution of hotel rooms

	Koror State	Airai State	Other States	Total	Visitor Arrivals
1998	779	72	61	912	54,530
2005	1,010	172	90	1,272	80,578
2010	1,061	160	96	1,317	92,500
2011	1,079	160	95	1,334	118,055
2012	1,079	160	95	1,334	123,286
2013	1,104	168	96	1,368	114,127
2014	1,314	168	96	1,578	146,867
2015	1,405	190	94	1,689	167,966
Share (2015)	83.2%	11.2%	5.6%	100.0%	-
CAGR	3.5%	5.4%	2.6%	3.7%	6.8%

Source: ROP Statistical Yearbook 2002, 2006, 2012, 2013, PVA

A surge of tourists from Mainland China since late 2014 caused a serious shortage of hotel rooms, which resulted in a hike of hotel room prices. It was triggered by a start of Chinese charter flight services and the "block booking" of hotel rooms by Chinese tour operators, where rooms are not returned to hotels even though they were not sold. Although the situation has been eased after PVA intervened to reduce the number of charter flights from China and banned block booking, there is a chronicle background for the hotel shortage as summarized below.

- Areas suitable for hotel development are limited due to the lack of infrastructure except for Koror and Airai States.
- Land acquisition is not easy since the land ownership system is complicated, and there are many areas where land ownership is not fully confirmed.

Since many Palauans know disorderly development in Saipan, Palauan Government is known to be concerned about tourism development similar in type to that area.

As discussed in "1.3.1 Visitor arrivals forecast", the number of visitor arrivals to Palau is forecasted to increase from 167,966 in 2015 to around 431,000 in 2035. The number of guest nights in 2015 is estimated to be 840,000 by assuming that the average length of stay is 5.0 nights,

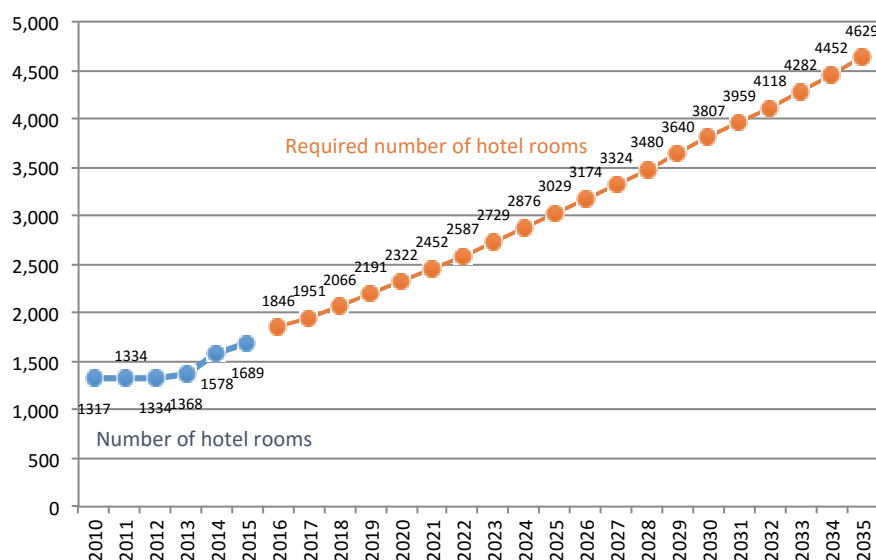
which is based on the result of a questionnaire survey conducted by the South Pacific Tourism Organisation (SPTO) in 2014. Since the number of hotel rooms in 2015 is 1,689, existing hotel room capacity is calculated at 1,048,000 guest nights per year by assuming that the average number of persons per room is 1.7, with which an occupancy rate is calculated at 80%. Taking into account the fact that Palau has suffered a shortage of hotel rooms in 2015, it is desirable to lower the occupancy rate to 75%. Based on these assumptions, 4,600 hotel rooms would be necessary to accommodate 431,000 visitor arrivals in 2035.

Table 2.11.1.2 Required hotel rooms in 2035

Category	Indices	2015	2035	Notes
Visitor arrivals		166,966	431,000	Visitor arrivals forecast
Hotel	Guest nights	839,830	2,154,000	Visitor arrivals x 5.0 nights (SPTO study)
	Hotel room capacity	1,048,025	2,872,000	No. of rooms x 1.7 person x 365 days
	Occupancy rate	80%	75%	
	Number of hotel rooms	1,689	4,629	Hotelroom capacity/1.7/365

Source: JICA Study Team

Figure 2.11.1.1 shows the increase in the required number of hotel rooms up to 2035. It implies that additional 600 rooms have to be built in five years from 2016 to 2020. The figure shows that hotel constructions accelerated after 2014 as evidenced by the fact that 321 rooms have been added in two years from 2113 to 2015. Two new hotels are under construction in Koror, which are to be completed in 2016 adding 137 rooms to Palau's hotel room supply. If this trend continues, hotel room supply will not be a constraint to achieve the number of visitor arrivals set forth by the demand forecast.



Source: JICA Study Team

Figure 2.11.1.1 Required number of hotel rooms

(2) Required tourism workforce in 2035

International standard for the employee-to-room ratio, or the number of employees per hotel room, is known to be 1.0 person/room. According to the 2014 Statistical Yearbook, employment for

"hotel and restaurant" in Palau is 1,581 persons as compared to 1,578 hotel rooms, which indicates that hotels in Palau tends to hire less people than the international standard. The statistics does not provide the number of direct tourism employments i.e. that includes employments not only for hotels, but also for restaurants, tour operators/ travel agencies, guides, tourist transports, souvenir shops etc. Studies by World Travel and Tourism Council (WTTC)⁴ indicate that the hotel room to direct tourism employment ratios are from 0.8 (St. Vincent & Grenadines) to 4.7 (Trinidad & Tobago) in small island countries. The ratios of Maldives and Seychelles are 3.2 and 2.2, respectively.

Taking into account Palau's small population, the number of direct tourism employment is assumed to be 1.5 times as many as that of hotel rooms. With this assumption, Palau is estimated to have 2,500 tourism direct employments in 2015, which would increase to around 6,900 in 2035 when Palau is expected to have 4,600 hotel rooms. It is noted that the total number of employees in Palau is only 10,386 in 2014 including 3,648 for the public sector; therefore it would not be possible to cater to the increasing tourism demand with the existing employment structure. Some 4,400 tourism employments would be required additionally in the long-term.

The additional employments may be secured by reducing the number of government employees that is regarded to be relatively too large for population, absorbing young workforce that tends to seek employment opportunities outside of Palau, and attracting overseas Palauans that are estimated to number some 4000 for tourism employments and participation in tourism businesses. In spite of the above, all the additional employments would not be filled by Palauans and the import of foreign workers may be necessary. Since the purpose of this section is to examine the increase of load to the infrastructure, all the additional employments are assumed to come from the outside resulting in the increase of population. Table 2.11.1.3 summarizes estimations and assumptions of tourism-related employments.

Table 2.11.1.3 Assumptions of tourism-related employments

Category	Indices	2015	2035	Notes
Visitor Arrivals		167,966	431,000	
Number of hotel rooms		1,689	4,629	
Labor	Direct tourism employment	2,534	6,943	Hotel rooms x 1.5
	Population in Palau	17,501	22,500	Increase of 4,400 tourism workers

Source: WTTC, JICA Study Team's estimation based on Statistical Yearbooks

(3) Relative Scale of Tourism Development in Palau

It would be useful to discuss on the relative scale of tourism development before proceeding to the estimation of infrastructure requirements. Table 2.11.1.4 compares Palau with other small island tourism destinations that are similar in size to Palau.

The number of visitor arrivals to Palau is not comparable with those in Maldives and Yaeyama Islands in Japan that are receiving almost 10 times as large numbers as that of Palau. Although the number of visitor arrivals to Seychelles is not very large, Palau's number of guest nights is only one third of the Seychelles' since Palau's average length of stay is much shorter than that of Seychelles. Room density in Palau is only 3.8 rooms/km², the smallest among the four destinations, which implies that Palau has physical space for further tourism development. Even the required number of hotel rooms based on the demand forecast, which is 4,862 rooms, is one

⁴ Travel & Tourism Economic Impact 2015, WTTC

third of Maldives, 83% of Yaeyama, and roughly the same as that of Seychelles at present. This would imply that the forecasted number of hotel rooms is reasonable and achievable.

Table 2.11.1.4 Comparison of Palau with Other Small Island Destinations

	Palau 2015	Maldives 2014	Yaeyama 2013	Seychelles 2014	Palau 2035
Area (km ²)	444	300	586	459	444
Population	17,501	396,334	52,438	92,000	21,900
Population Density	39	1,321	89	200	49
Visitor Arrivals	167,966	1,204,857	1,121,622	232,667	431,000
Average length of stay	5.0	6.3	2.8	10.2	5.0
Visitor nights	839,830	7,590,599	3,140,542	2,373,203	2,155,000
Visitor /local population	13.3%	5.3%	16.6%	7.2%	26.6%
Number of hotel rooms	1,689	14,975	5,828	4,725	4,862
Room density (room/km ²)	3.8	49.9	9.9	10.3	11.0
Spending per visitor (USD)	763	1,936	529	1,711	763
Visitor spending (mln. USD)	128	329	594	398	329

Source: MNRET, UNWTO, respective government offices, MLIT

It is noted, however, that Palau's population is much smaller than other island destinations. The visitor to local ratio⁵ in Palau is 13.3% at present, which is higher than those of Maldives and Seychelles but lower than that of Yaeyama Islands in Japan, which is 16.6%. In 2035, the ratio would increase to 26.6%. Population of Palau includes foreign workers with work permit. As shown in Table 2.11.1.5, population of ethnic Palauans excluding foreign workers was 13,807 in 2012. In case the number of foreign workers is 4,000 out of 4,400 new tourism employments, the share of ethnic Palauans would decrease from 79% to 64%. If the number is 2,000, the share is 75%, which is almost the same as the present share.

Table 2.11.1.5 Population and Foreign Workers in Palau

	Resident pop. in Palau	Foreign workers	Ethnic Palauan
1980	12,116	-	-
1986	13,873	-	-
1990	15,122	-	-
1995	17,225	-	-
2000	19,129	6,786	12,343
2005	19,907	3,691	16,216
2006	18,324	3,970	14,354
2007	-	4,620	-
2008	-	4,719	-
2009	19,536	4,465	15,071
2010	-	4,338	-
2011	-	4,135	-
2012	17,501	3,694	13,807
2013	-	4,017	-
2014	-	4,330	-

Source: ROP Statistical Yearbooks

⁵ Visitor to local ratio = guest nights / (resident population x 360 days)

It may be possible to cope with the expected labor shortage by increasing the number of foreign workers like in Gulf States, but concerns may arise in Palau from the viewpoint to maintain cultural traditions and social integrity. It is recommended for the Government of Palau to build a national level consensus for the above along with efforts to increase Palauan employments in tourism related businesses.

(4) Required infrastructure

Ministry of Public Infrastructure, Industries and Commerce (MPIIC) is in charge of infrastructure development. Services of water supply, sewerage, and electricity are managed and operated by the Palau Public Utilities Corporation (PPUC) that is owned by the government, and solid waste management is under the jurisdiction of the Bureau of Public Works of MPIIC. Adequate public sector investments are expected to allow visitors to Palau to stay comfortably, to encourage private investments in hotels and other tourism businesses, and to minimize negative impacts on the environment from these development activities. Table 2.11.1.6 summarizes required capacities of respective infrastructure components as well as statistical indicators and assumptions necessary to estimate the required infrastructure capacities. Following sections explain the procedures to estimate the capacities.

Table 2.11.1.6 Required Capacity of Infrastructure for Tourism Development

Indicators	2015	2035	Notes
Visitor arrivals	167,966	431,000	Result of demand forecast
Hotel	Guest nights	839,830	2,154,000 Visitors x 5.0 nights (SPTO survey)
	Hotel room capacity	1,048,025	2,872,000 Hotel rooms x 1.7 x 365 days
	Occupancy rate	80%	75% Seasonal and weekly fluctuation
	Hotel rooms	1,689	4,600 Hotel room capacity/1.7/365
Labor	Tourism-related employments	2,534	6,900 Hotel rooms x1.5
	Population of Palau	17,501	21,900
	Population of Koror State	11,665	15,300 Increased tourism employees are assumed to live in Koror or Airai.
	Population of Airai Stte	2,537	3,300
Water supply	Water use per hotel room (m ³ /day)	0.5	0.5
	Water use by hotels (m ³ /day)	845	2,300 Hotel rooms x 0.5m ³
	Increase of water use by hotels (m ³ /day)	-	1,500
	Water use/ day/ person (m ³ /day/person)	0.26	0.26 Water use by residents/population
	Water use by residents (m ³ /day)	3,693	4,800 Population x 0.26 m ³
	Water use by business (m ³ /day)	3,690	5,200
	Water use total (m ³ /day) Koror & Airai	7,382	10,000 Residents+business establishments
Sewerage	Water supply capacity (m ³ /day)	7,900	11,355
	Sewerage generation in Koror (m ³)	4,851	6,600 Water use x 0.8
Solid waste	Treatment capacity in Koror (m ³)	8,000	8,000
	Waste generation Koror (kg/day)	20,000	26,709
	Waste generation (kg/day/person)	1.7	1.7 Solid waste generation/population
	Waste generation by residents (kg/day)	29,752	37,000 Palau population x 1.7
	Visitor arrivals converted to population	2,301	5,900 Guest nights / 365 days
	Increase of waste by visitors (kg/day)	-	6,100
Electricity	Total waste generation in Palau (kg/day)	29,752	43,000
	Electricity use per m ² (kwh/m2/year)	160	160
	Hotel floor area (m ²)	76,005	207,000 30m ² x1.5xhotel rooms
	Electricity use by hotels (kwh/year)	11,361,600	35,007,897
	Electricity use by hotels (kw/h)	1,388	3,800 1 year = 8760 hrs.
	Electricity use by residents (kwh/person)	0.66	0.66
	Electricity use by tourism workers (kw/h)	1,562	4,814
	Increase of tourism electricity use (kw/h)	-	5,300
Telecom.	Total electricity consumption (kw/h)	12,000	17,000
	Power generation capacity (kw/h)	29,400	29,400
Telecom.	Subscription of fixed-line telephones	7,900	7,900
	Subscripton of mobile telephones	19,100	24,600 19,100 x (22,500/17,501)

Source: Statistical Yearbooks, estimates by JICA Study Team

a) Water Supply

There is a relatively large-scale network of water supply that covers Koror and Airai States. Other states have independent water supply systems developed for a state or a village. Government statistics indicate that 96% of Palauans households have water supply in their house or building (4727/4926)⁶.

⁶ 2014 Statistical Yearbook, Ministry of Finance

Koror-Airai Water Supply Network has water sources in Airai State, and covers most part of Airai State as well as Koror, Malakal and Ngerekebesang Islands of Koror State. The maximum supply capacity of the network is 4.0MG/day (15,140 m³/day) but the current distribution pipelines limit the service capacity to 2.1MG/day (7,950 m³/day). No-revenue water ratio is as high as 48%, which is caused by water leakage since old distribution pipelines made of asbestos cement are still used. Current water use by households is 3,693 m³/day, the water use by business establishments is 3,690 m³/day, and the total water use is 7,382 m³/day, which is nearing the upper limitation of 7,900 m³/day⁷. Water use per resident is calculated to be 0.26 m³/day as the population of Koror and Airai States is 14,202 as of 2012.

Increase of tourism related employments to cater to the increased number of visitor arrivals is estimated to be around 4,400. If they are assumed to live in Koror and Airai States, the service area population would increase from 14,202 at present to some 19,000, and the water use by residents would increase from 3,693 m³/day to 4,800 m³/day in 2035.

An international standard for water use by hotels is known to be 0.5 m³/room. It is estimated that current water use by hotels is 845 m³/day since there are 1,689 hotel rooms in Palau (0.5 m³ x 1,689 rooms = 845m³). Hotel rooms are forecasted to increase to 4,600 rooms in 2035. If all the hotel rooms are constructed in Koror or Airai State, water use by hotels would increase to 2,300 m³/day, which is an increase of 1,500 m³/day from that of 2015. It is noted that the above-assumption of 4,600 rooms in Koror and Airai States is that of the worst case. It is expected that hotels would be built in other states such as northern Babeldaob, Peleliu and other remote islands, and the water demand is less than the above figure.

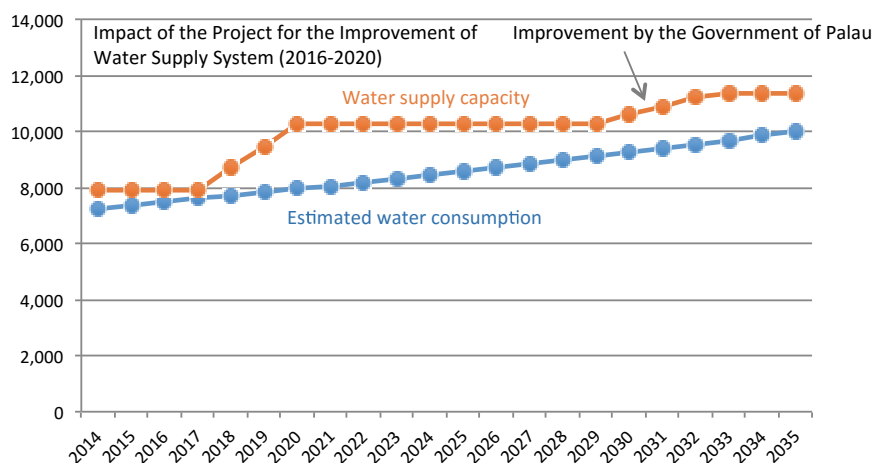
Hence, the total water use in Palau would increase from 7,382 m³/ day at present to the maximum of 10,000 m³/day in 2035. This figure, which would be an over-estimation since there are hotels that do not use water from Koror-Airai water supply network, is still less than the water supply capacity of 4.0MG/day (15,140 m³/day) but the reduction of leakage makes a prerequisite to cater to the increased water demand.

The Government of Japan agreed with the Government of Palau to provide a grant assistance for the "Project for Improvement of Water Supply System in Palau," which is scheduled to start in 2016. The project aims to lower the non-revenue ratio from 48% at present to 32% in 2020, and consists of the following components; a) installation of additional pipeline for transmission from the Airai water treatment plant to Koror State (8.3km), b) replacement of deteriorate asbestos cement pipelines (13.9km), c) modification of water distribution zones (construction of a Malakal service tank (950 m³), d) installation of flow meters to each service tank etc. The total project cost is estimated to be JPY 1,843 million.

If the water leakage ratio, which is almost identical to non-revenue ratio, is reduced to less than 25% with the efforts and investment by the Government of Palau after the grant assistance, water demand would be met in 2035.

Palau suffered a shortage of water supply from March to April in 2016 due to an abnormal climate, and the water restriction was enforced in Koror and Airai States. Due to the restriction, cancellations of hotel reservation were reported. Figure 2.11.1.2 shows the changes in the water supply capacity and the estimated water consumption in the Koror - Airai Water Supply Network. It indicates the urgency of the grant assistance project that is scheduled to start in 2016.

⁷ "Project Preparation Study for Improvement of Water Supply System in Palau", 2015, JICA



Source: JICA Study Team

Figure 2.11.1.2 Water Supply Capacity and Water Consumption

b) Sewerage

Sewerage networks are constructed only in Koror and Melekeok States. 75% (2289/3037) of households in Koror and 64% (69/108) in Melekeok are connected to a sewerage network. In the country, 48% (2358/4926) of households use sewerage, 43% (2111/4926) use septic tank and 9% (457/4926) use other measures.

Hotels are concentrated in Koror and Airai States but only the urban area of Koror State has a sewerage system. Sewerage treatment plant is located in Malakal Island with a capacity of 8,000 m³/day⁸. The volume of sewerage generation is empirically known to be 80% of the water supply, therefore the sewerage volume in Koror is estimated to be 4,900 m³/day (7382 m³ x (11,665/14202) x 0.8), which is less than the current capacity. The volume is estimated to increase 7,500 m³/day in 2035, which is close to the capacity limit, and therefore the government will need to expand the capacity of current water treatment plant in the long-term.

Airai State does not have a sewerage system and existing hotels treat sewerage with septic tank. There are voices indicating that existing systems of septic tanks do not have sufficient capacity to treat water to a desirable level. Hotel construction projects are being planned in Airai State, and 190 hotel rooms at present may increase to more than 1,000 in several years. If the hotel rooms increase by 1,000 rooms, increase of sewerage volume from hotel would be 400 m³ (1,000 x 0.5m³ x 0.8). Further, increase of tourism employments would result in the increase of resident population by 900 people that generates additional 200m³ of sewerage.

ADB is preparing to implement the "Koror Airai Sanitation Project" that consists of: a) effective, efficient, and sustainable sewage collection systems in Koror and Airai, b) sewage treatment and disposal that meet Palau's environmental standards, c) availability of safe and hygienic public toilet facilities in Koror, and d) Effective project management. The total project cost is estimated to be 26.9 million USD. The component in Koror has emphasis on improving the quality of existing sewerage network rather than increasing its capacity, and the component in Airai is to construct a sewerage network with a capacity of 4000 people increased from the current population of 2537, for a newly developed residential areas, not for hotel development.

⁸ Koror-Airai Sanitation Project, ADB, 2012

In this context, it would be necessary to examine the details of the ADB project to propose an expansion of sewerage treatment capacity for proposed hotel construction projects.

c) Solid Waste

Koror State generates 20t of solid waste per day according to an interview with the Koror State Recycling Center. With this figure and the population of Koror, solid waste generation of 1.71kg/day/person is obtained. As mentioned previously, tourism-related employments would increase by 5,000 at maximum, and the resident population, which is 17,500 at present, is estimated to increase to 22,000 in 2035. Other than the above, visitors' guest nights is estimated to increase from 840,000 at present, to 2,150,000 in 2035, which is equivalent to the increase of resident population from 2,300 to 4,400. Based on the above assumptions, solid waste generation in Palau would increase from 30 t/day in 2015 to 43 t/day in 2035.

Solid waste has been dumped to small-scale dumpsites operated by respective states. Most of them are types of open-dump that have been known to be hazardous to the environment. M-Dock Landfill Site in the Koror Island, which has been operated with the Fukuoka Method, is approaching the capacity limit and its location close to a residential area and tourist facilities has not been well-regarded. GOP has finally decided to construct a new landfill site in Aimeliik State that occupies a southwestern part of Babeldaob Island. Schematic design and EIA are being conducted at present with funding from Taiwan, and a request of grant assistance for its construction has been submitted to, and is being processed by, the Government of Japan. Moreover, JICA is planning to provide technical assistance for the management and operation of the new landfill site. The specifications of Babeldaob Landfill Facility Development Project Phase-1 are as follows:

- Construction of a 235-meter long by 5-meter high earth berm/slope formation
- Construction of a 450-meter long by 5-meter wide gravel-capped access road
- Installation of Leachate and Vent Pipes
- Construction of leaching pond: 35m by 25m by 4m

New landfill facility is to be managed and operated by GOP, and treat all the solid waste from Koror State and Babeldaob Island. It is epoch-making in that solid waste management has been centralized. Areas for future expansion have been secured as Phase-II and III sites and facility has enough capacity for future use⁹. It is noted that M-Dock Landfill Site would exceed its capacity if the construction of the new landfill site is delayed.

d) Electricity Power Supply

Palau's electrical supply network consists of a relatively large network that covers Koror State and the Babeldaob Island, and small-scale networks developed for respective remote islands of Angaur, Peleliu and Kayangel. Koro-Babeldaob network has two power plants: one in Malakal Island in Koror State and another in Aimeliik State in Babeldaob Island. Table 2.11.1.7 shows the numbers and rated and effective capacities of functional power generators ("stand-by" and "in operation") in Palau as of November 30, 2015.

⁹ Interview with the Koror State Recycling Center

Table 2.11.1.7 Electrical supply capacity in Palau

Location	Functional generators	Rated capacity (kw)	Effective capacity(kw)
Malakal	10	22,800	19,430
Aimeliik	2	10,000	10,000
Angaur	2	147	147
Kayangel	3	254	254
Peleliu	2	1,500	1,500
Total	19	34,701	31,331

Source: PPUC

A JICA study in 2011 reported that effective capacities of power generators attached to the Koror-Babeldaob network are 30.8MW and 17.7MW, respectively, while current capacities are 32.8MW and 29.4MW, respectively. There is a significant improvement, in particular, in effective capacity and the current capacity is good enough for the current electricity use, which is 10 - 12 MW.

Demand for electricity consumption was estimated based on a construction standard for hotels, which is known to be 160kw/m²/year. Electricity consumption was calculated from the number of hotel rooms by assuming that a hotel room has an area of 30m² and the total floor area that also includes lobby, restaurant, office etc. is 1.5 times as large as the total room area.

Current electricity consumption by hotels is 1.39 MW/h, which is estimated to increase to 3.8MW/h in 2035. Per person electricity consumption is calculated to be 0.66kw/h/person by dividing the current electricity consumption of 11MW/h in the service area with the service area population of 16,790. Based on this figure, power consumption by tourism-related employees is estimated to increase from 1.672MW/h at present to 4.6MW/h in 2035. The total increase of electricity consumption by hotels and tourism employees would be around 5.3MW/h, which means that current electricity consumption of 12.0MW/h will increase to 17.0MW/h. Taking into account the fact that the effective capacity of functional generators for the Koror and Babeldaob network is 29.4MW/h, existing facilities suffice the increased demand for electricity in 2035 provided that they are maintained properly.

e) Telecommunication

Palau National Communication Corporation (PNCC) is a public corporation funded by GOP, and operates telephone services (long distance and domestic), Internet, mobile phone service, and cable TV. The numbers of subscriptions of fixed-line telephones and mobile cellular phones are 7,100 and 19,100, respectively¹⁰. Table 2.11.1.8 shows the revenues from respective services.

Table 2.11.1.8 Revenues from Internal and External Transactions

Unit : USD	2007	2008	2009	2010	2011	2012	2013	2014
Total revenue	8,776,138	9,339,643	8,690,478	9,354,886	9,816,815	10,790,213	9,840,876	11,059,627
Palaunet use	1,570,446	1,564,475	1,703,025	1,866,938	2,077,983	2,256,815	2,215,862	2,750,986
Long distance calls	2,091,242	2,102,418	1,614,711	1,541,586	1,429,346	792,741	736,975	847,118
Domestic calls	1,439,755	1,492,236	1,387,618	1,445,873	1,499,031	1,339,278	1,397,747	1,391,036
Other transactions	3,674,695	4,180,514	3,985,124	4,500,489	4,810,455	6,401,379	5,490,292	6,070,487

Source: Statistics Office

¹⁰ CIA World Factbook

PNCC's total revenue is increasing thanks to the increase of revenues from Internet (Palaunet), mobile phones, and Cable TV, but the revenues from fixed-line telephones, in particular from long-distance calls, are declining. Due to this trend, capacity of fixed-line telephones would not be a problem for the increased tourists. The decline of revenues from long distance calls would be attributable to the widespread use of mobile phones and alternative telecommunication tools like Skype. The number of mobile phone subscriptions is almost equal to the population of Palau, but there seems to be no problem in its capacity of transaction so far. With the increase of resident population in Palau as a response to increased number of tourists, PNCC would have to invest mobile phone facilities to increase its capacity.

Internet service providers in Palau include Palau Net, which is operated by PNCC, and Palau Telecom, which is a private company. They provide internet services through mobile phone and wifi networks. A tourist survey conducted in 2014 by South Pacific Tourism Organization (SPTO) revealed that "slow," "hard to connect," and "expensive" Internet service is the most frequently quoted complaints from tourists in Palau, and the limited internet capacity presents a major challenge for the growth of tourism. Moreover, since Palau relies on satellite links for internet connectivity, weather conditions have affected the speed and stability of internet connections considerably. To cope with the internet problems, GOP has decided to install fiber optical submarine cables with funding and technical assistance from ADB.

North Pacific Regional Connectivity Investment Project is an ADB funded project to install 300km-long optical submarine cable to link Palau to the Southeast Asia - United States (SEA-US) submarine cable that connect Manado in Indonesia and Davao in the Philippines thorough to the US mainland via Hawaii and Guam. Loan Agreement was signed on March 7, 2016 for the project between the Government of Palau and ADB. Total project cost is 30.19 million USD, and ADB will provide a loan of 25 million USD. Submarine cable has a capacity of two terabit/second, which is estimated to have sufficient capacity for internet connections in Palau until 2040. SEA-US submarine cable is scheduled to be in operation in 2016 and will have a capacity of 20 terabit/second.

(5) Issues for Tourism Development

Sustainable tourism development is crucial for the financial sustainability of our project since tourists constitute more than 90% of the airport passengers. The following discusses issues for Palau to ensure its healthy growth of the tourism sector.

a) Urgent and Secure Implementation of "Water Supply Improvement Project"

As proven by the water shortage in March and April caused by abnormal climate, urgent and secure implementation of the "Project for Improvement of Water Supply System in Palau" is critical, which is scheduled to start in 2116. It is noted that the project is indispensable for tourism development.

b) Development / Expansion of Sewerage System in the Airai State

As discussed in "0 (4) Required infrastructure" there are many hotel construction projects in the Airai State due to its proximity to Koror City, presence of infrastructure such as water supply and electricity, and availability of suitable lands for hotel construction. Although it is not certain if all the projects are implemented, Airai is likely to have more than 1,000 hotel rooms in a few years.

Airai State does not have a sewerage system; therefore sewerage has been treated by septic tank and discharged. Although the construction of a sewerage system is scheduled to start in 2016 financed by ADB, it is intended for a residential area in the state, not for hotels planned in the state.

Taking into account the scale of hotel projects in the pipeline, it is preferable to expand the sewerage network to include these hotels, or at least, to design the network with a view to expand the network to cover these hotels.

c) Dispersal of hotels

As discussed earlier, the number of hotel rooms in Palau is expected to increase from 1,689 in 2015 to some 4,600 in 2035. Comparison of Palau with other small island destinations reveals that the number of hotel rooms per km² in 2035 is roughly the same as that of Seychelles at present, and much smaller than those of Maldives and Yaeyama Islands in Japan. But it is noted, however, that 94% of the hotel rooms currently concentrate in Koror and Airai States.

Dispersal of hotel is required from the fact that lands available for hotel construction is very limited in Koror City. Concentration of hotels in Koror City is a result of the availability of infrastructure but excessive concentration of hotels in the city would lead to the degradation of urban environment and may affect the competitiveness of tourism in Palau.

Dispersal of hotels is necessary from a viewpoint to maintain good tourists' environs that lead to a favorable tourism image, but also to achieve a balanced development within the republic. Remote islands like Kayangel and Peleliu and the northern part of Babeldaob are suffering from declining population, and tourism has potential to revitalize these areas. These areas, however, have limited capacity of infrastructure, thus hotels have to develop infrastructure such as electricity, water, sewerage and solid waste treatment with their own expense, which results in higher construction costs that are compatible with business risk.

A chicken and egg situation exists, in which hotel investors say they cannot build hotels other than Koror and Airai States because there is no infrastructure in other areas, while the government say they cannot build infrastructure because there is no hotel. Such situation would be solved if the government choose a certain area for hotel development, prepare a land use plan in the site, and set development guidelines, and develop infrastructure to reduce business risk for investors. This type of government-led development would be combined with a national-level land use planning to prevent overdevelopment by limiting areas for hotel construction.

It is advisable for MPIIC to conduct works for developing infrastructure on the initiative of Ministry of State. From a viewpoint to achieve a balanced development of Palau, it would be worthwhile considering to choose a site as discussed above such as Ngarchelong and Ngaraard.

2.11.2 Airport Access

Access to PIA is only through the one-lane roads on the right and left. Even considering the current number of customers, the peak inbound and outbound flights, the size of the aircraft, and other factors, the problem raised by present airport access condition will not cause material issues for ordinary airport operation. According to our traffic forecast, the number of PIA users is expected to steadily increase to 900,000, which is doubling of current number of passengers by 2035. PIA may encounter passenger conveyance problems with the current access environment and which may negatively influence airport operations; however, this concern is assuaged because of below operational structure.

Aircraft depart from and arrive at PIA in 30-minute intervals: Depart → Depart, Arrive → Arrive, Depart → Arrive, Arrive → Depart. Therefore, even during peak hours, the maximum number of flights is two per hour. We expect there will be no change, even after the implementation of the Project so that about 60 vehicles will come and go every hour (for two flights). Although number

of vehicles increase when compared to current situation, we consider access road congestion will be avoided on the airport premises, assuming that the number of parking lots is increased as planned. However, if there will be significant change in the bus/automobile utilization ratio and/or further increase in car rental demand, these will cause shortage of parking lots. If such cases take place, we will consider operating large shuttle buses (for 30 to 40 passengers, greater than the current bus capacity) to major hotels during late-night and early-morning peak hours as part of peripheral operations of the airport management company and reduce the number of buses.

2.11.3 Airport Associated Development

(1) Existing accommodation facilities

Existing accommodation facilities range from economy to medium-class compact refurbished apartments, to the Tokyu Real Estate owned and operated Palau Pacific Resort and the Okura Nikko Hotel Management operated Palau Royal Resort all capitalized locally.

Table 2.11.3.1 Summary of Major Hotels in Palau

Accommodation facility names	Guest rooms
Rose Garden Resort	20
Papago International Resort Palau	100
Palau Royal Resort	157
Palau Plantation Resort	20
Palau Pacific Resort	160
Carp Island Resort	17
Carolines Resort	8
Storyboard Beach Resort	6
Nature Island Resort	8
West Plaza Coral Reef Hotel Koror Island	14
West Plaza Hotel By The Sea	36
West Plaza Malakal	26
West Plaza Downtown	22
West Plaza Desekel	30
Airai Water Paradise Hote l& Spa	75
Cliffside Hotel	29
Sea Passion Hotel	77
Island Paradise Resort Palau	129
Palasia Hotel Palau	165
Palau Marina Hote	28
Malakal Central Hotel	18
Total	1,145

Source: Jones Lang LaSalle study



Figure 2.11.3.1 Location of Existing Major Hotels

(2) Accommodation facility conditions

We held a hearing regarding the operational conditions of the Palau Pacific Resort and the Palau Royal Resort, the only high-class category hotels in Palau.

The Palau Pacific Resort opened its doors in 1984, and it sits one of the few man-made sandy beaches in that country with only 30% of its 25 hectare land area already developed. Most of its guests are Japanese, followed by Koreans, Taiwanese, Chinese, Americans, and Europeans. The average guest room unit price is US\$280 to 330 per night, with 80% to 85% occupancy in recent years and favorable operational conditions that are generally high level relative to other facilities. It is now planning to renew its existing facilities and build additional ones thanks to favorable business results.

The Palau Royal Resort has been in operation since 2005 and added a man-made sandy beach in 2008. Most guests are Japanese and Taiwanese, but mainland Chinese have increased in recent years. The average guest room unit price is US\$200 to 250 per night with 85% to 89% occupancy in recent years and it is safe to say that the high-class category is in good profitability relative to the foregoing Palau Pacific Resort.

(3) New accommodation facility

Currently, we can confirm that there are many transactions involving purchases or leases of land close to the coastline in Koror and Babeldaob Island, a future development candidate area, mostly by mainland Chinese investors, but also Koreans and Taiwanese. If development occurs as planned, we can expect over 1,000 guest rooms in new accommodation facilities in Palau by completion. However, many have secured speculative land rights in view of latent accommodation facility development demand spurred by insufficiencies due to recent drastic visitor increases, and there is much land where no development is taking place.

There are also many cases of land use rights disputes that hinder the execution of intended goals due to insufficient preliminary studies relating to complex land ownership formats. Under such circumstances, we can only confirm two actual new accommodation facility constructions, a 100-guest room building by Australia's Wild Orchid Group and an 80-guest room building by a local concern in Malakal, Koror.

(4) Future development possibilities and issues

We believe that wide-ranging considerations for the new accommodation facility development is possible, not only in the environment friendly high-class category which Palau government intends with elevated economic ripple effects in the low- to mid-class categories for visitors from China, who are drastically increasing, and those wanting low guest room unit prices who come for scuba diving.

Meanwhile, we previously touched on the issues of infrastructure insufficiency, complex land ownership formats, few areas suitable for development and insufficient Palawan tourism workers, among others; however, we can assume market risk from increasingly wide demand fluctuations in a small market scale due to low overall passenger numbers, who are the drivers of demand, as well as business risk from the high construction investment amount necessary due to a reliance on imports of materials to this small, isolated island chain, and length of time required for construction due to limited specialized labor.

(5) Foreign capital investment system in local areas

Palau welcomes foreign inbound investment based on its policies for encouraging the introduction of a free and vigorous market economy to replace the foreign aid-based economy it's had during its long trusteeship era. Inbound foreign investment in Palau is governed by the 1990 Foreign Investment Act and articulated in Chapter 28 of the Palau Domestic Act. Shown below is a simple description of restrictions to be aware of when implementing a project locally.

All foreign investors looking to implement a project locally are obligated to apply for and acquire a Foreign Investor Approval Certificate (FIAC) under the Foreign Investment Act with regard to their project. Applications are submitted to the Foreign Investment Board, which screens them for contribution and necessity for the domestic market, conformity to environmental policy and impact on culture and society.

The Palau legal system does not allow land ownership by non-nationals and foreign investors are provided with land lease rights for up to 99 years.

Unlike Japan, Palau does not have any law equivalent to the Building Standards Act. However, construction plans are screened by the Palau Environmental Quality Protection Board (EQPB) for infrastructure burden, structural method, rainwater and wastewater treatment, etc. In addition, when building in Koror, an independent license examination is necessary, which includes coordination with zoning districts provided under law

(6) Development candidate land study

Koror is very popular for its physical proximity to the urban area and for its infrastructure as an area eligible for new accommodation development. For the same reason, nearby Airai is beloved, and many accommodation facilities were built within a certain range. However, as a result, the limited amount of land suitable for development in that area raised the level of difficulty for market entry. The following are examples of land for projects available for sale on the market as of the time of this study.

2.12 Preliminary Discussion for Further Development after the Project Contract Period (not disclosed)

2.13 Building and Equipment Implemented by the Japan Grand Aid (not disclosed)

Chapter 3

Cash Flow Analysis, Consideration of Business Scheme and Funding Methods

Chapter 3 Cash Flow Analysis, Consideration of Business Scheme and Funding Methods (not disclosed)

Chapter 4

Capabilities of Project Sponsors and Project Risk Assessment

Chapter 4 Capabilities of Project Sponsors and Project Risk Assessment (not disclosed)

Chapter 5

Quantitative and Qualitative Effects of the Project

Chapter 5 Quantitative and Qualitative Effects of the Project (not disclosed)