

Republic of Vanuatu

Ex-post Evaluation of Japanese Grant Aid Project  
“The Project for Improvement of Port Vila Main Wharf”

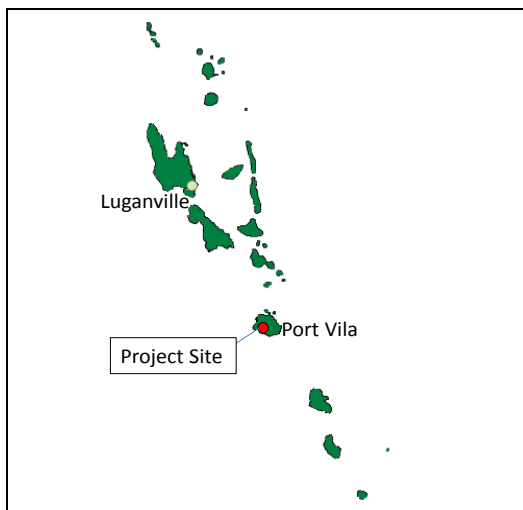
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**0. Summary**

In this project, the port area of the Port Vila Main Wharf was rehabilitated and tugboat and pilot boat were constructed to improve cargo-handling efficiency and make it safer for ships calling at the port to berth. The relevance of this project was high as it was consistent with the development plan and needs of Vanuatu, both at the times of planning and ex-post evaluation and also consistent with Japan’s ODA policy at the time. With regard to the project effects, an achievement of all the indicators expected at the time of planning, such as reducing the container transportation distance and relaxing wind-velocity restrictions on berthing for ships calling helped underpin and support an increased number of cruise ships calling and stabilise goods trade: therefore, the effectiveness and impact of the project was high. The efficiency of the project was fair as while the project period was within the plan, the project cost would have exceeded the original project scope, although the scope was reduced to keep the cost within the planned amount after steel prices surged. The sustainability of the project effect generated by this project was fair, reflecting some problems from technical perspectives and the current status of operation and maintenance in terms of maintenance of port facilities.

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

**1. Project Description**



Project Location



Main Wharf rehabilitated in this project and a cargo ship calling at the port

## 1.1 Background

Port Vila Main Wharf was brought into service in 1972 and as the port facilities had been designed for bulk and pallet cargo, they could not respond to cargo containerisation. The most serious issue was the fact that the shed for loose cargo, which occupied 25% of the limited port area, was located centrally in the port area. Therefore, sufficient container area could not be secured and it significantly hindered cargo handling. Under such circumstances, containers were transferred to and stored at the Star Wharf, located approximately 1km east of the Main Wharf and on the road shoulders outside the port area. In addition, the structure of the port facilities meant that considerable time was required to carry containers from the pier, and thus generated a waiting time for cargo to be transferred from container ships, resulting in inefficient cargo-handling operations.

The cargo-handling hours at the Main Wharf were 7:00 - 22:00 daily except Sunday and workers worked in two shifts. Under such conditions, if a freighter arrived outside these hours, it was put on demurrage, awaiting the start time, because no cargo-handling operations were performed. In addition, customs work was performed at the container storage areas on the public road, approximately 200m to 1km from the port area. This was not only very inefficient but also was a serious security issue.

Regarding the navigation of ships calling at the port, the laws of Vanuatu required ships to use pilot and tug boats when entering and leaving the Port Vila Harbour. However, a 24-year-old pilot boat was banned from operating due to unsafe conditions. Accordingly, a flat-bottomed wooden boat with an outboard motor was used as a substitute for the pilot boat. A 34-year-old tugboat, deployed at the Port Vila Harbour, was also taken out of service in 2005 because of aging, and no tugboat support was provided.

## 1.2 Project Outline

The objective of this project was to improve the cargo-handling and berthing environment for ships calling at the Port Vila Harbour by rehabilitating the Port Vila Main Wharf and constructing a tugboat and a pilot boat.

Grant Limit / Actual Grant Amount	1,707 million yen / 1,707 million yen
Exchange of Notes Date	May, 2008
Implementing Agency	Department of Ports & Marine (DPM), Ministry of Infrastructure and Public Utilities (MIPU)
Project Completion Date	January 2011 (April, 2010 (Facility) / January, 2011 (Equipment))

Main Contractor (Construction)	Penta-Ocean Construction Co., Ltd.
Main Contractor (Equipment Procurement)	Kanagawa Shipyard & Machinery Co., Ltd.
Consultant	The Consortium of ECOH CORPORATION and Japan Marine Science Inc.
Basic Design	December 2007
Detailed Design	December 2008 <sup>1</sup>
Related Projects	[ODA Loan Project] Port Vila Lapetasi International Multi-Purpose Wharf Development Project (2012 – 2016 (planned)) [Grant Aid Project] The Project for Rehabilitation of the Wharf in Tanna Island (1998) [Other Donors] Asian Development Bank, Reconstruction of Port Vila Wharf and Fenders (2000 – 2001)

## 2. Outline of the Evaluation Study

### 2.1 External Evaluator

Keisuke Nishikawa, Japan Economic Research Institute Inc.

### 2.2 Duration of Evaluation Study

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

Duration of the Study: September, 2013 – October, 2014

Duration of the Field Study: February 28 – March 12, 2014 and May 18 – 24, 2014

## 3. Results of the Evaluation (Overall Rating: B<sup>2</sup>)

### 3.1 Relevance (Rating: ③<sup>3</sup>)

#### 3.1.1 Relevance to the Development Policy of Vanuatu

In Vanuatu, ‘The Priorities & Action Agenda 2006 – 2015’ (hereinafter referred to as PAA), a medium- to long-term plan, stated the need to improve domestic maritime transportation and take security measures at the two major ports of Luganville and Port Vila. The mid-term plan (2008 – 2011) of PAA more specifically proposed improvements to port facilities, the implementation of the International Ship and Port

<sup>1</sup> Indicating the date when ‘a comparison table of basic design and detailed design’ (for re-tendering) was submitted

<sup>2</sup> A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

<sup>3</sup> ③: High, ②: Fair, ①: Low

Facility Security Code (ISPS Code)<sup>4</sup>, improvements to sites including the container area, tugboat replacement and so on.

The PAA was a continuously valid development plan at the time of the ex-post evaluation. The plan was revised in 2012 and the need to improve operational efficiency at ports for international trade was added as a priority agenda. In the PLAS (Planning Long, Acting Short 2013-2016), regarded as a medium-term specific plan to implement PAA, one of the listed strategies was to improve existing maritime infrastructure. Furthermore, the Vanuatu Infrastructure Strategic Investment Plan (VISIP) was being formulated during the ex-post evaluation, in which maintaining and renewing existing port facilities was positioned as one of the strategies. In this plan, the Port Vila Lapetasi International Multi-Purpose Wharf Development Project, implemented adjacent to the site of this project (rehabilitation of the Main Wharf), is considered to be the most important maritime infrastructure project.

Thus, ports have consistently been placed as significantly important infrastructure facilities, from the time of planning until the time of the ex-post evaluation in Vanuatu, underlining the need to maintain and rehabilitate facilities, formulate laws and policies and ensure operational efficiency; all of which are key challenges mentioned in various planning documents. Therefore, as this project planned to rehabilitate the international port for smooth operation of the facilities, it can be said that the project has been highly consistent with the development plan of Vanuatu.

### 3.1.2 Relevance to the Development Needs of Vanuatu

During the project planning, the Port Vila Harbour, the largest port in Vanuatu, was unable to respond to the international containerisation of cargo, exposing issues in handling operations. One particular problem was the small space for handling yard and container storage and the fact that containers were transported to the shoulders of the public road outside the port area before customs clearance. Moreover, tug and pilot boats were not deployed in the port, hampering berthing operations when ships called at the port.

At the time of the ex-post evaluation, the Port Vila Harbour played a major role as a gateway to domestic and international maritime transport and a port of call for cruise ships. Calls of cruise ships and volumes of international containers in recent years are shown in Tables 1 and 2.

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<sup>4</sup> Special measures to strengthen maritime security, comprising part of 'The International Convention for the Safety of Life at Sea' (The SOLAS Convention)

Table 1: Number of Calls to Vanuatu Ports by International Cruise Ships

Port of Calls	2009	2010	2011	2012	2013	2014
Port Vila	50	57	73	111	124	138
Mystery Island	23	21	57	55	67	76
Wala	9	11	15	18	19	11
Champaign Beach	6	4	13	17	20	16
Pentecost	3	5	5	3	3	3
Luganville	2	2	6	15	19	29
Total	93	100	169	219	252	273

Source: Data provided by South Sea Shipping Ltd.

Note: Calls in 2014 are planned numbers.

Table 2: Volume of International Containers Handled at Port Vila Wharf

(Unit: TEU)

FY	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Imports	5,320	5,886	5,656	5,628	6,084	5,877	5,949
Exports	3,891	5,909	5,313	4,585	6,342	5,512	5,793
Total	9,211	11,795	10,969	10,213	12,426	11,389	11,742

Source: Data provided by Ifira Port Development Services

Note: The financial year for the data provided is from June to May.

The Port Vila Main Wharf was rehabilitated when this project was implemented. While operational efficiency improved as described later, the number of cruise ships calling at the Main Wharf soared by 70% in the two years since 2011, when this project was completed to 2013, as shown in Table 1. The volume of international containers increased by 27% between the time of planning (FY2006/07) and ex-post evaluation (FY2012/13), showing a steady demand for cargo after the completion of the project. Consequently, the increasing number of calls by cruise ships were hampering the entries of cargo ships into the port and handling operations<sup>5</sup>.

Although the Main Wharf was accepting all calls by international cargo ships and cruise ships in Port Vila, expanding the wharf was impossible due to the topographical conditions. Accordingly, to respond to the tight demand-supply situations stated above and increase the international cargo-handling capacity as well as making the handling more efficient, a wharf to handle international cargo was being developed at the time of the ex-post evaluation as an ODA loan project ‘Port Vila Lapetasi International Multi-Purpose Wharf Development Project’<sup>6</sup>. In addition, the development of a 46m x 132m domestic wharf with three berths and one landing ramp is planned to the east of Lapetasi Wharf; assisted by the Asian Development Bank and New Zealand.

As stated above, a significant increase in cruise ship calls and a steady movement of

<sup>5</sup> As cruise ships are normally berthed from the early morning to evening the same day, cargo ships are on demurrage inside the harbor or offshore in the meantime.

<sup>6</sup> After the completion of Lapetasi Wharf, international cargo will basically be handled at this wharf and the Main Wharf is planned to be mainly used for cruise ships. However, if two cargo ships arrive at the same time, some of the cargo will be handled at the Main Wharf as required.

cargo handled have been seen in recent years, and the needs for port development can be considered high; both at the times of planning and ex-post evaluation.

### 3.1.3 Relevance to Japan's ODA Policy

At the time of planning, in consideration of the five priority areas of Japanese assistance (Economic growth, Sustainable development, Good governance, Security and People to people communication and exchange) declared at 'The Fourth Japan-Pacific Islands Forum Summit Meeting (PALM 4)' between Japan and the leaders of the Pacific Island Governments, cooperation in 'Economic Growth: Infrastructure, etc.' was one of the key areas of cooperation for Vanuatu (according to the Ministry of Foreign Affairs 'Japan's ODA Data by Country 2007'). Therefore, as this project is in line with the five priority areas indicated at the PALM at the time and with assistance for economic growth, one of the key cooperation areas for Vanuatu, this project can be considered highly consistent with Japan's ODA policy.

This project is consistent with the development policy and strategies of Vanuatu at the times of planning and ex-post evaluation. The development needs for ports have always been high, as reflected in the increase in cruise ships and steady volume of cargo handled. Moreover, this project, which supported infrastructure development spawning economic growth, is in line with Japan's ODA policy at the time. In light of the above, the relevance of this project is high.

## 3.2 Effectiveness<sup>7</sup> (Rating:③)

### 3.2.1 Quantitative Effects

#### 3.2.1.1 Improvements in Cargo-handling and Berthing Environment

When the project was planned, reduced container cargo transportation distance, cycle time and berthing (mooring) time of vessels were expected, as well as realising a smaller water area for turning ships calling at the port, and a higher wind velocity for berthing operations as quantitative effects by implementing the project.

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<sup>7</sup> Sub-rating for Effectiveness is to be put with consideration of Impact.

Table 3: Changes in Cargo-handling and Berthing Environment

Indicator	2006 (Plan)	2011 (Project completion)		2014 (Ex-post evaluation)
	Actual	Target	Actual	Actual
Transportation distance	200m~1km	50~100m	50m~100m	50~100m
Cycle time	13 minutes	9.6 minutes	9.6 minutes	7 minutes
Mooring time	11.3 hours	7 hours	4 hours	4 hours
Water area required for turning ships	3~4 times the ship's length	1~1.5 times the ship's length	1~1.5 times the ship's length	1~1.2 times the ship's length
Wind velocity for berthing operations	Less than 10m/s	Less than 15m/s	Less than 20m/s	Less than 20m/s

Source: Basic Design Study Report and data provided by the Department of Ports & Marine

With the development of container placement yard within the port area, it became possible to conduct customs clearance within the Main Wharf, as opposed to on a public road outside the area after transporting the containers, and the transportation distance was substantially reduced. Issues of container placement on a public road prior to project implementation were solved. The 'cycle time' indicates the length of time after a container is discharged, placed on the container yard and the transporting equipment returns to the side of the ship and was observed to have shortened in line with the plan upon project completion. At the time of the ex-post evaluation, the cycle time was shortened further from 9.6 to 7 minutes as the operation became more efficient, thanks to accumulated container transportation experience. Through this reduced cycle time, the mooring time per ship was also reduced beyond the target to 4 hours; both at the time of completion and ex-post evaluation. Deploying a tugboat has enabled the water area required for turning ships to be reduced from 3~4 times to 1~1.5 times the ship's length, and further down to 1~1.2 times at the time of the ex-post evaluation due to more efficient tugboat operation. In addition, while the ships calling at the port could berth only when the wind velocity was less than 10m per second before the project, deploying a tugboat has enabled berthing at wind speeds of up to 20m per second, which was also beyond the targeted figures.

Accordingly, the expected indicators during the planning stage had already been achieved by the target year 2011, and further improvements were observed in cycle time, mooring time and water area required for turning ships at the time of the ex-post evaluation.

Additionally, while no specific quantitative indicators were set at the time of planning, reduced berthing time and damage to the wharf were expected with the deployment of a tugboat. While the time required was unknown, since it was not measured, after berthing support with the tugboat was provided, the tolerable wind

velocity for berthing operations increased and the water area required for turning ships became smaller, which implies that the berthing operations became more efficient. Since the project was completed, no wharf-damage accidents have occurred and it can be judged that there is no problem. However, there are periods when the tugboat is outside the Port Vila Harbour due to dry docking as part of maintenance, whereupon berthing operations take longer. Given the potential for an accident to occur, it is considered necessary to take responses and measures in the absence of the tugboat.

### 3.2.1.2 Other Quantitative Indicators

While these indicators were not expected in this project, Table 4 shows the number of all calling ships and the number of cruise ship passengers at the Port Vila Main Wharf as the main indicators of port development.

Table 4: Number of Calling Ships and Cruise Ship Passengers at the Port Vila Wharf

	2009	2010	2011	2012	2013
Number of all calling ships (including cruise ships)	181	167	193	231	228
(Cruise ships)	50	57	73	111	124
Number of cruise ship passengers (persons)	124,818	140,468	154,938	213,243	242,646

Source: Data provided by the Department of Ports & Marine, South Sea Shipping Ltd., Vanuatu National Statistics Office

Increases in the number of calling ships are mostly due to the increased number of cruise ships, and the associated number of cruise ship passengers increased to 240,000, a level equivalent to the population of Vanuatu itself, as seen in Table 4. The role in promoting cruise ship tourism has become increasingly important.

In this survey, as the Department of Ports and Marine (hereinafter referred to as DPM) has not developed sufficient data, no other port-related data could be obtained. Information on cruise ships and the cargo volume were provided by private operators.



Photo 1: Cruise ship berthed at the wharf



### 3.2.2 Qualitative Effects

At the time of planning, the following qualitative effects were expected by implementing this project:

- Port service functions would improve by enabling firefighting responses to fires on ships and at coastal facilities.
- Greater security would be ensured by improving lighting facilities within the port premises.
- The cargo-handling machinery would not run on general public roads, thereby easing traffic congestion of general vehicles on public roads.



Photo 2: Tugboat provided under this project

A fire extinguishing device for other boats was installed on a tugboat to deal with fire accidents at sea and on land facilities. While there have been no cases where firefighting actions were required using the tugboat, port service functions are considered to have improved as it became possible to respond to fires with the procurement of the tugboat though there were no equipment to respond to the occurrence of fires on a boat in the harbour and near the wharf. According to the implementing agency, fire drills are implemented by the crew on a quarterly basis.

With regard to security within the port premises, according to DPM and handling / shipping agents, it was confirmed that improvements in lighting facilities within the port had ensured greater security at night and facilitated night handling operations after cruise ships departed in the evening. The expected effects are thus considered to have been realised<sup>8</sup>.

As for the status of general public roads around the port, circumstances where containers are piled up on public roads were eliminated after implementing this project, and there were no operations involving cargo-handling equipment such as forklifts or top lifters. This elimination has also eased traffic congestion with general vehicles on public roads.

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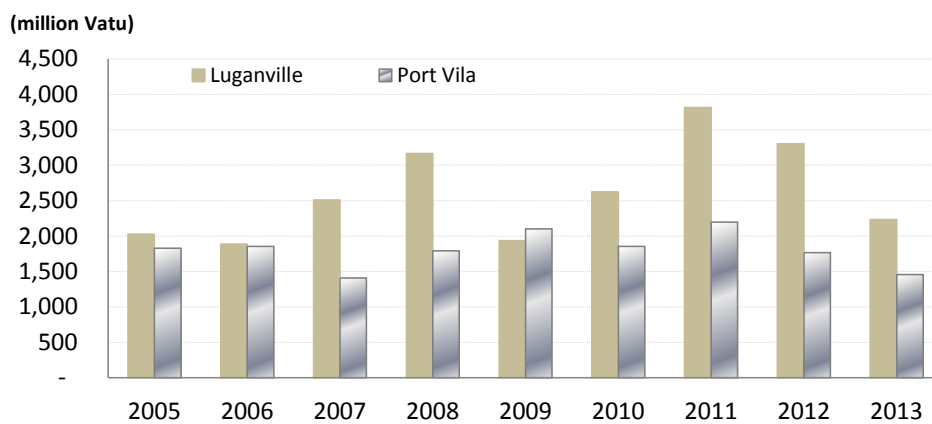
<sup>8</sup> At the time of ex-post evaluation, when a cruise ship is berthed during the daytime, no cargo handling operation can be performed on a cargo ship having arrived at the same time. However, as the cruise ship leaves in the evening, unloading operations can be performed afterward. There was no problem of permanent offshore demurrage of cargo ships.

### 3.3 Impact

#### 3.3.1 Intended Impacts

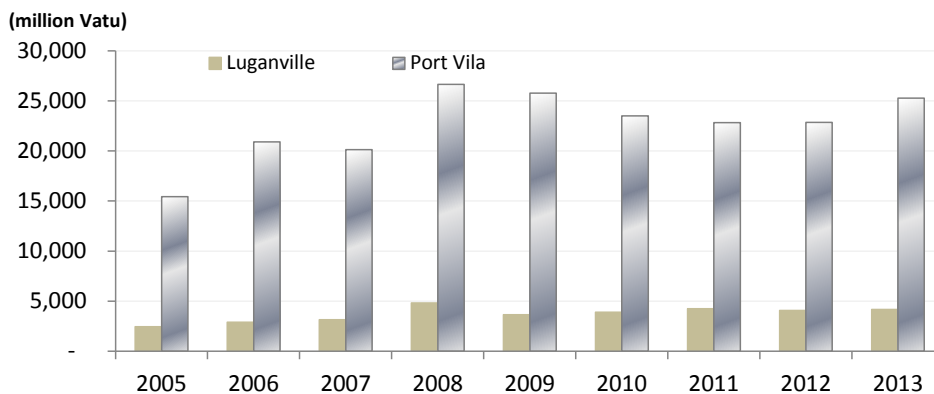
As an impact of this project, it was expected at the planning stage that the safety for ships calling at the port and the shorter cargo handling time would stabilise maritime transportation and goods distribution. In the ex-post evaluation, the export and import values of international cargo were captured and the stabilisation of goods distribution was confirmed following interviews with port handling and shipping agents.

Export and import values by port in Vanuatu are as shown in Figures 1 and 2.



Source: Data provided by the Vanuatu National Statistics Office

Figure 1: Export Values by Port



Source: Data provided by the Vanuatu National Statistics Office

Figure 2: Import Values by Port

The Port Vila Harbour is one of two international ports in Vanuatu, and is more prominent as a consumption point for imported goods as it is the largest city in the country. It handled 39% of all exports by value and 86% of all imports by value in 2013,

making it a facility particularly crucial for imports. The project rehabilitated the only international cargo wharf in Port Vila to reinforce the structure and facilitate cargo handling operations. It is assumed that this project has secured national goods distribution of goods in the country through stable and efficient use of by using the country's largest port stably and efficiently.

It was also confirmed through interviews with the agents using the port (cargo-handling and shipping agents) that cargo-handling operations had been made more efficient and imports proceeded far more smoothly thanks to the improved port facilities. As understood in '3.2 Effectiveness', the Port Vila Harbour is a port of call for approximately half the cruise ships visiting Vanuatu and is used by 240,000 cruise ship passengers, roughly equivalent to the national population. While the existence of survey results on cruise ship tourism revenues was unconfirmed, it can be inferred that this project also contributes significantly to promoting cruise ship tourism.

Based on the above, the stable use of the port and substantially improved logistical efficiency were confirmed, and the expected impact, stabilisation of maritime transportation and goods distribution are considered to have been sufficiently realised.

### 3.3.2 Other Impacts

#### 3.3.2.1 Impacts on the Natural Environment

It was judged not necessary to implement an environmental impact assessment at the planning stage as this project involved rehabilitation of existing port facilities and minimal environmental impact was expected. Measures such as disposing of construction debris appropriately and preventing the spread of dirty water by installing coating films, installing an oily-water separator and a sewage-treatment unit on the boats were planned during the construction.

According to DPM and project consultants, the actual measures were as follows:

- Most of the construction materials were used and a small amount of debris was appropriately disposed of at a disposal site. There was little dust but sprinkling of water was properly implemented.
- The coating film was not installed because the spreading of turbidity was seldom seen. This was because the stones cast were limestone with little soil attached and the casting point featured deep terrain. There was no problem of turbidity caused by non-installation.
- An oily-water separator and a sewage-treatment unit were both installed based on the International Convention for the Prevention of Pollution from Ships, and there was no discharge of oil and dirty water that would adversely affect the environment.

In terms of comparing the plan and actual result, the coating film was not installed following examination and discussions by DPM and project consultants, but no particular issues emerged, including the disposal of construction debris and dust-prevention measures. No other environmentally negative effects were seen in particular, during and after the implementation of this project; therefore, it can be said that there was no problem overall.

#### 3.3.2.2 Land Acquisition and Resettlement

It was confirmed that there was no land acquisition and no resettlement cases as this project involved rehabilitation of existing port facilities and the procurement of boats. There was no problem during and after the project implementation.

#### 3.3.2.3 Other Impacts

##### (1) Rescue Activities of Other Boats

The tugboat procured in this project was used in four cases to rescue boats that could not be operated in outer seas in 2011<sup>9</sup>, as well as tugging cargo and cruise ships, contributing significantly from a life-saving perspective. When conducting rescues, the tugboat travels on its own.

##### (2) Simultaneous Implementation of Facility Development and Equipment Procurement

This project involved developing port facilities and procuring a tugboat and pilot boat, and as described above, it was a project to solve various issues of the Port Vila Main Wharf as a whole. The comprehensive achievement of the project objective was confirmed, with cargo-handling operations made more efficient through redeveloped port facilities and berthing and departing operations made safer for ships by procuring a tugboat and pilot boat. Consolidating the development of port facilities and procuring boats is considered to have contributed substantially to realising the effects of the project.

By implementing this project, the target figures of all indicators such as container transportation distance, cycle time and wind velocity allowing berthing and departing operations were achieved. The port facilities developed and the tugboat and pilot boat procured under this project can be said to have underpinned the increased number of cruise ships calling at the port as well as exports and imports of a number of goods. Moreover, greater security thanks to lighting facilities installed within the port,

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<sup>9</sup> According to DPM, there were no rescue cases in other years.

fire-fighting facilities via the tugboat, and eliminating the need to handle cargo-handling operations on public roads were realised. There were no specific negative impacts during and after the project implementation in terms of the impact on the natural environment, nor was any land acquisition or resettlement observed. Therefore, the effectiveness and impact of the project is high.

### 3.4 Efficiency (Rating:②)

#### 3.4.1 Project Outputs

This project was intended to improve port facilities at the Port Vila Harbour and procure workboats (tugboat and pilot boat). The output was planned as shown in Table 5.

Table 5: Planned Details of Port Facilities and Workboats

Civil Engineering Facilities		Workboats	
Concrete deck	1,013m <sup>2</sup>	Tugboat	Length overall: approx. 31m
Pavement of cargo-handling yard	8,620m <sup>2</sup>		Gross tonnage: approx. 250 tons
Drainage facilities	1 Set		Main engine horse power: 1,600ps x 2
Shore protection	West: 50m East: 66.6m		
Lighting facilities	4	Pilot boat	Length overall: approx. 12m
Light buoy	2		Gross tonnage: approx. 11 tons
Construction Facilities			Main engine horse power: 180ps x 2
Rehabilitation of loose cargo shed	1,045m <sup>2</sup>		
Administration building	2 storeys 560m <sup>2</sup>		

Source: Basic Design Study Report

While both the tugboat and pilot boat were constructed as planned, some of the planned outputs were changed for port facilities as indicated in Table 6.

Table 6: Changes from the Planned Outputs

Item Changed	Details of Changes
Alterations to the structural foundation of the administration building	Concrete pile foundation → Concrete mat foundation
Reduction of the concrete pavement area in the cargo-handling yard following the tender failure	8,620m <sup>2</sup> → 7,000m <sup>2</sup>
Changes to the pavement shape of the cargo-handling yard	Keep the western side of port premises unpaved → Keep the dead space in the east unpaved
Reduction in the size of administration building following the tender failure	Two storeys, 560m <sup>2</sup> → Single storey, 280m <sup>2</sup>
Excavation of the protected shore in the east due to the emergence of a rock and changes in the shape of cubic blocks	Depth of excavation: 6m → 3.5m Cubic blocks: 14 on the upper level + 13 on the lower level → 28 on one level and changes in size
Changes to the shape of the loose cargo shed	Total roof : 1,423m <sup>2</sup> → 1,155m <sup>2</sup> + installation of gutters
Changes of soil in the excavation area for the foundation of the administration building and the foundation for the septic tank due to the emergence of a rock	Excavation of soil → excavation of a rock

Source: Completion Report

As tender failure occurred due to a surge in steel materials and a rock found during the construction stage, slight changes were added to the construction details, but no particular inconveniences emerged, according to confirmations with DPM and port-related agents.

While most of the changes shown in Table 6 were minor, steel prices surged during the period between the Basic Design Survey and the main construction work tender, which resulted in the occurrence of tender failure. Consequently, the administration building, which was planned as a two-storey structure, ultimately became a single-storey building. Due to the reduction in size of the new administration building, the old administration building was left unchanged and not demolished. At the time of ex-post evaluation, the customs office and quarantine office were housed in the new administration building, while DPM was performing its duties in the old administration building. DPM said that no major problems had arisen in terms of the implementation of DPM's routine work in the old administration building at the time of ex-post evaluation, but that the building had deteriorated significantly and its office space was expected to be small, given the need to additionally hire a port security administration officer and a port facilities security administration officer to fully implement the ISPS Code. In response, the Ministry of Infrastructure & Public Utilities (hereinafter referred to as MIPU), to which DPM belongs, plans to transform the administration building to two storeys by 2015 in its Mid-term Action Plan. However, no concrete budget

arrangement has been made.

The following items were planned to be undertaken by the Vanuatu side in association with this project:

- Securing a construction yard (temporary) with an area exceeding 2,500m<sup>2</sup>
- Partial removal of the loose cargo shed
- Removal of the old administration building after the completion of the new one
- Removal of an outside toilet and septic tank
- Construction of a drainage channel, catch basin and conduit
- Relocation of surveillance cameras

It was confirmed during the ex-post evaluation that the above items had been implemented as planned except for the removal of the old administration building.

### 3.4.2 Project Inputs

#### 3.4.2.1 Project Cost

The cost of this project was planned to be approximately 1,707 million yen to be borne by Japan, and another 12 million Vatu (approximately 15 million yen) to be borne by Vanuatu to implement its own items.

Table 7 compares the breakdown of planned and actual costs borne by the Japanese side.

Table 7: Breakdown of Planned and Actual Project Costs

(Unit: million yen)

Breakdown	Plan	Actual
Construction	1,002	1,013.05
(Engineering work at the port)	(673)	(732.42)
(Construction work at the port)	(329)	(280.63)
Equipment (boats)	617	616.00
Designing and Supervision	135	77.91
Total	1,754	1,706.96

Source: Basic Design Survey and Completion Reports

Note: As the planned amount is approximate as of the time of the basic design survey, it differs from the E/N amount.

The cost borne by the Vanuatu side was 16.5 million Vatu (approximately 14.85 million yen).

The project cost was within the E/N limit amount (100% of the plan) as the sizes of some facilities were reduced due to tender failure and price escalations. However, the project outputs were reduced from the original plan such as the administration

building area, and the project cost would have exceeded the originally planned amount had the reduced outputs been implemented. Therefore, the project cost can be said to have exceeded the planned amount in practice.

With regard to the cost borne by the Vanuatu side, the actual cost exceeded the planned amount in local currency though it was within the plan in Japanese yen. As the cost did not include removing the old administration building, the Vanuatu side cost would also have exceeded the planned amount in reality, if the removal had been taken into account.

#### 3.4.2.2 Project Period

The period of this project was planned to be approximately 35 months, including the period for detailed designing and tender processes.

The actual project period was respectively as follows:

[Facilities] May, 2008 ~ April, 2010 (24 months)

[Equipment] May, 2008 ~ January 2011 (32 months)

The period from the E/N signing date (May, 2008) to the handover date was 32 months, which was within the planned period (91% of the plan). There was an initial delay of 4.5 months as the port construction work had a tender failure once followed by re-tendering, but this did not lead to any overall delay, as the construction work itself was completed in 15 months against the planned 18 months, thanks to efforts to expedite the construction. It was also because the construction period of the two boats had been planned to be longer than the period for the construction of port facilities.

While the tender failure of the port facilities works was attributable to a surge in steel material prices, the decision was made not to increase the project cost but implement the project within the initial budget. As measures were taken to reduce the project scope slightly, the project cost remained on budget (100% of the plan) after the project had been scaled back. Port operations were not hindered in particular by the change in scope and said changes were agreed between the two countries. However, steel material prices escalated, and it can be judged that the project cost would have exceeded the planned amount in its original scope. The project period was within the plan overall (91% of the plan). Although a tender failure occurred, this is because the facility works were implemented smoothly and the construction period for the two boats was planned to be longer than the period of port facilities development. Therefore, the efficiency of the



project is fair.

### **3.5 Sustainability (Rating: ②)**

#### **3.5.1 Institutional Aspects of Operation and Maintenance**

The implementing agency of this project is MIPU and the daily administration of port facilities and boats was undertaken by DPM. DPM is staffed with 55 members: 37 of whom assigned at the Port Vila Wharf and 18 at the Luganville Wharf. Maintenance of the Port Vila Wharf is the responsibility of the Operations Department (5 staff) of DPM, tasked with keeping the facilities in optimal conditions. 2 crew members are assigned to the pilot boat procured in this project and 4 crew members to the tugboat, tasked with basic maintenance as well as operating the boats.

MIPU also has the Public Works Department (hereinafter referred to as PWD), structured with the Head Office with 28 staff members and other sections in 6 provinces. This department performs work at the request of DPM when port facility repairs exceeding a certain scale are required. It does not normally undertake direct operation and maintenance.

Cargo-handling services at the Port Vila Wharf are provided by the Ifira Port Development & Services (IPDS) under a concession agreement with the Government of Vanuatu. All the cargo handling equipment is owned by IPDS.

As described above, a total of 11 staff members were assigned at DPM to operate and maintain the facilities and two boats, and there is a system in which PWD will respond to the cases after being contacted by DPM, if large-scale repairs of port facilities are required. No particular shortage of staff numbers or shortfall in the organisational structure was observed.

#### **3.5.2 Technical Aspects of Operation and Maintenance**

The system to maintain port facilities involves DPM contacting PWD to request repair work when something goes wrong with the port facilities as stated above. However, at the time of ex-post evaluation, it emerged that regular inspections were not being systematically conducted by DPM, nor had any inspection and recording methods been developed. Port-related data were not consolidated, and it emerged that the capacities to manage operations within the port premises were insufficient.

Some of the tugboat and pilot boat crew members have qualifications based on the 'International Convention on Standards of Training, Certification and Watchkeeping for Seafarers' (STCW Treaty.) As no accidents have occurred to date, it is believed that they have sufficient operational skills. As for maintenance, the engine rooms of the two boats have inspection items specified on a daily, monthly, quarterly, biannual and

annual basis and inspections are conducted in accordance with the same. In addition, the boats are dry-docked<sup>10</sup> generally once every year. It is considered that the work items and techniques of regular inspections by the DPM crew as well as dry-docking by private businesses are not subject to any particular issues.

According to DPM, regarding training programmes for the staff operating and maintaining the facilities and boats, while no training was provided for port facilities, fire-fighting drills are implemented on a quarterly basis for the tugboat.

Based on the above, no technical issues emerged in terms of the qualifications owned, operational techniques and regular inspections for the boats. However, administrative capacities are judged to have some issues and there were no inspections and recording of port facilities, particularly the pier deck, nor any consolidation of port-related data.

### 3.5.3 Financial Aspects of Operation and Maintenance

DPM is not financially independent and receives a government budget allocated as a department of the Ministry of Infrastructure & Public Utilities. Table 8 shows the budget and expenditure of DPM since 2007.

Table 8: Budget and Expenditure of DPM

(Unit: million Vatu)

	2007	2008	2009	2010	2011	2012	2013
Budget	86.3	142.3	111.2	110.0	121.9	138.8	154.9
Expenditure	82.9	140.7	109.9	108.3	108.4	138.0	134.7

Source: Data provided by MIPU

Although DPM invoices ships for berthing fees and tugboat services, revenue management, including the collection of port fees, is not conducted by DPM and the private businesses invoiced make all direct payments to the Ministry of Finance and Economic Management.

Port revenues from the Port Vila Wharf based on the issuance of invoices from DPM are as shown in Table 9.

<sup>10</sup> A dry-docking of the tug boat is conducted in Fiji or New Caledonia, and a dry-docking of the pilot boat is conducted at a slipway of a private business inside the Port Vila Harbour.

Table 9: Revenues Related to the Port Vila Harbour

(Unit: million Vatu)

	2008	2009	2010	2011	2012	2013
Landing fees	63.0	60.6	58.1	86.0	98.1	117.3
Port dues	120.0	121.3	106.0	137.3	161.3	189.3
Wharfage	26.9	28.9	14.3	32.4	89.5	41.5
Other charges	34.3	9.1	6.9	10.4	14.8	13.5
Total	244.2	219.8	185.2	266.0	363.7	361.6

Source: Data provided by the Ministry of Finance and Economic Management

The budget allocated to DPM has remained at around 40% of the port-related revenues based on the invoices issued by DPM and paid to the Ministry of Finance and Economic Management. DPM cannot manage port revenues directly as it is not a financially independent organisation, and is in a situation where the amounts smaller than port revenues are received in the form of government budget. Regarding this level, DPM says that managing port facilities such as the pier deck and container yards<sup>11</sup> sufficiently is not possible due to the budget shortfall. However, as described in ‘3.5.4 Current Status of Operation and Maintenance’, daily management of port facilities is inadequate and the lack of budget to inspect port facilities on a daily basis had not been confirmed.

The actual expenditures incurred for operating and maintaining a tugboat and pilot boat in 2012 and 2013 were provided by DPM. In 2013, since the pilot boat was not dry-docked, the total operation and maintenance cost of the two boats was not captured. It was a total of 20,443 thousand Vatu in 2012. It was kept under the planned amount since an annual cost of 29,320 thousand Vatu had been anticipated at the planning stage of this project.

Table 10: Operation and Maintenance Costs of the Tugboat and Pilot Boat

(Unit: thousand Vatu)

	2012	2013
Tugboat	18,219	14,932
Pilot Boat	2,224	Not implemented
Total	20,443	14,932

Source: Data provided by DPM

The financial conditions of DPM are not structured to receive all of revenues for the services it provides, and it receives all its allocation from the government budget.

<sup>11</sup> The central role of DPM is to supervise cargo-handling operators, inspect facilities and conduct daily management, including small-scale repairs. When large-scale trouble occurs to the facility, DPM requests PWD within MIPU for the repair.

According to DPM, this budget was insufficient to manage daily port facilities, but the issue of insufficient management of port facilities involves operational maintenance and no precise picture of budget shortfall was identified. However, as no source of revenue in the form of replacement investment was given either, the need to appropriate budget by the government will emerge when the facilities need to be rehabilitated in future.

#### 3.5.4 Current Status of Operation and Maintenance

The pier-deck area of the Main Wharf was reinforced by a rehabilitation project supported by ADB in 2000 – 2001. While this area was excluded from the project scope, it needs to be inspected regularly and repaired as needed, as it is relatively old and getting deteriorated. However, there is no maintenance plan for port facilities and regular inspections have seldom been performed. Consequently, the deteriorated conditions of the piles under the pier deck are unknown, and unrepaired partial damage was confirmed on the concrete area above ground in the container yard.

To prevent further deterioration of the pier deck area, DPM considers it necessary to avoid the use of any large forklift on the pier deck, hence this has been prohibited. However, since it has been used occasionally on the pier deck in fact during container transportation, but as the supervision and guidance by DPM about its use is insufficient, there is a concern that damage may occur sooner in future<sup>12</sup>.

A checklist of regular inspection items was specified for a tugboat and pilot boat, based on which it was confirmed that inspections were conducted. No breakdowns that would have hindered tugging operations had occurred on either boats, but merely minor troubles, such as a meter failure and water leakage from pipes, etc. There also seem to have been some cases where it was difficult to smoothly procure spare parts from overseas. Also, as described above, the tugboat undergoes dry-docking once a year in Fiji or New Caledonia, and the pilot boat in a private boat yard near the Port Vila Main Wharf. Accordingly, the two boats are largely maintained and tugging operations are also implemented smoothly. However, one of the boats is away during the dry-docking period, resulting in circumstances whereby safe berthing and departure operations for ships calling at the port cannot be fully ensured.

No particular issues were found in terms of the institutional aspects of operation and maintenance, and the operational techniques and maintenance conditions were also good. However, there was concern over the capacities and techniques used to fully record the

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<sup>12</sup> However, once the Lapetasi International Multi-Purpose Wharf comes into operation, cargo-handling operations are expected to become rare and use by cruise ships will prevail. This may significantly alleviate burdens on the pier deck structure.

precise situations, given the lack of maintenance of port facilities in practice and the lack of consolidated port-related data. With regard to finance, under circumstances where no authorities were assigned to manage port-related revenues and the budget allocation was received as a government department, DPM considers the budget insufficient to operate and maintain the port facilities and equipment sufficiently. However, the fact that the inspections and routine management of port facilities were insufficient represented more of an operational issue, and the budget shortfalls were unconfirmed. With respect to the operation and maintenance conditions, it was judged that while the boats had been properly operated and maintained, facility maintenance was insufficient.

In light of the above, some problems have been observed in terms of technical aspects, as well as maintenance statuses, in the operation and maintenance of this project. Therefore, the sustainability of the project effect is fair.

## **4. Conclusion, Lessons Learned and Recommendations**

### **4.1 Conclusion**

In this project, the port area of the Port Vila Main Wharf was rehabilitated and tugboat and pilot boat were constructed to improve cargo-handling efficiency and make it safer for ships calling at the port to berth. The relevance of this project was high as it was consistent with the development plan and needs of Vanuatu, both at the times of planning and ex-post evaluation and also consistent with Japan's ODA policy at the time. With regard to the project effects, an achievement of all the indicators expected at the time of planning, such as reducing the container transportation distance and relaxing wind-velocity restrictions on berthing for ships calling helped underpin and support an increased number of cruise ships calling and stabilise goods trade: therefore, the effectiveness and impact of the project was high. The efficiency of the project was fair as while the project period was within the plan, the project cost would have exceeded the original project scope, although the scope was reduced to keep the cost within the planned amount after steel prices surged. The sustainability of the project effect generated by this project was fair, reflecting some problems from technical perspectives and the current status of operation and maintenance in terms of maintenance of port facilities.

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

### **4.2 Recommendations**

#### **4.2.1 Recommendations to the Implementing Agency**

##### **4.2.1.1 Consolidation of Port-related Data**

In implementing the ex-post evaluation study, as the port-related data were not sufficiently consolidated by DPM, basic data such as the number of calls by cruise

ships and the container handling volume were obtained from private operators. As it is very fundamental and important for DPM as a port administrator to get a true picture of port operations to manage the port appropriately, it is essential to enhance the capacities to consolidate major indicators.

#### 4.2.1.2 Regular Inspection of the Existing Pier Deck Area

While the existing pier deck area of the Main Wharf was outside the development scope of this project, it is indispensable for the trade and economic activities of Vanuatu to maintain its durability. No regular inspections of the port facilities were conducted after the project had been implemented, and it is necessary to inspect them regularly, including the pier deck area, to prevent deterioration as much as possible. Moreover, DPM's constant supervision of cargo-handling operations while cargo ships berth will be important so that heavy machinery will not unload cargo on the pier deck.

#### 4.2.1.3 Security of Berthing and Departing Operations by Adding a Tugboat

A tugboat was procured in this project to ensure safe berthing and departing operations of the ships calling at the port, but the Port Vila Harbour has only one such boat. As it is not available in the port for several weeks during annual dry-docking, there is concern during this period over the need to ensure safe berthing and departing operations of the ships calling at the port. Once the international multi-purpose terminal is completed at the Lapetasi Wharf, Port Vila Wharf will have two berths instead of the current one. Therefore, it is desirable that another tugboat be added to ensure berthing and departing operations proceed safely at all times.

#### 4.2.2 Recommendations to JICA

The DPM, which is tasked with daily operation and maintenance of the Main Wharf, is not conducting regular inspections or repairing the port facilities sufficiently, and the consolidation of major port-related data also proved problematic. At the time of the ex-post evaluation, the International Multi-purpose Wharf Development Project was being implemented in the Lapetasi Wharf, adjacent to the Main Wharf, and a response to the increased demand by cruise ships to call at the port and realisation of efficient handling of international cargoes are expected. Upon completion of the project, it is anticipated that the overall DPM workload will increase. Therefore, it is important to continue cooperation by senior volunteers and/or experts to enhance the port management capacities of DPM so that the effects of both projects on wharf development are sustained.

### **4.3 Lessons Learned**

#### **4.3.1 Strengthening the Operation and Maintenance Structure and Implementing Capacities**

In terms of the operation and maintenance of this project, issues were found in the areas of consolidation of port-related data, particularly by the Department of Ports and Marine (DPM), inspections of port facilities and supervision of cargo-handling operations. In managing the wharf being developed in the adjacent area as an ODA loan project or implementing other similar projects, it will be important to specify the roles and responsibilities of stakeholders in operating and maintaining the port, for the administrator to implement maintenance activities with sufficient authorities, responsibilities and budget, and to enhance capacities of implementing operation and maintenance for that purpose.

#### **4.3.2 Effective Combination of Facilities Development and Equipment Procurement**

In this project, project effects were confirmed in the sense of streamlined cargo-handling operations by integrally implementing port development (facility development) and tugboat / pilot boat procurement (equipment procurement), and further that berthing and departing operations were made safer by procuring equipment. While developing facilities, e.g. at the port, and procuring equipment such as tugboat / pilot boat were often implemented as separate JICA projects beforehand, integrating them in this project boosted effectiveness and helped achieve the project objective comprehensively. When implementing similar projects, it is desirable that an optimal combination of facility development and equipment procurement be investigated to achieve the project objective.

(End)