

Solomon Islands

FY2019 Ex-Post Evaluation of Japanese Grant Aid Project

“Project for Improvement of Honiara Port Facilities”

External Evaluator: Atsuko Orimoto, Japan Economic Research Institute Inc.

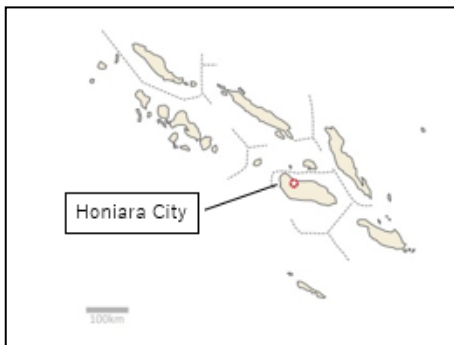
0. Summary

This project was aimed at building and enhancing the port facilities thereby realising greater effectiveness and efficiency in the management and the cargo handling at Honiara Port, which is the most important port in the Solomon Islands.

This project has been highly relevant to the country’s development plan and development needs, as well as Japan’s ODA policy. Therefore, its relevance is high. With regard to implementation, the project components were carried out mostly as planned, and the project cost and period were within the plan. Consequently, the efficiency is also high. All quantitative indicators, such as elimination of berth waiting time and improvement on efficiency of cargo handling, of this project were achieved. Furthermore, safety of cargo handling and ship routes were secured and further qualitative effects have been emerging. As to the impact of the project, although the promotion of logistics and the reduction of transportation costs could not be verified, several positive impacts have been confirmed; unemployment reduction; profit from the restoration of fiscal balance of the Solomon Islands Ports Authority (SIPA) has made possible systematic investment in further improvements of the facilities and equipment, and; Honiara Port has been recognised as a sufficiently equipped and properly managed international port. Therefore, effectiveness and impacts of the project are high. With regards to operation and maintenance, the financial aspect is particularly promising, and no major problems have been observed in the institutional/organizational and technical aspects and current status of the operation and maintenance system. Therefore, sustainability of the project effects is high.

In light of the above, this project is evaluated to be highly satisfactory.

1. Project Description



Project Location



Aerial Photograph of Honiara Port

1.1 Background

The Solomon Islands is an island country, with the islands scattered across a sea area of 1,632,964 km². The distance between the eastern and western edge of the country is 1,666.8 km. Therefore, most international and domestic cargos are transported by sea. There are six major sea ports in the country; however, international cargos are mainly handled at Honiara Port, which is located at the capital city. The main commodities imported into the country are food, industrial materials and equipment, clothes and fuel, which are essential for the everyday life of the people. The main exports of the Solomon Islands are palm oil, cacao, timber and fisheries products, which are very important to support the country's economy.

Ethnic tension erupted in late 1990s and the volume of cargo handling at Honiara Port greatly decreased during that time; however, it sharply bounced back once the conflict ceased in 2003 and the economy started to recover. As a result, cargo volume exceeded the cargo handling capacity of Honiara Port at the time of planning, and many container ships had to wait offshore a long time before berthing. Furthermore, although Honiara Port had an international berth with an extension of 120m, the berth extension was insufficient for larger sized ships and some parts of the berth did not meet the structural strength requirements to handle heavy cargo. Therefore, Honiara Port could only handle light-weight cargo and there were safety and efficiency concerns during cargo handling operations for container ships.

At the time of planning, the export of palm oil and mineral resources, etc. had been expected to increase and there was growing concern regarding a risk of collision between large sized international ships and small sized domestic ships moored nearby due to the narrow water area adjacent to the international wharf. Under such circumstances, it was urgently required to improve cargo handling efficiency and to secure safety and security of the port so as for the port to function as an international logistics hub, and to pursue future economic development of the country through the construction of a second wharf.

1.2 Project Outline

The objective of this project is to realise effectiveness and efficiency in the management of and the cargo handling at Honiara Port, by improving and enhancing the port facilities, thereby contributing to the smoother international cargo trade and economic development of the Solomon Islands.

Grant Limit / Actual Grant Amount	52 million yen / 52 million yen (Detailed Design) 2,681 million yen / 2,607million yen (Construction)
Exchange of Notes Date /Grant Agreement Date	January 2014 / January 2014 (Detailed Design) May 2014 / May 2014 (Construction)

Executing Agency	Solomon Islands Ports Authority
Project Completion	June 2016
Target Area	Honiara City
Main Contractor(s)	The Consortium of Toa Corporation and Kitano Construction Corporation
Consultant	ECOH Corporation
Preparatory Survey	August – September 2012 (I) February – December 2013 (II)
Related Projects	[General Grant Aid] Project for Construction of Market and Jetty in Auki in Solomon Islands (2010 – 2012) [Technical Cooperation] Data Collection Survey on Strategic Development of Maritime Infrastructures in the Pacific Region (2010) [Other International and Aid Agencies] Asian Development Bank: Honiara Port Development Project (Phase I: 1982, Phase II: 1990), Domestic Maritime Support Project (2011 – 2018) Pacific Region Infrastructure Facility: Honiara Port Scoping Study, Solomon Islands (February, 2012)

2. Outline of the Evaluation Study

2.1 External Evaluator

Atsuko Orimoto (Japan Economic Research Institute Inc.)¹

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule.

Duration of the Study: October, 2019 – October, 2020

Duration of the Field Study: February 8, 2020 – February 22, 2020

2.3 Constraints during the Evaluation Study

Due to the COVID-19 outbreak, the evaluator could not conduct a second field study. Therefore, additional information was collected remotely through online interviews and via the

¹ The consultant is from Japan Development Service Co., Ltd., who assisted Japan Economic Research Institute Inc. with this ex-post evaluation.

local associate. There were limitations to obtain all the information and data required; therefore, some quantitative data under Impacts is not available in this report.

3. Results of the Evaluation (Overall Rating: A²)

3.1 Relevance (Rating: ③³)

3.1.1 Consistency with the Development Plan of the Solomon Islands

At the time of project planning, *National Development Strategy (NDS) 2011 – 2020* was the National Development Plan of the Solomon Islands and well-maintained ports facilities and maritime service were considered essential for the economic development of the nation. Moreover, in *Solomon Islands National Infrastructure Investment Plan (SINIIP) 2013-2023*, which was about to be finalised, this project was categorised as one of the highest priority projects.

The development plan at the time of the ex-post evaluation was *National Development Strategy 2016–2035*, which had been updated in 2016. In a Medium Term Strategy of Objective One: Sustained and Inclusive Economic Growth, expanding and upgrading weather resilient infrastructure and utilities focused on access to productive resources and markets and for essential services was seen as a priority. Moreover, it was stated that priority should be given initially to those investments that are targeted at key productive sectors and initiatives, providing links to economic possibilities and opportunities, and, in the transport sector, the importance of shipping services and maritime infrastructure was emphasised. In particular, this project was clearly mentioned in the NDS as a JICA funded project to be completed. The SINIIP was still in effect at the time of the ex-post evaluation. A *National Transport Plan (NTP) 2017–2036* was developed from the SINIIP to specialise in transport infrastructure. In the NTP, maritime transport was positioned as one of the most important components in this sector, and in *Medium Term Transport Action Plan 2019–2023* of the NTP, keeping Honiara Port in good condition was prioritised. Furthermore, *SIPA Development Strategy. (2018–2023)* was created to show SIPA's commitment towards the continuation of maintenance, expansion and investment to keep improving services provided by Honiara Port.

This project aimed to realise effectiveness and efficiency in the management of cargo handling at Honiara Port, by improving and enhancing the port facilities, thereby contributing to increases in international cargo trade and economic development. It is consistent with the development plan of the Solomon Islands both at the time of planning and ex-post evaluation.

3.1.2 Consistency with the Development Needs of the Solomon Islands

The Solomon Islands is an island country, where the islands are scattered across a vast sea area,

² A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

³ ③: High, ②: Fair, ①: Low

and most international and domestic cargos are dependent on sea transportation.

Container cargo handling is only possible at two international ports, Honiara Port and Noro Port; therefore, the vast majority of international cargo is handled at those two ports. In recent years, SIPA has assigned Noro Port as an International Fishery Port, and Honiara Port has stopped dealing with fish cargo transshipment; however, international cargos are mainly handled at Honiara Port and the cargo handling volume sharply increased during the recovery of law and order and economy following the ethnic tension ending in 2003. One of the main causes driving the increase in cargo handling volume was an increase in population and general trading volumes in both export and import. The cargo volume had grown beyond the capacity of Honiara Port and increasing cargo handling volume was SIPA's priority for urgent action (See Table 1).

Table 1 Population of the Solomon Islands

Year	2013	2014	2015	2016	2017	2018
Population (thousand)	571	587	603	619	636	653

Source: The World Bank Data⁴

At the time of the planning, cargo handling operations had been inefficient due to the short berth length in relation to the size of calling ships, and there was a growing risk of collision for both large sized international ships coming in and small sized domestic ships moored nearby due to the narrow water area adjacent to the international wharf. Therefore, Honiara Port was struggling to fulfil its requirements such as safety as the main port. Moreover, as shown in Table 1, the population of the Solomon Islands increased by 20 percent between 2013 and 2018, and the volume of exports and imports increased significantly. As a result of this project, both cargo handling efficiency and safety have improved and Honiara Port better fulfils its function as the most important international port in the Solomon Islands.

Furthermore, there were several large-scale cyclones and floods which struck the Solomon Islands before and after the project. These had caused damage to the first wharf and it had deteriorated rapidly and was only partially functioning. Therefore, the need to build strong port facilities, which would not be destroyed easily by natural disasters, was commonly recognised in the country.

Based on the above, this project has been consistent with the development needs of the Solomon Islands both at the time of planning and ex-post evaluation.

3.1.3 Consistency with Japan's ODA Policy

At the time of the planning, 'Overcoming Vulnerability' was one of the priority areas for assistance for the Solomon Islands in the Country Assistance Policy (December 2012), and

⁴ URL address: <https://data.worldbank.org/country/solomon-islands?view=chart> (accessed on 12 May 2020.)

under ‘Program for Development of Economic Infrastructure and Improvement of Management and Maintenance’, Japan focused on construction and maintenance of transport infrastructure. Moreover, Japan had implemented 17 General Grant Aid Projects for ports in 8 Pacific Islands nations. At the Sixth Pacific Islands Leaders Meeting held in 2012, *Okinawa “Kizuna” Declaration* was adopted by the Leaders of Japan and the Pacific Islands Forum. Under one of the five pillars, Sustainable Development and Human Security, it was emphasized that high quality infrastructure would continue to play a fundamental role in securing reliable transport links and access to energy as well as the sustainable development of agriculture, fisheries and tourism.

This project was to assist reliable transportation and high-quality infrastructure such as ports to secure sustainable development, therefore, at the time of planning, this project was highly consistent with Japan’s direction to assist the Pacific and the Solomon Islands.

This project has been highly relevant to the country’s development plan and development needs, as well as Japan’s ODA policy. Therefore, its relevance is high.

3.2 Efficiency (Rating: ③)

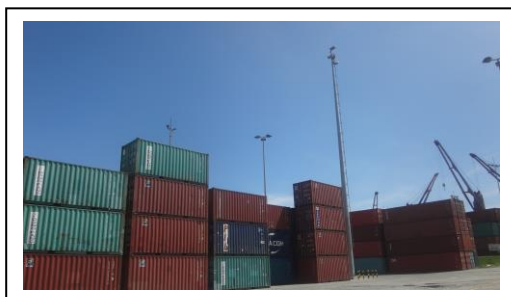
3.2.1 Project Outputs

The planned and actual project components are as shown in Table 2. Since unexploded cannon shells from World War II were found in the reclamation and concrete materials collected in the field, the Government of the Solomon Islands requested a metal detector survey, which was approved as an addition to the original plan. Apart from the additional survey, most components were carried out as planned.

Table 2 Planned and Actual Contents of the Project

Components	Plan	Actual	Remarks
International Wharf			
Berth Extension	150m	150m	
Revetment Extension	155m	155m	
Water Depth	11m	11m	
Dredging	6,680 m ³	6,680 m ³	
Filling	58,900 m ³	58,900 m ³	
Mooring Dolphin	2 Units	2 Units	Mooring dolphin without connection bridge. See '3.4.4' for more details.
Container Yard			
Yard Pavement	6,700 m ²	6,700 m ²	
Apron Pavement	10,600 m ²	10,600 m ²	
Access Road Pavement	1,922 m ²	1,922 m ²	
Accessories			
Water Supply Facility	1 Set	1 Set	Pipe laying and 2 faucets
Lighting Facility	1 Set	1 Set	Brightness: 30 lux (Apron), 20 lux (Yard)
Beacon	2 Units	2 Units	Lighting distance: 5 nautical miles
A metal detector survey for unexploded shells	-	1 Set	Unexploded cannon shells were found in reclamation and concrete material collected field, a metal detector survey was added and conducted.

Source: Prepared from information of the Second Preparatory Survey Report for Outline Design on the Project for Improvement of Honiara Port Facilities in Solomon Islands, and information provided by JICA



Container Yard



Container Cargo Handling

The obligations of the Solomon side, which are listed below, were agreed and fulfilled. They were confirmed at the ex-post evaluation.

- Land securement for a temporary yard neighbouring the project site.
- Implementation of EIA, acquisition of Environmental Permit and Facility Construction

Permit (Honiara City Council).

- Site clearance and removal of wastes and debris from the project site.
- Services of electricity, water, etc. to the new international wharf construction area.
- Securement of staff and budget for operation and maintenance of facilities.
- Exemption of tax and other duties assessed on imported materials and equipment from overseas.
- Commission payment for banking arrangement and fees

In addition, it was observed during the ex-post evaluation survey that SIPA had continued making further improvements at the Honiara Port facility using its own funding. Improvements included the installation of Closed-Circuit TeleVision (CCTV) Security System and changing all security lighting to solar and LED.

3.2.2 Project Inputs

3.2.2.1 Project Cost

The cost of this project borne by Japan was planned to be approximately 2,733 million yen (138 million yen for the detailed survey and construction supervision and 2,595 million yen for construction), with another 15 million yen planned as implementation expenses to be borne by the Solomon Islands⁵.

Table 3 summarises the actual costs contributed by Japan and the Solomon Islands.

Table 3 Actual Project Costs

Country	Items	Cost (mil. yen)
Japan	Detailed Survey	52
	Supervision	86
	Facility Construction	2,521
	Sub-total	2,659
Solomon Islands		15
TOTAL		2,674

Source: Prepared from information provided by JICA and SIPA

The actual project cost was 2,659 million yen (Japanese side), which was within the planned amount (approx. 97% of the plan). The evaluator could not confirm the exact amount of costs borne by the Solomon Islands; however, the cost was reported as having been approx. 15 million yen as planned (approx. 100% of the plan). Moreover, SIPA continued improving the facility of Honiara Port with its own funding after the completion of the project.

Therefore, the total cost of the project was 2,674 million yen, which was less than the

⁵ Exchange rate: 1 SBD = 12.23 JPY (As of December 2012, at the time of planning)

planned amount (approx. 97% of the plan).

3.2.2.2 Project Period

The period of this project was expected to be 32 months, which included eight months for a detailed design survey and tendering. The actual project period was 29 months from February 2014 to June 2016, and the project was executed for a significantly shorter period than planned (91% of plan). The shorter project period, with high quality construction, became possible mainly due to the selection of a well-experienced and reputable sub-contractor for the installation of the steel pipe pile foundation⁶. A metal detector survey was added to the original plan, nonetheless the project was executed within the plan (91% of the plan).

Both the project cost and project period were within the plan. Therefore, efficiency of the project is high.

3.3 Effectiveness and Impacts⁷ (Rating: ③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

In this project, 'Number of Waiting Container Ships for Berth', 'Efficiency of Container Handling Operation (Number of Container Handled in both the first and second wharves per Hour)', 'Efficiency of Vehicle Discharge from Ro-Ro Ship (Number of Vehicle Discharged per Hour)' and 'Increase of Stacking Capacity of Container Yard' had been selected to be the operation indicators and targets that were set at the time of planning. The actual indicators were confirmed as shown in Table 4 at the time of ex-post evaluation.

⁶ The steel pipe pile foundation is widely used as revetment wall of ports, and huge steel pipes with welded fittings are lined up vertically. Because of the advantage, its strong supporting power and flexural rigidity, it can apply to wharf on a deep sea.

⁷ Sub-rating for Effectiveness is to be put with consideration of Impacts.

Table 4. Quantitative Effects (Operation and Effect Indicators)

	Baseline	Target	Actual* ¹		
	2013	2019	2016	2017	2019
		3 Years After Completion	Completion Year	1 Year After Completion	3 Years After Completion
1) Number of Waiting Container Ships for Berth	4 to 5 ships/month	Nearly 0 ship/month	approx. 0.5 ship/month	Nearly 0 ship/month	Nearly 0 ship/month
2) Efficiency of Container Handling Operation (Number of Containers Handled per Hour)* ¹	15 TEU/hour	20 TEU/hour	20 TEU/hour	20 TEU/hour	20-22 TEU/hour
3) Efficiency of Vehicle Discharge from Ro-Ro Ship (Number of Vehicles Discharged per Hour)* ²	10 vehicles/hour	30 vehicles/hour	30 vehicles/hour	30 vehicles/hour	30 vehicles/hour
4) Increase of Stacking Capacity of Container Yard* ³	22,035 TEU/year (Insufficient Shortly)	33,341 TEU/year (Sufficient for Target Year)	33,341 TEU/year	33,341 TEU/year	> 33,341 TEU/year

Source: Prepared from information of the Second Preparatory Survey Report for Outline Design on the Project for Improvement of Honiara Port Facilities in Solomon Islands, and information provided by JICA

*1: The baseline indicator is the potential maximum efficiency when all equipment, staff members and facilities are available. The reason for increases in maximum efficiency at the time of the ex-post evaluation was that SIPA introduced better equipment using their own funds and utilises them for container handling.

*2: The baseline and target indicators were calculated as potential maximum efficiency in cargo handling of containers (vehicles inside) or directly downloading by driving vehicles using a ramp of a ship, which has Ro/Ro (Roll-on/Roll-off) facilities⁸.

*3: Increases for stacking capacity of container yard were automatically achieved, while this project created/upgraded container yard.

While the priority order of calling vessels is; 1. cruise liners; 2. cargo ships; and 3. others (including diplomatic vessels), calling permissions to diplomatic vessels are only granted at times which avoid clashing with cruise liners and/or cargo ships. Owing to such improvement in shipping schedule management, Honiara Port achieved almost zero waiting for the berthing of container ships.

The baseline of 'Efficiency of Container Handling Operation (Number of Containers Handled per Hour)' was not an actual number but potential maximum efficiency when all existing equipment, staff members and facilities were available. The maximum efficiency of container handling operations at the ex-post evaluation achieved a higher level, since the

⁸ This project made possible use of Ro-Ro ramp, vehicles can move between wharf and ship by driving using the ramp.

second wharf was completed by this project and SIPA introduced more and better equipment with their own funds and started utilising them for container handling.

Similarly to the container handling, the baseline of 'Efficiency of Vehicle Discharge from Ro-Ro Ship (Number of Vehicles Discharged per Hour)' was calculated as the potential maximum efficiency at the time of planning. Vehicles had been transported in containers until completion of the project thus the number of vehicles discharged had equalled the number of containers handled. However, after construction of the second wharf, cargo ships with Ro-Ro functions could utilise the ramp and directly download vehicles by driving them, therefore; the target was achieved.

Increase in stacking capacity of the container yard (yard capacity) was automatically achieved, after the project created/upgraded the container yard (calculated with empty four containers in one stack). Moreover, SIPA has continued to expand and upgrade the container yard using their own funds and has purchased side lifters, which can stack up to seven empty containers; therefore, it is expected that the project has achieved yard capacity beyond the target (the precise figure was not provided).

3.3.1.2 Qualitative Effects (Other Effects)

At the time of planning, the following qualitative effects were expected to be achieved through the implementation of this project.

- 1) Promotion of Logistics (The function as an international port is enhanced and the logistics are promoted by inputting the new international wharf.)
- 2) Reduction of Transportation Costs (Reduction of transportation costs can be expected by upgrading the safety and efficiency of container handling operation at Honiara Port.
- 3) Shortening of Port Time and Elimination of Berth Waiting Time (As a benefit for shipping companies, shortening of port time and elimination of berth waiting time of calling container ships are expected by implementation of the project.)

With regard to "1)", the total volume of cargo is influenced by the wider economic situation and the price of export products rather than the condition of Honiara Port, and the effect of this project was not confirmed. However, all interviewees expressed that; the quality of goods, such as industrial commodities, daily necessities and other items handled, have improved, since there were more ships from different countries and more varieties of goods have become available, and; the functionality of Honiara Ports had been enhanced. Therefore, some degree of effect was observed.

Qualitative indicator "2) Reduction of Transportation Costs" is considered to be an impact, which was to be achieved after the safety and efficiency of container handling was improved through the project, therefore, this indicator was analysed in "Impacts". According to SIPA's

CEO, it was not only the efficiency of cargo handling that was improved, but also, the port itself has become safer. Navigation of large cargo vessels has become much easier, since the view around the newly constructed second wharf is clearer and there is wider berthing space. This helps prevent collisions with domestic ships and the wharf or jetties, and shortens the duration of berthing and departure. Therefore, both safety and efficiency were greatly enhanced.

With regards to “3) Shortening of Port Time and Elimination of Berth Waiting Time”, in the past, some container ships were longer than the length of the first wharf, and containers had to be moved on the ship from one side to the other before downloading or ships had to reposition after downloading some of the containers from one end of the ship. However, the second wharf made it possible for containers to be downloaded from a single position and, with easier navigation, thus port time was reduced greatly. Regarding berth waiting time; both people concerned with the project and the wider general public confirmed that nowadays almost no ship was witnessed waiting.

3.3.2 Impacts

3.3.2.1 Intended Impacts

The intended impact of the project was `contributing to the smoother increases in international cargo trade and economic development in the Solomon Islands`. Therefore, it was decided to ascertain if there had been any improvement in the total exports/imports, Gross Domestic Product (GDP), Gross National Income per capita, labour force and unemployment rates.

Table 5 Change on Total Amount of Export and Import (Year 2000 = 100%)⁹

	2013	2014	2015	2016	2017	2018
Total Export	368.9	310.1	352.9	403.3	428.0	448.4
Total Import	286.3	269.6	283.5	289.2	348.7	351.9

Source: Prepared from data obtained from WB website¹⁰

Table 6: GDP (Current billion USD) and GNI (USD)¹¹

	2013	2014	2015	2016	2017	2018
GDP	1.13	1.172	1.155	1.23	1.31	1.396
GNI	1,770	1,840	1,870	1,830	1,870	2,020

Source: Prepared from data obtained from WB website¹²

⁹ Only data up-to 2018 was available, when it was accessed.

¹⁰ URLaddress: <https://data.worldbank.org/country/solomon-islands?view=chart> (accessed on 12 May 2020)

¹¹ Only data up-to 2018 was available, when it was accessed.

¹² URLaddress: <https://data.worldbank.org/country/solomon-islands?view=chart> (accessed on 12 May 2020)

Table 7 Labour Force (1,000 persons) and Unemployment rate (%)

	2013	2014	2015	2016	2017	2018	2019
Labour Force	243	250	257	264	271	279	286
Unemployment Rate	2.04	2.10	2.01	1.93	1.77	1.79	1.79

Source: Prepared from data obtained from WB website ¹³

As shown in Table 5, the volume of international cargo (exports/imports) increased by approx. 22% for export and approx. 23% for imports, compared between 2018 and 2013. Among the main economic index, GDP increased by approx. 24% and GNI per capita by approx. 14% (See Table 6). Furthermore, the labour force increased by approx. 18% and the unemployment rate decreased by 0.25% compared between 2019 and 2013 in Table 7. This indicates that the number of employed people has been increasing.

Some shipping companies commented that imports in year 2019 had decreased and SIPA, the Solomon Islands' Government, and all concerned people in the maritime industry, unanimously agreed that the amount of imports and exports was affected greatly by the broader economic situation and the price of primary products.

Numbers for SIPA's staff members were 224 in 2013 and 478 in 2018. Although not verified by statistical data, SIPA's CEO estimates that there are over 10,000 people employed in relation to SIPA, such as shipping companies and domestic cargo companies.

As described above, between the base year (2013) and the ex-post period (2018/2019), this project contributed to some extent to the economic development of the Solomon Islands both in terms of promotion of employment and increasing logistics.

3.3.2.2 Other Positive and Negative Impacts

1) Impacts on the Natural Environment

This project was not regarded as a large-scale project within the port sector as determined by JICA's *Guidelines for Environmental and Social Considerations* (April, 2010) and it was considered that undesirable impacts on the environment through project implementation would not be serious. This project is therefore categorized as "B" within JICA's Environmental and Social Considerations.

To alleviate the effect on the aquatic ecosystem, contamination prevention membrane was set in the sea during dredging, and no particular associated problems were observed. The Ministry of Environment is responsible for monitoring water quality around Honiara Port. Water quality monitoring was not carried out, but no water pollution was reported during construction. Surface water drained from Honiara Port is mainly rainwater and its impacts on the aquatic ecosystem are considered minimal. The Environmental Impact Assessment (EIA) report for this project was approved by the Ministry of Environment at the time of planning

¹³ URLaddress: <https://data.worldbank.org/country/solomon-islands?view=chart> (accessed on 12 May 2020)

and it was confirmed that the project was conducted in accordance with the conditions described in the Environment License.

2) Resettlement and Land Acquisition

Neither resident resettlement, nor land acquisition was required, as the land belongs to the Government of the Solomon Islands.

3) Unintended Positive/Negative Impacts

More self-funded investment after recovering fiscal balance (positive impact)

As SIPA secured a larger space (the second wharf) to handle cargo more efficiently, the income from wharf fees and cargo handling fees increased rapidly and SIPA's fiscal balance improved after completion of the project in 2016. This made it possible for SIPA to further invest in facilities and equipment, and significant impacts were observed, such as the improvement of safety at the domestic jetty, reduced electricity bills, increased donations to the Solomon Islands Government and community.

- Upgrading facilities: repair and re-tarmac of the container yard (outside of the scope of the project); provision of three cranes and other equipment; replacing existing lights with LED lights and installation of solar lights; introduction of new terminal management system and new security system such as CCTV.
- Improvement of safety and security: changing to LED lights realised electricity cost savings, and has enabled the expansion of the lighting area and operation duration. With the introduction of CCTV, less theft and vandalism were reported, thus the security situation of Honiara Port has improved significantly.
- Improvement of the domestic wharf: LED security lights were installed and maintenance and construction of jetties began (four new jetties have been designed and one jetty was about to be built).
- Contribution towards the capacity improvement of customs and quarantine of Solomon Islands Government: donation of an X-ray scanner for quarantine (approx. two million US dollar)
- Community support: donations to the central hospital, schools, etc.

More recognition as an international port fulfilling international standards (positive impact)

After completion of the project, SIPA was accepted as a provisional member of the International Association of Ports and Harbours, which is an affiliated association of the International Maritime Organization, and became a full status member in August 2019. Moreover, Honiara Port was recognised as a sufficiently equipped and properly managed international port and signed a partnership agreement with Jurong Port, which is a main

domestic port in Singapore and Ports Australia, which represents both Australian Government and private ports in Australia.

With regard to effectiveness, all targets of operation indicators were achieved and the efficiency of cargo handling was significantly improved. Furthermore, safety of cargo handling and ship routes were secured and further qualitative effects have been emerging. As to the impact of the project, there has been economic development to some degree after the completion of the project, and the profit from the restoration of fiscal balance has made possible investment in further improvement of the port. Initial impacts have borne subsequent impacts and many positive effects were observed. There were no particular negative effects on the environment and no land acquisition or resettlement cases have occurred.

This project has largely achieved its objectives. Therefore, effectiveness and impacts of the project are high.

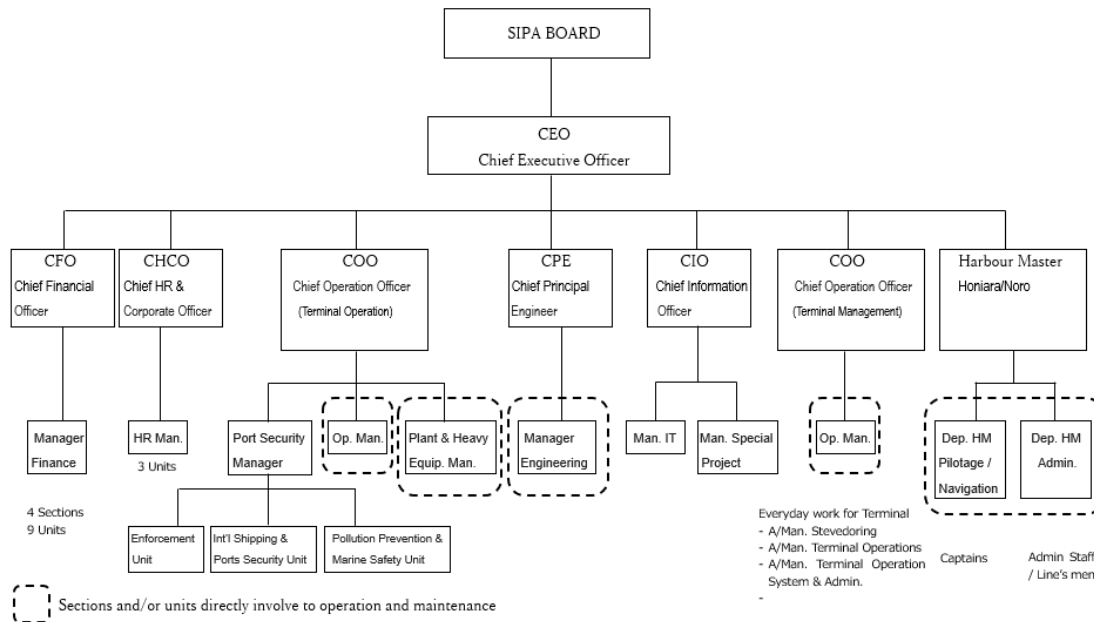
3.4 Sustainability (Rating: ③)

3.4.1 Institutional/Organizational Aspect of Operation and Maintenance

Soon after completion of the project the executing agency, SIPA, recruited the current CEO and under his leadership organisational reform began and has been ongoing. At the time of planning, there were four Departments, namely, Operation Department, Engineering Department, Financial Department and Corporate Service Department, with a total of 224 employees. As of September 2018, the number of employees reached 478 across eight departments including two ports. The eight departments are, Finance Department, Human Resource Department, Terminal Operation Department (Port Security Section, Ports Service Operation Section, Plant/Heavy Equipment Section), Engineering Department, Information Department, Terminal Management Department, Honiara Port and Noro Port. Honiara and Noro ports each include a Pilotage and Navigation Section. Facilities provided under this project are mainly looked after by the Engineering Department. Section managers for the Ports Service Operation and Plant/Heavy Equipment Section are also directly involved with maintenance of the port. Under supervision of the Chief Principal Engineer, the Engineering department contains sections in charge of general building and plumbing, marine infrastructure, port terminals, electrical and property. The Engineering Department is responsible for marine and terminal infrastructure and also planning on new projects.

This project made it possible for Honiara Port to operate 24 hours a day for 365 days, and it has resulted in organisational structural reform and an increase in the number of staff members, 99% of whom are Solomon Islanders. The sufficiency rate of employees is 95%. SIPA continues its efforts with recruitment and, with the introduction of a new terminal management system

(IT), it was confirmed that Honiara Port operated more efficiently and there were no problems found in the operational aspect of sustainability.



Source: Prepared from organisational chart (2020) provided by SIPA

Figure 1 Organisational Chart of SIPA (Top Executives Simplified)

Moreover, safety at Honiara Port has improved dramatically with the enhancement of security, such as the increasing numbers of security personnel, introduction of a biometrics security system and conducting training courses for security guards. This has contributed towards the further enhancement of the organisational aspect of operation and maintenance. There were some vacancies at the time of the ex-post evaluation, however, main positions, which required qualifications, were filled and the SIPA was making continuous effort for recruitment. Therefore, there were no problems found with the organisational aspects of operation and maintenance at SIPA.

3.4.2 Technical Aspect of Operation and Maintenance

The main facility, which entails the berth in the second international wharf and the north and south revetment was designed with 50 years of service life. Therefore, in principle, it should not require major maintenance work. However, at the time of planning, it was recommended that to prolong its life for good usage in the future, early discovery of damage and appropriate and timely repair are essential through regular inspection of the berth facilities; such as depths and conditions of berth at the front water area, mooring dolphins, armour blocks, and access road.

Regarding the technical level of operation and maintenance, during the project period on-the-job training was provided to the Engineering Department to enhance their maintenance

capacity. At the time of the ex-post evaluation, staff members of the Engineering Department have sufficient technical skills to plan and implement small-scale repair; such as repairing tarmac areas and the expansion of the temporary container yard. However, SIPA is promoting capacity enhancements for technical staff and is considering the recruitment of a foreign expert specialised in areas such as ship repair and/or slipway¹⁴ to provide workshops and on-the-job training for further enhancing the technical skills of their workforce.

At the time of planning, maintenance of stevedoring equipment, which includes forklifts, was conducted under the Engineering Department. However, the Plant/Heavy Equipment Section was subsequently transferred to the Terminal Operation Department as part of the organisational reform. Separate units based around the brands of the equipment were created to strengthen the skills capacity on maintenance and troubleshooting for each brand.

During the ex-post evaluation, the Harbour Master of Honiara Port was recruiting more lines' men¹⁵ and captains. All captains within SIPA were trained and qualified overseas and it is a requirement for lines' men to have completed attachments to large ports in Singapore or Australia. This is desirable for the lines' men in terms of safety and strengthening of their technical skills as they can acquire experience of tethering in large ports, where many large ships call.

Therefore, in regard to technical aspects of operation and maintenance, there were no particular concerns regarding operation and maintenance of facilities. Staff members concerned with operation and maintenance have sufficient levels of technical skill and opportunities for capacity enhancement as needed.

3.4.3 Financial Aspect of Operation and Maintenance

SIPA's recent income and expenditure are as shown in Table 8.

Table 8: Income and Expenditure of SIPA

(Unit: million Solomon Dollars)

Fiscal Year	2013	2014	2015	2016	2017	2018
Income						
Ports Charges and fees	86.8	94.5	118.1	226.9	195.3	205.9
Other income	10.3	12.7	17.3	13.9	18.8	26.1
Expenditure						
Administration	-63.1	-70.7	-62.6	-71.2	-75.2	-65.9
Personnel Cost	-32.5*	-42.8	-46.3	-46.9	-62.4	-79.3
Profit from Operations	1.5	-6.2	26.4	122.8	76.4	86.8
Net Finance Cost	0.0	0.2	-0.1	-0.1	0.9	1.3
Net Profit	1.6	-6.5	26.3	122.7	77.3	88.1

Source: Prepared from information provided by SIPA

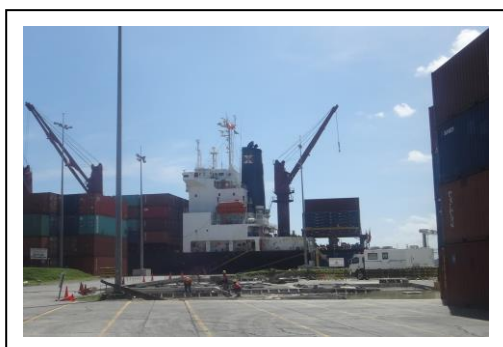
¹⁴ Slope to bring ship on land.

¹⁵ Line's men are the workers who fasten lines (ropes and/or cables) of large vessels to facilities of wharves such as mooring dolphins and bollards.

Due to the improvement of facilities achieved by this project, SIPA's income from port charges and fees nearly doubled in comparison with prior to the project implementation. This, in combination with management efforts, has led to net profits drastically increasing since the completion of the project in 2016.

At the time of planning, it was expected to use the second wharf only for the handling of container ships for the time being. However, when two container vessels call at the same time, both the first and second wharves are used. Moreover, shift numbers have increased, because Honiara Port started to operate 24 hours 365 days after completion of the project; and with the enhancement of Noro Port as an international port, the total number of staff members has almost doubled. This caused personnel costs to rise from 2017.

After completion of the project, personnel costs and electricity bills increased; however, SIPA self-financed the purchase of equipment, introduced new systems and further improved facilities. As the project brought a significant rise in revenue, this is more than sufficient to cover the additional costs and SIPA has secured and manages a budget sufficient for maintenance.



Repair Work by Self-Funding



Donated X-ray Scanner for Quarantine Office

Therefore, the financial situation of operation and maintenance was assessed as very satisfactory at the time of the ex-post evaluation.

3.4.4 Status of Operation and Maintenance

SIPA understands the importance of regular inspections and repairs for the second wharf facility. Technicians from the Engineering Department and Honiara Port management strictly practice regular check-ups and monitor appropriate usage of the wharf. Therefore, the status of operation and maintenance of the facilities/equipment remained very good at the time of the ex-post evaluation. Damage to the concrete construction of the facilities, which was pointed out during the defects inspection, has already been repaired by SIPA, and the bollards are regularly repainted.

The overall status of the facilities has improved further, subsequent to the defect inspection, since repairs outside the project scope have been carried out. Facilities provided under this

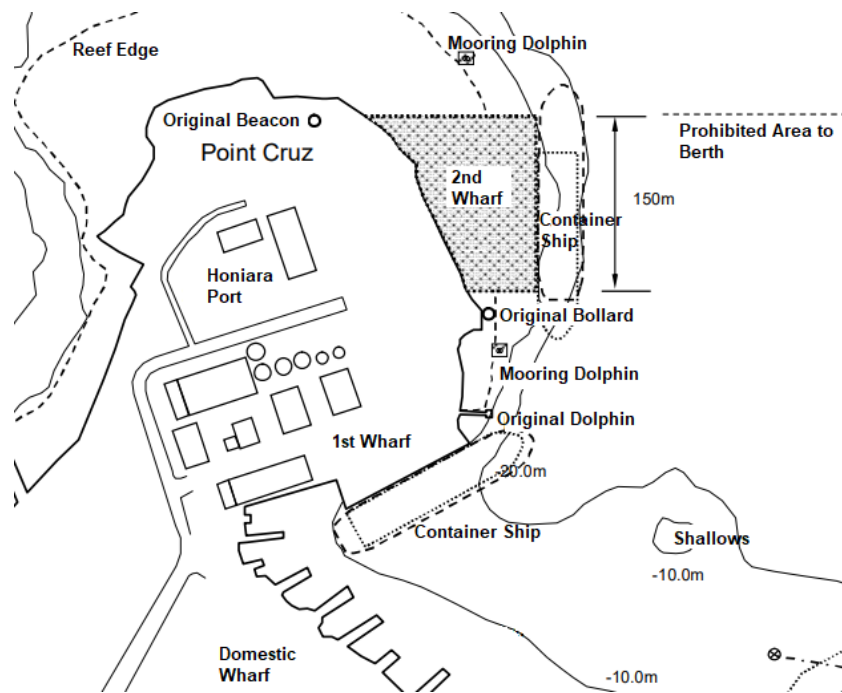
project contribute towards the more efficient operation of Honiara Port and have been a driving force to increase SIPA's profit.

All the facilities provided were utilised fully. Generally, container vessels and cargo ships, other than copra ships¹⁶, are berthing at the second international wharf for stevedoring. However, both the first and second wharves are utilised if it is necessary to receive two vessels, container and/or cargo ships, simultaneously. Cruise liners are always given priority to berth at the second wharf.

The only operational concern raised during the ex-post evaluation was access to the mooring dolphins¹⁷. At the time of planning, neither the Solomon nor Japanese sides gave sufficient attention to the desirability of building a connection bridge to the dolphins. Island style dolphins accessed by small boats were designed, approved and constructed. However, actual use has revealed that the dolphin facing towards the open sea can face high waves. The size of the vessels/boats berthing makes a difference to the maximum allowable wave height to berth (1,000t~5,000t: 0.5m, > 5,000t: 0.7m). The maximum allowable wave height for small boats transporting line's mem is only 0.3m, causing the line's men, who finished the tethering work, to sometimes have to wait on the dolphin until the sea becomes sufficiently calm for their safe return. Previously, SIPA's line's men used to work on the dolphins using a connected bridge and had become accustomed to freely moving between the dolphins and the wharf. In high seas they can feel unease that they are unable to safely come back to the wharf immediately after completing their tasks.

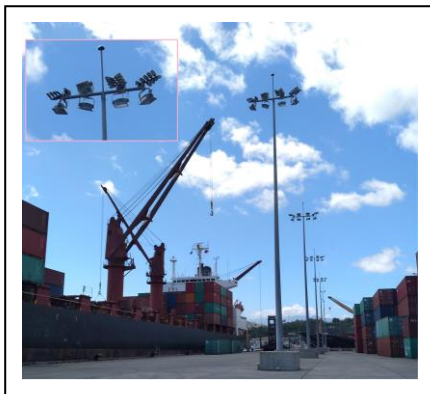
¹⁶ Cruise liners are given priority to berth at the second wharf, however, copra ships whose cargo are coconut oil have strong odor and, to avoid staining, are not allowed to use the second wharf.

¹⁷ Facilities piled in the water in ports for securing the vessels by using ropes. Top of pillar stakes are normally out on the surface of the water.



Source: Information of the Second Preparatory Survey Report for Outline Design on the Project for Improvement of Honiara Port Facilities in Solomon Islands

Figure 2: Locations of Mooring Dolphins on the First and the Second Wharves



LED Lights



Mooring Dolphin

Apart from concerns with the mooring dolphins` access, no accidents around Honiara Port were reported and there have been no problems after the completion of the project. Therefore, in regards to the status of operation and maintenance, there were no particular problems found other than a wish for a connecting bridge to the mooring dolphin.

No major problems have been observed in the institutional/organizational, technical, financial aspects and current status of the operation and maintenance system. Therefore, sustainability of the project effects is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project was aimed at building and enhancing the port facilities thereby realising greater effectiveness and efficiency in the management and the cargo handling at Honiara Port, which is the most important port in the Solomon Islands.

This project has been highly relevant to the country's development plan and development needs, as well as Japan's ODA policy. Therefore, its relevance is high. With regard to implementation, the project components were carried out mostly as planned, and the project cost and period were within the plan. Consequently, the efficiency is also high. All quantitative indicators, such as elimination of berth waiting time and improvement on efficiency of cargo handling, of this project were achieved. Furthermore, safety of cargo handling and ship routes were secured and further qualitative effects have been emerging. As to the impact of the project, although the promotion of logistics and the reduction of transportation costs could not be verified, several positive impacts have been confirmed; unemployment reduction; profit from the restoration of fiscal balance of the SIPA has made possible systematic investment in further improvements of the facilities and equipment, and; Honiara Port has been recognised as a sufficiently equipped and properly managed international port. Therefore, effectiveness and impacts of the project are high. With regards to operation and maintenance, the financial aspect is particularly promising, and no major problems have been observed in the institutional/organizational and technical aspects and current status of the operation and maintenance system. Therefore, sustainability of the project effects is high.

In light of the above, this project is evaluated to be highly satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

It is important that the line's men feel confident working on the mooring dolphin located on the open sea. Therefore, it is recommended that SIPA undertake consultation and examine the practicality of building a connecting bridge between the wharf and the dolphin and/or other solutions to improve the situation. ¹⁸

4.2.2 Recommendations to JICA

If improvement in operation of the mooring dolphin is found necessary after consultation and examination within SIPA; it is recommended that JICA work together with SIPA to explore possible countermeasures in the future.

¹⁸ During finalizing the report in December 2020, CEO informed that the boat for tethering was changed to larger boat and safety of line's men was secured for the time-being, however, it was not directly verified by the evaluator.

4.3 Lessons Learned

Necessity to check thoroughly the way the existing facilities work during the design stage.

The old mooring dolphins had a connecting bridge between the first wharf and the dolphins; however, the new mooring dolphins attached to the second wharf, were designed and constructed as “island style” for this project. Line’s men have to use a small boat to go back and forth between the wharf and the dolphins. At the time of planning, the executing agency was also unaware of any potential problems. However, the allowable wave heights for berthing are different between large vessels and small boats, and there are times when the line’s men could not return to the wharf after tethering.

If there is an existing facility, its on-going operation should be examined in advance of design and consultation undertaken with the recipient side whether the expected operation of the new facility could cause any problems.

Choosing facilities/equipment with low running costs to increase sustainability.

The electricity cost of lighting in ports makes up a significant proportion of running and maintenance costs, due to night stevedoring and security, and lighting facilities were included in the project scope. SIPA wished to be certified as a Green Port, and therefore changed all lighting to LED lights at both Honiara Port and Noro Port. As a result, SIPA reduced running costs and was able to increase the number of lights at both international wharves and the Domestic Port. This has helped greatly to improve the efficiency and safety of cargo handling and security at the port.

To increase sustainability, it is very important to keep running costs low. Therefore, it is desirable to consider long-term cost efficiency and energy saving rather than simply the cheapest initial cost. This is especially important when a project includes facilities and/or equipment, which consume significant quantities of energy.

Selection of contractors based on quality and experience (Good Practice)

The shorter project period, with high quality construction, became possible mainly due to the selection of a well-experienced and reputable sub-contractor for the installation of the steel pipe pile foundation. Aiming to shorten the project period, a Japanese specialist company that employs highly experienced operators was selected for the installation of the steel pipe pile foundation. Moreover, the crane chosen to use was bigger and of a higher specification than was specified in the plan, for the safety concerns. Although using a top-class contractor and expensive equipment meant a higher unit cost, the main contractor felt that based on the quality and performance the expense was justified. As a result, the overall project period was reduced and high quality construction was achieved.

Important points to consider when designing civil engineering construction in developing countries are as follows:

1. The need to match requirements (request) of the recipient country.
2. Robustness of construction (not easily broken).
3. Ease of maintenance.

Therefore, when the contractors for key construction elements and equipment are selected it is preferable to consider, not only initial costs, but also quality and performance/experience. This will help to secure sustainability through prolonging the life of the facility and the equipment provided.