Completion Report

Project Number: 43381-012
Grant Numbers: 0175, 0176, 0177, 0207, 0210
September 2015

Solomon Islands: Second Road Improvement (Sector) Project

Asian Development Bank

CURRENCY EQUIVALENTS

Currency Unit – Solomon Islands dollar (SI$)

		At Project Approval (12 November 2009)	At Project Completion (31 December 2013)
SI$1.00	=	$0.1247	$0.1391
$1.00	=	SI$8.0167	SI$7.1891

ABBREVIATIONS

ADB	–	Asian Development Bank
CPIU	–	central project implementation unit
CSO	–	civil society organizations
EARP	–	environmental assessment and review procedure
EIRR	–	economic Internal Rate of Return
EMP	–	environmental management plan
EU	–	European Union
GAP	–	gender awareness progran
GRM	–	grievance redress mechanism
ICB	–	international competitive bidding
LBES	–	labor-based and equipment-supported
MDG	–	millennium development goals
MID	–	Ministry of Infrastructure Development
NGO	–	non-government organizations
NTF	–	National Transport Fund
NTP	–	National Transport Plan
OAG	–	Office of the Auditor General
PMCBU	–	project management and capacity building unit
PSA	–	poverty and social assessments
PSC	–	project steering committee
SIRIP	–	Solomon Islands Road Improvement (Sector) Project

WEIGHTS AND MEASURES

Km	–	kilometers
Km/h	–	Kilometers per hour

NOTE

In this report, "$" refers to US dollars unless otherwise stated.

Vice-President	S. Groff, Operations 2
Director General	X. Yao, Pacific Department (PARD)
Regional Director	A. Iffland, Pacific and Liaison Coordination Office, PARD
Team leader	P. Indrawansa, Senior Project Officer (Infrastructure), PARD
Team members	R. Adhar, Senior Project Officer, PARD
	D. Ling, Transport Specialist, PARD
	M. de Villa, Project Analyst, PARD

CONTENTS

BASIC DATA

A. Grant Identification	
1. Country	Solomon Islands
2. Grant Numbers	0175/0176/0177/0207/0210
3. Project Title	Second Road Improvement (Sector) Project
4. Recipient	Government of Solomon Islands
5. Executing Agency	Ministry of Infrastructure Development
6. Amount of ADB Grant	$15,000,000 (Grant 0175)
7. Amount of European Union Grant	$3,340,000 (Grant 0176)
8. Amount of Government of Australia Grants	$8,768,000 (Grant 0177) $2,358,750 (Grant 0210)
9. Amount of New Zealand Grant	$345,522 (Grant 0207)
10. Government of Solomon Islands Finance	$1,160,000 (Counterpart contribution) $3,000,000 (NTF)
11. Project Completion Report Number	PCR: SOL-1546
B. Grant History	
1. Fact-Finding Mission	29 Jun–07 July 2009
2. Grant Negotiations	
– Date Started	03 September 2009
– Date Complete	04 September 2009
3. Date of Board Approval	12 November 2009 (Grant 0175/0176/0177) 20 May 2010 (Grant 0207/0210)
4. Date of Grant Agreement	
– ADB Grant 0175	01 December 2009
– European Union Grant 0176	15 November 2012
– Government of Australia Grant 0177	02 August 2010
– New Zealand Grant 0207	02 August 2010
– Government of Australia Grant 0210	02 August 2010
5. Date of Grant Effectiveness	
– In Grant Agreement	28 February 2010 (Grant 0175) 13 February 2013 (Grant 0176) 31 October 2010 (Grant 0177/0207/0210)
– Actual	10 March 2010 (Grant 0175) 04 December 2012 (Grant 0176) 20 August 2010 (Grant 0177/0207/0210)
6. Closing Date	
– In Grant Agreement	31 March 2012
– Actual	30 September 2013 (Grant 0176) 31 December 2013 (Grant 0175/0177/0207/0210)
– Number of Extensions	1 (Grant 0176) 3 (Grant 0175/0177/0207/0210)

7. Disbursements

a. Dates

Grant	Initial Disbursement	Final Disbursement	Time Interval
0175	27 October 2010	24 June 2014	43.9 months
0176	30 April 2013	30 January 2015	21 months
0177	27 October 2010	30 January 2015	51.13 months
0207	28 April 2011	30 January 2015	45.07 months
0210	20 April 2011	30 January 2015	43.97 months

Source: Asian Development Bank.

Grant	Effective Date	Original Closing Date	Time Interval
0175	10 March 2010	31 March 2013	24.7 months
0176	04 December 2012	30 September 2013[1]	18.15 months
0177/0207/0210	20 August 201	31 March 2012	19.97 months

Source: Asian Development Bank.

b. Amount ($)

Grant 0175: ADB Financing (Net of tax)

Category No. (1)	Category (2)	Original Allocation (3)	Partial Cancellations (4=3–5)	Last Revised Allocation (5)	Amount Disbursed (6)	Undisbursed Balance (7=5–6)
3101	Consulting Services–Design and Supervision	350,000.00	31,084.00	318,916.00	318,915.20	0.80
3102	Consulting Services–Project Management	470,000.00	(395,730.90)	865,730.90	865,702.28	28.62
3103	Consulting Services–Capacity Building	320,000.00	172,375.00	147,625.00	147,624.71	0.29
3201	Road Rehabilitation Makira	6,360,000.00	35,192.00	6,324,808.00	6,324,807.82	0.18
3202	Labor-Based Equipment-Supported Maintenance	560,000.00	73,243.84	486,756.16	486,756.16	0.00
3203	Road Maintenance 1b–Road	750,000.00	149,312.48	600,687.52	600,687.52	0.00
3204	Rehabilitation Guadalcanal 1c–Road	6,010,000.00	(245,476.42)	6,255,476.42	6,255,476.42	0.00
	Rehabilitation Malaita	170,000.00	170,000.00	0.00	0.00	0.00
	Unallocated	10,000.00	10,000.00	0.00	0.00	0.00
		15,000,000.00	**0.00**	**15,000,000.00**	**14,999,970.11**	**29.89**

Source: Asian Development Bank.

[1] The original grant closing date was 31 March 2012; extended to 30 September 2013.

Grant 0176: European Union Financing

Category No. (1)	Category (2)	Original Allocation (3)	Partial Cancellations (4=3–5)	Last Revised Allocation (5)	Amount Disbursed (6)	Undisbursed Balance (7=5–6)
3201	Works–Road Rehabilitation (Guadalcanal)	2,220,000.00	2,220,000.00	0.00	0.15	(0.15)
3202	Works Rd Rehabilitation (Malaita)	950,000.00	(2,223,000.00)	3,173,000.00	3,104,086.46	68,913.54
4901	Unallocated	170,000.00	3000.00	167000.00	0.00	167,000.00
	Total	**3,340,000.00**	**0.00**	**3,340,000.00**	**3,104,086.61**	**235,913.39**

Source: Asian Development Bank.

Grant 0177: Government of Australia Financing (Trust Fund; Net of Tax)

Category No. (1)	Category (2)	Original Allocation (3)	Partial Cancellations (4=3–5)	Last Revised Allocation (5)	Amount Disbursed (6)	Undisbursed Balance (7=5–6)
3101	Consulting Services–Design and Supervision	230,000.00	88,899.60	141,100.40	141,100.40	0.00
3102	Consulting Services–Project Management	260,000.00	(673,300.28)	933,300.28	933,300.28	0.00
3103	Consulting Services–Capacity Building	100,000.00	38,320.42	61,679.58	61,679.58	0.00
3201	Civil Works–Road Rehabilitation Guadalcanal	6,550,000.00	(407,297.11)	6,957,297.11	6,957,297.11	0.00
3202	Civil Works–LBES Supported Maintenance (Net Of Tax)	168,000.00	42,051.71	125,948.29	125,948.55	(0.26)
3203	Civil Works–Road Maintenance	600,000.00	183,410.46	416,589.54	416,589.54	0.00
3204	Civil Works–Road Rehabilitation Malaita	370,000.00	237,915.20	132,084.80	68,367.95	63,716.85
	Unallocated	490,000.00	490,000.00	0.00	0.00	0.00
	Total	**8,768,000.00**	**0.00**	**8,768,000.00**	**8,704,283.41**	**63,716.59**

Source: Asian Development Bank.

Grant 0207: New Zealand Financing (Net of Tax)

Category No. (1)	Category (2)	Original Allocation (3)	Partial Cancellations (4=3–5)	Last Revised Allocation (5)	Amount Disbursed (6)	Undisbursed Balance (7=5–6)
3101	Consulting Services–Temporary Connectivity	50,000.00	2,205.14	47,794.86	47,794.86	0.00
3201	Restoration of Temporary Connectivity	275,522.00	5,058.07	270,463.93	279,463.93	(9,000.00)
3202	Civil Works–Rehabilitation 3 Malaita	0.00	(9,986.21)	9,986.21	0.00	9,986.21
4901	Others	20,000.00	2,723.00	17,277.00	0.00	17,277.00
	Total	**345,522.00**	**0.00**	**345,522.00**	**327,258.79**	**18,263.21**

Source: Asian Development Bank.

Grant 0210: Government of Australia Financing (Net of Tax)

Category No. (1)	Category (2)	Original Allocation (3)	Partial Cancellations (4=3–5)	Last Revised Allocation (5)	Amount Disbursed (6)	Undisbursed Balance (7=5–6)
3101	Consulting Services	30,000.00	25,950.00	4.050.00	4,050.00	0.00
3201	Civil Works–Road Rehabilitation–Malaita	2,250,000.00	1,731,308.82	518.691.18	525,304.14	(6,612.96)
3202	Civil Works–Road Rehabilitation–Guadalcanal	110,000.00	(1,608,070.82)	1.718.070.82	1,718,070.82	0.00
4801	Unallocated	0.00	(117,938.00)	117.938.00	0.00	117,938.00
	Total	**2,390,000.00**	**31,250.00**	**2,358,750.00**	**2,247,424.96**	**111,325.04**

Source: Asian Development Bank.

Government of Solomon Islands Financing (Counterpart and National Transport Fund)

Category No. (1)	Category (2)	Original Allocation (3)	Partial Cancellations (4=3–5)	Last Revised Allocation (5)	Amount Disbursed (6)	Undisbursed Balance (7=5–6)
A1a–c	Road Rehabilitation	700,000.00	3,160,000.00	3,860,000.00	3,860,000.00	0.00
A1d	LBES Pilot Program	30,000.00	0	30,000.00	30,000.00	0.00
A1e	Maintenance	40,000.00	0	40,000.00	40,000.00	0.00
A2a	Design and Supervision	110,000.00	0	110,000.00	110,000.00	0.00
A2b	Project Management	50,000.00	0	50,000.00	50,000.00	0.00
A2c	Capacity Building	70,000.00	0	70,000.00	70,000.00	0.00
3	Unallocated	170,000.00	(170,000.00)	0	0	0.00
	Total	**1,160,000.00**	**2,990,000.00**	**4,160,000.00**	**4,160,000.00**	**0.00**

Source: Asian Development Bank.

8. Local Costs (Financed)
   - Amount ($ million) 4.16
   - Percent of National Costs 100%
   - Percent of Total Cost 12.25%

C. Project Data

1. Project Cost ($ '000)

Cost	Estimate (at Approval)	Actual
Foreign Exchange Cost	Not Assessed	Not Assessed
National Currency Cost	Not Assessed	Not Assessed
Total		

2. Financing Plan ($ '000)

Cost	Estimate (at Approval)	Actual amount disbursed[2]
Implementation Costs		
Recipient Financed	1,160	4,160
ADB Financed	15,000	14,999
Other External Financing (Australia Trust Fund)	4,500	8,704

[2] Excluding ADB Administration fee and other expenses.

Other External Financing (EU)	3,340	3,104
Other External Financing (Government of Australia)	nil	2,247
Other External Financing (New Zealand)	nil	327
Total	**24,000**	**33,541**

ADB = Asian Development Bank, EU = European Union.

Source: Asian Development Bank.

3. Cost Breakdown by Project Component ($ '000)

Component	Estimate (at Approval)	Final Cost
A. Base Cost		
1. Civil Works		
a. Rehabilitation	16,810	28,813
b. LBES maintenance pilot program	650	642
c. Maintenance	1,020	1,057
d. Restoration of Temporary Connectivity	nil	279
Subtotal (A1)	**18,480**	**30,791**
2. Consulting Services		
a. Design and Supervision	700	570
b. Project Management	300	1,849
c. Capacity Building	450	279
d. Consulting (Temporary Connectivity)	nil	52
Subtotal (A2)	**1,450**	**2,750**
3. Others (ADB Administration Fee)	**nil**	**364**
Subtotal (A)	**19.93**	**33,845**
B. Contingencies	**4,070**	**nil**
Subtotal (B)	**4,070**	**nil**
Total	**24,000**	**33,905**

LBES = labor- based and equipment-supported.

Source: Asian Development Bank.

4. Project Schedule

Item	Estimate (at Approval)	Actual
Consultant Contracts		
Design and Supervision Consultant		
Date of Award	01-Nov-09	07-Apr-10
Completion of Work	30-Apr-12	31-Dec-13
Engineering Survey, Naro Hill to Lambi		
Date of Award		17-Jun-10
Completion of Work		
Roads and Bridges Rehabilitation/ Reconstruction Contracts		
Makira subproject (continuation from SIRIP1)		
Date of Award		18-Jan-10
Completion of Work	17-Jan-12	25-May-12
West Guadalcanal subproject (Poha to Naro Hill)		
Date of Award		18-Jan-10
Completion of Work	18-Jan-12	
North Malaita Climate Change Adaptation subproject		21-May-12
Date of Award		
Completion of Work	21-Nov-12	
Emergency Temporary Connectivity Contracts		
Contract 1 (Islander)		

Item	Estimate (at Approval)	Actual
Date of Award		10-Sep-10
Completion of Work	31-Dec-10	31-Dec-10
Contract 2 (W&P)		
Date of Award		10-Sep-10
Completion of Work	31-Dec-10	31-Dec-10
Contract 3 (Jerisya)		
Date of Award		20-Sep-10
Completion of Work	31-Dec-10	30-Jun-13
Maintenance Contracts		
Guadalcanal: Resealing bitumen sealed roads east and west Honiara		
Date of Award		18-Feb-11
Completion of Work	04-Oct-12	
Central: NFD wharf to Tulagi town		
Date of Award		09-Sep-10
Completion of Work	09-Sep-12	
Central: Tulagi town to Coastal Road		
Date of Award		16-Nov-10
Completion of Work	16-Nov-12	
Isabel: Kaevanga Road, Kaevanga Wharf to Muana School		
Date of Award		18-Nov-10
Completion of Work	18-Nov-12	
Isabel: Kaevanga Road, Muana School to end of road		
Date of Award		23-Nov-10
Completion of Work	23-Nov-12	
Isabel: Koge Road		
Date of Award		18-Nov-10
Completion of Work	18-Nov-12	
Western: Gizo Coastal Road New Manda To Sageraghi Village – Section 1		
Date of Award		08-Apr-11
Completion of Work	08-Apr-13	
Western: Gizo Coastal Road New Manda To Sageraghi Village – Section 2		
Date of Award		14-Apr-11
Completion of Work	14-Apr13	
Western: Munda Hospital Road – Section 1		
Date of Award		24-Feb-12
Completion of Work	24-Feb-14	
Western: Munda Hospital Road – Section 2		
Date of Award		20-Apr-11
Completion of Work	20-Apr-13	

Source: Asian Development Bank.

5. Project Performance Report Ratings

	Ratings	
Implementation Period	**Development Objectives**	**Implementation Progress**
From 10 March 2010 to 31 December 2013	Satisfactory	Satisfactory

D. Data on Asian Development Bank Missions

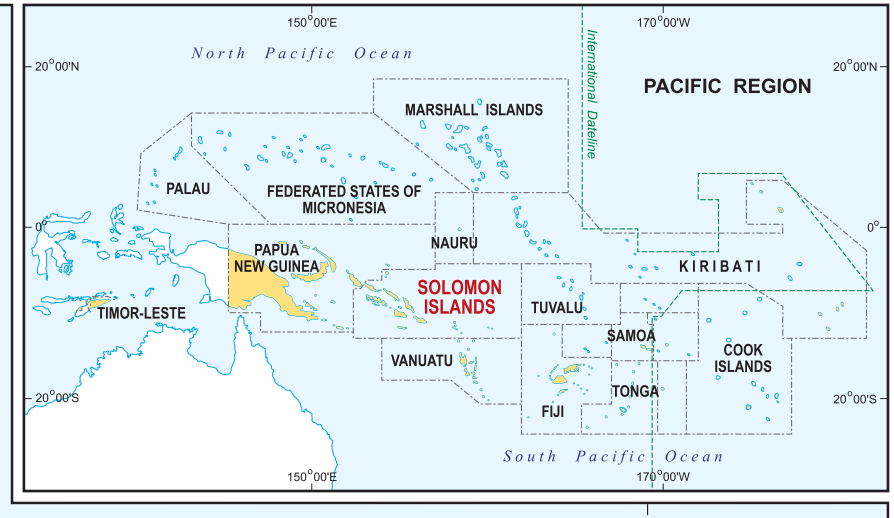
Name of Mission	Date	No. of Persons	No. of Person-Days	Specialization of Members
Fact-Finding	29 Jun–07 Jul 2009	2	14	f, h
Inception	22–26 Mar 2010	2	10	f, g
Review 1	21–28 Jun 2010	1	6	g
Review 2	24 Nov–3 Dec 2010	4	32	a, e, f, g
Midterm Review	9–18 May 2011	2	16	f, g
Review 3	5–16 Dec 2011	2	20	b, g
Review 4	11–21 Jun 2012	1	9	g
Review 5	22 Oct–01 Nov 2012	3	27	b, c, g
Review 6	3–7 Jun 2013	3	15	d, g, h
Review 7	9–13 Sept 2013	3	15	b, f, g

a = climate change adaptation economist, b = environment specialist, c = external relations officer, d = financial management officer, e = finance and administration coordinator, f = project officer, g = project officer (infrastructure), h = transport specialist.
Source: Asian Development Bank.

SOLOMON ISLANDS

SECOND ROAD IMPROVEMENT (SECTOR) PROJECT

(as completed)



CHOISEUL PROVINCE
Taro
Papara
Choiseul Island
Shortland Island

WESTERN PROVINCE
Vella Island
Ranongga Island
Kolombangara Island
Gizo
Simbo Island
New Georgia Islands
Munda
Vangunu Island
Rendova Island

ISABEL PROVINCE
Kia
Isabel Islands
Buala
Susubona
Sepi

CENTRAL PROVINCE
Yandina
Russell Islands
Savo Island
Tulaghi

MALAITA PROVINCE
Malu'u
Auki
Malaita Island
Oteotea

GUADALCANAL PROVINCE
HONIARA
Guadalcanal Island
Aola
Avu Avu

MAKIRA PROVINCE
Kira Kira
San Cristobal Island

RENBEL PROVINCE
Rennell Island

Western
Labour Based Road and Bridge Maintenance
> Gizo Coastal Road
New Manda to Sageraghi Village - Section 1 (6 km)
> Gizo Coastal Road
New Manda to Sageraghi Village - Section 2 (6.8 km)

> Munda Hospital Road - Section 1 (5 km)
> Munda Hospital Road - Section 2 (4.3 km)

Central
Labour Based Road and Bridge Maintenance
> NFD Wharf to Tulagi Town (3.8 km)
> Tulagi Town to Coastal Road (3.7 km)

Malaita
Road and Bridge Rehabilitation
> North Malaita Climate Change Adaptation subproject
(14 km, 9 bridges, 6 causeways, 3000 meters coastal protection)

Isabel
Labour Based Road and Bridge Maintenance
> Kaevanga Road, Kaevanga Wharf to Muana School (6.7 km)
> Kaevanga Road, Muana School to end of road (6.8 km)
> Koge Road (4.3 km)

Guadalcanal
Road and Bridge Rehabilitation
> West Guadalcanal subproject (Poha to Naro Hill)
(30 km with 18 km sealed, 14 bridges, 15 causeways,
750 m retardation walls, 250 m river bank realignment)

Labour Based Road and Bridge Maintenance
> Resealing bitumen sealed roads east and west Honiara (10 km)
> West Guadalcanal Temporary Connectivity Emergency Works
(3 contracts at selected damaged sections)

Makira
Road and Bridge Rehabilitation
> Makira subproject (Kirakira-Wainuri Road)
(19.6 km, 11 bridges, 29 causeways, 200 m retardation walls)

N

0 20 40 60 80 100
Kilometers

National Capital
Provincial Capital
Town
Road and Bridge Rehabilitation
International Boundary

Boundaries are not necessarily authoritative.

15-1989 AV

I. PROJECT DESCRIPTION

1. **Background.** Solomon Islands consists of six large islands, dozens of smaller islands, and hundreds of islets and atolls. It has a land area of 28,000 square kilometers. More than 80% of the country's population is rural, living in widely dispersed villages of a few hundred persons. Infrastructure and services, especially in rural areas, are inadequate. Improvements in the efficiency and effectiveness of the national transport network will make the rural areas more accessible and promote development.

2. The Government of Solomon Islands (the government), implemented the Solomon Islands Road Improvement (Sector) Project (SIRIP) from 2007 to 2012. SIRIP rehabilitated unsealed roads, reconstructed bridges and culverts, maintained unsealed and sealed roads using labor-based and equipment-supported (LBES) maintenance methods, and supported the transformation of the Ministry of Infrastructure Development (MID) into an asset management organization.[1] The Asian Development Bank (ADB) administered the implementation of SIRIP, which was cofinanced by the governments of Australia and New Zealand.

3. **The project.** Following the detailed engineering design of SIRIP, the Makira subproject was estimated to cost $18 million compared with the appraisal estimate of $10 million. In the absence of technical assistance for project preparation, the appraisal costs were underestimated, which together with increased cost of materials, and inclusion of two high-level bridges, resulted in an estimated cost overrun of $8 million. At the request of the government, the Second Road Improvement (Sector) Project (the project) was formulated to meet these cost overruns. A further request from the government sought restoration of road infrastructure damaged by floods in February 2009 and January 2010. The government requested ADB to manage the project, in recognition of ADB's long experience in implementing projects in the transport sector in the Solomon Islands, as well as its expertise in implementing safeguards.

4. **Impact, outcome and outputs.** The objective of the project was to remove transport accessibility constraints by restoring or providing road connectivity, and improving access reliability during natural hazards. The impact would be economic growth, social development, and reduction of hardship and poverty in the areas served by the subprojects. The project outcome would be improved road transport that supported economic and social activities.[2] Project outputs were divided into three components: (i) rehabilitation of selected roads and bridges not covered by SIRIP, permanent repair of roads damaged in the floods of 2009 and 2010, and upgrading and climate-proofing waterway crossings and road improvements for climate change adaption; (ii) road maintenance of road sections reconstructed under SIRIP as well as other past and ongoing investment projects through private sector using LBES techniques developed under SIRIP and routine maintenance involving local communities; and (iii) project management and capacity building provided through a project management unit for planning, assessing, designing, managing, and implementing road, drainage, and bridge works under road rehabilitation and maintenance components.

5. The project initially ran in parallel with SIRIP and resources of the already established project management and capacity building unit (PMCBU) were shared. The implementation of part of Makira subproject was undertaken by the project. While the feasibility study of the West Guadalcanal subproject was carried out under SIRIP, the procurement, implementation and

[1] The physical components of SIRIP included (i) rehabilitation of 57 kilometers (km) of unsealed roads, reconstruction of 17 bridges and 46 culverts in Makira Province; and (ii) maintenance of 86 km of unsealed roads and 90 km of sealed roads in Makira, Malaita, Temotu and Guadalcanal provinces.

[2] ADB. 2009. *Report and Recommendation of the President to the Board of Directors: Proposed Asian Development Fund Grant and Administration of Second Road Improvement (Sector) Project.* Manila.

supervision were undertaken by the project, and the feasibility study, procurement and implementation of the Malaita subproject were completed by the project.

II. EVALUATION OF DESIGN AND IMPLEMENTATION

A. Relevance of Design and Formulation

6. The project's impact, outcomes and outputs remain relevant at completion. The project complied with the strategic framework of the National Transport Plan (NTP) for developing and maintaining physical infrastructure, facilitating transport services, improving the capacity of government agencies, and increasing private sector participation. The project was also in line with the three-year action plan provided in the NTP. [3]

7. As envisaged in the NTP three-year action plan, the project (i) expanded the scope of rehabilitation beyond Guadalcanal and Malaita, (ii) implemented permanent repairs to water crossings damaged by floods in 2009 and 2010 on West Guadalcanal Road, and (iii) provided climate change adaptation (North Road in Malaita). The project supported the government's desire for ADB to take the lead in the road subsector as agreed with other donor partners.

8. The project design was similar to SIRIP and based on the development needs identified by the government, which included: (i) accommodating climate change adaptation measures into the design; (ii) restoring and connecting roads in disadvantaged rural areas; (iii) fostering opportunities for small businesses; and (iv) improving capacity to plan, finance and deliver, as well as maintain, essential transport infrastructure and services. This emphasis was consistent with ADB's Country Partnership Strategy 2009–2011 (CPS), which sought to (i) promote equitable private sector-led economic growth by improving transportation infrastructure and services, (ii) strengthen the business environment, thereby reducing poverty, and (iii) develop capacity and good governance.[4]

9. MID's Transport Planning and Policy Unit, which subsequently became the Transport Infrastructure Management Services Department (TIMS), coordinated all activities of the project under the direction of the Project Steering Committee (PSC).[5] The National Transport Fund (NTF) was to provide an adequate and predictable source of medium-term funding for road repair and maintenance after project completion, prioritizing expenditure based on sound technical criteria, and harmonized safeguard procedures.

10. Capacity building initiatives were integrated across all project activities. Capacity building was designed to support MID to sustain planned and efficient road maintenance. The PMCBU comprised international and national consultants and MID staff, and was under the management supervision of the Permanent Secretary of MID. About 40% of the PMCBU international consultant inputs were devoted to capacity building and training of MID staff, staff of other government agencies such as the Environment and Conservation Department, national consultants, and the emerging community-based contractors. The emphasis on capacity building was also a response to earlier concerns about MID's weak absorptive capacity.

11. The improved capacity and connectivity of the road network in rural areas, made possible by the project, was expected to improve access to markets and economic and social services and, thus, increase community wellbeing and improve livelihoods, particularly for women. Gender elements were integrated into the project through: (i) the design of road

[3] ADB. 2004. *Technical Assistance to Solomon Islands for Institutional Strengthening of the Ministry of Infrastructure Development*. Manila (TA 4494-SOL).
[4] ADB. 2009. *Interim Country Partnership Strategy 2009–2011.* Manila.
[5] TIMS subsequently transformed into the Central Project Implementation Unit (CPIU) under MID.

subcomponents to maximize accessibility and safety for road users, the majority of whom were women and children, as identified in the initial poverty and social analysis (PSA); (ii) the design of the LBES subcomponent to enhance female participation, income and empowerment; and (iii) the communications strategy designed to ensure female stakeholders were informed and encouraged to participate in project activities.

12. A larger number of contracts under the LBES program was awarded, leading to an increase in the number of provincial domestic contractors and provided road maintenance training to communities. This approach supported the government's objective of increasing economic and social activities by generating employment and income for both women and men, and giving women the possibility to acquire productive assets and achieve economic empowerment within their communities.

B. Project Outputs

13. The outputs at approval compared with outputs achieved at completion are summarized below for the individual components, and in the design and monitoring framework in Appendix 1.

14. **Road Rehabilitation.** In line with the priorities set in the NTP, at approval the project envisaged rehabilitation and upgrading of about 20 km of roads, and climate proofing of about 30 major water crossing structures. There were three core subprojects: (i) rehabilitation of roads and bridges along Kirakira–Wainuri Road (Makira province), (ii) restoration of road sections and bridges between Poha Stream and Naro Hill damaged in the floods of 2009 and 2010 (Guadalcanal province), and (iii) rehabilitation of, and climate change adaptation for, North Road (Malaita province). The output at completion for each subproject is shown in Table 1.

Table 1: Component A—Road Rehabilitation Achievements

Subproject	Outputs Achieved
Makira	• 19.6 km unsealed road rehabilitated, • 11 major water crossing structures, • 29 new culverts (causeways), and • 200 m of retardation walls along river banks.
West Guadalcanal	• 30 km road rehabilitated, • 18 km road sealed, • 14 major water crossing structures, • 15 new culverts (causeways), • 750 m of retardation walls along river banks, and • 250 m of river bank reshaping/ realignment.
North Malaita	• 14 km unsealed gravel road rehabilitated, • 9 major water crossing structures, • 6 new culverts (causeways), and • 3 km of coastal protection works.

Source: Ministry of Infrastructure Development.

15. The project actually achieved 63 km of road rehabilitation, and repair or construction of 34 major crossings and 50 minor crossings; a significant overachievement. This was possible through the combination of additional cofinancing from the governments of Australia and New Zealand, and efficient project management. The substantial travel time savings and uninterrupted connectivity during floods brought about by the additional road improvements under the project led to increased economic and social activities in the project areas.

16. A systematic and consultative approach was integrated into all aspects of the subprojects, providing for community and stakeholder inputs to social, economic, and environmental evaluation and monitoring of each subproject. Each feasibility study provided evidence of eligibility under agreed criteria, and acceptability for due diligence requirements including: (i) exclusion of any subproject classified as category A according to ADB's

Environment Policy or *Involuntary Resettlement Policy* as requested at approval; (ii) delivery of HIV awareness and prevention, as well as general health and safety activities during implementation; and (iii) climate change adaptation measures incorporated into subproject design and implemented through respective contracts.

17. **Road Maintenance.** This component comprised both periodic and routine maintenance contracts carried out through the private sector. It used LBES techniques for routine maintenance as developed under SIRIP. The routine maintenance contracts were implemented by domestic contractors involving community groups and local labor provided by both women and men. The periodic road maintenance covered resealing of roads in east and west Honiara (10 km), in poor condition since rehabilitation was last undertaken in 2007. In addition, three emergency contracts were awarded to restore connectivity in West Guadalcanal after the 2009 and 2010 floods. Periodic and routine maintenance contracts covered a total of 57.4 km in four provinces: Central, Guadalcanal, Isabel and Western.[6] All routine maintenance contracts were continued for a minimum of two years. A summary of outputs from this component is in Table 2.

Table 2: Component B: Road Maintenance Achievements

Province	Road Section	Length of Road Section (km)
Central	NFD Wharf to Tulagi Town	3.8
	Tulagi Town to Coastal Road	3.7
Guadalcanal	Resealing bitumen sealed roads east and west Honiara	10.0
	West Guadalcanal temporary connectivity emergency Works (3 contracts)	Selected damaged sections
Isabel	Kaevanga Road, Kaevanga Wharf to Muana School	6.7
	Kaevanga Road, Muana School to end of road	6.8
	Koge Road	4.3
Western	Gizo Coastal Road: New Manda to Sageraghi village – Section 1	6.0
	Gizo Coastal Road: New Manda to Sageraghi village – Section 2	6.8
	Munda hospital road – Section 1	5.0
	Munda hospital road – Section 2	4.3

NFD = Name of the wharf.
Source: Ministry of Infrastructure Development.

18. **Project Management and Capacity Building.** The project management and capacity building components of the project further strengthened and deepened the efforts made under SIRIP. Capacity building in areas such as planning, design, and managing and implementing road, bridge, and drainage structures, was provided through the road rehabilitation and maintenance contracts, while broader technical and safeguards capacity building was provided to government institutions, contractors, local consultants, NGOs, and beneficiary communities.

19. Special features of the project included: (i) continuity and consolidation of SIRIP achievements, (ii) effective implementation of cofinancing and donor harmonization, (iii) community participation and labor intensive employment, (iv) identification and implementation of climate change adaptation measures, and (v) involvement of non-government organizations in HIV education. The project provided opportunities to continue progress achieved under SIRIP, ensuring that improvements in project management procedures and approaches became sustainable through embedding them more deeply in MID's business activities. The road maintenance component enabled the roll-out of the LBES road maintenance program developed under SIRIP in additional three provinces (Central, Isabel, and Western).

20. **Cofinancing and Development Partner Harmonization.** ADB's strategy in Solomon Islands emphasized coordination with development partners and encouraged cofinancing. The

[6] Routine maintenance of roads in Rennel-Bellona province was subsequently removed from the project due to lack of progress.

project was cofinanced by three development partners; the governments of Australia and New Zealand, and the European Union. As agreed with the partners and the government, ADB provided the lead role in coordinating and managing the cofinancing grants.

21. **Community Participation and Labor-Intensive Employment.** The project generated employment opportunities and increased the number of national contractors capable of maintaining rural roads using LBES techniques. Under these arrangements, national and community-based contractors were trained to undertake road maintenance. Women participated in greater numbers, and women contractors gained skills through on-the-job training.

22. **Climate Change Adaptation.** An important element of the project was climate change adaptation, which was incorporated into the subproject designs in West Guadalcanal and North Malaita. Adaptation included (i) water crossings to accept greater flood volumes and loads of river debris, (ii) piled bridge abutments to mitigate potential collapse and subsequent damage to approach roads, (iii) river training works to minimize deviation of watercourses, (iv) protection of bridge approach roads and river training works, (v) raised pavement levels at flood prone areas and sections susceptible to sea level rise, and (vi) embankment slopes and coastal protection works to minimize erosion and protect the road from storm surges and king tides.

23. **NGO Participation in HIV Education.** The project continued to use the methods established under SIRIP to raise awareness on HIV and educate rural communities on preventing the spread of communicable diseases. This included contract provisions requiring each contractor to engage an approved service provider to deliver HIV education awareness and prevention to employees and affected communities. Save the Children Australia and staff of HIV/AIDS Unit of provincial hospitals delivered the awareness programs. Approved awareness materials prepared by Oxfam were used to reinforce the messages during subproject implementation and community maintenance works. The contractors provided at least three awareness programs within each subproject area with at least 10 participants in each session. PMCBU staff actively monitored compliance with contract requirements through monthly audits.

C. Project Costs

24. At completion, the total cost of the project was $33.54 million, an increase of $9.54 million or 39.7% of the estimated $24 million at approval,. At project approval, ADB provided a grant of $15 million (62.50%), the Government of Australia provided a grant of $4.50 million (18.75%), the EU provided a grant of $3.34 million equivalent (13.92%) and the government contributed $1.16 million equivalent (4.83%). There were no changes to the ADB and EU grants. However, following the January 2010 floods, Australia provided $0.25 million and New Zealand provided $0.33 million in additional grants for emergency restoration of connectivity on West Guadalcanal Road. During implementation, Australia provided additional financing of $4.2 million equivalent for rehabilitating and climate proofing transport infrastructure damaged by the 2009 and 2010 floods, and in March 2012, provided a further grant of $2 million equivalent for climate proofing North Road on Malaita. The three packages of additional financing increased the contribution of Australia to $10.95 million or 32.7% of the total project cost. The government contribution increased by $3 million equivalent bringing its total to $4.16 million or 12.4% of the total project cost. All cofinanced grants were fully administered by ADB.

25. The road rehabilitation component accounted for the largest portion of the increase in total project cost; increasing from $16.81 million at approval to $28.80 million at completion. The increase was due to (i) appreciation of New Zealand dollar against the US dollar, (ii) the impact of the 2010 floods on the scope of the West Guadalcanal subproject, and (iii) the expansion of the scope of the Malaita subproject to address climate adaptation needs by inclusion of an additional three bridges.

26. The cost of consulting services increased from $1.45 million at approval to $2.47 million at completion (70%) as a result of the need to (i) extend the services of the procurement, contract management, and community development specialists; (ii) recruit a national consultant for survey works on the Malaita and Guadalcanal subprojects, (iii) provide additional consultancy services for supervision of the temporary connectivity restoration of the West Guadalcanal Road, and (iv) provide additional consultancy services for project management to cover the 18 month extension to the implementation of the project.

D. Disbursements

27. All grants were disbursed in accordance with ADB's *Loan Disbursement Handbook* (2007, as amended from time to time) governing direct payment and reimbursement procedures. Three first generation imprest accounts for ADB, Australia, and New Zealand contributions were held in US dollar at the Central Bank of Solomon Islands and five second generation imprest accounts were held at the local commercial bank (ANZ Bank, Honiara). The EU grant was disbursed under direct payment procedures. The annual disbursement of grant funds, S-curve and a diagram of the financial system are provided in Appendix 2.

28. The grants were disbursed more slowly than envisaged at approval due to the delay in the availability of EU funds. Managing three first generation and five second generation imprest accounts was cumbersome and this was identified as a major reason for the delayed closure of the project. All imprest accounts were closed on 4 November 2014 and grant accounts in ADB were closed on 16 March 2015.

E. Project Schedule

29. The ADB Board approved the project on 12 November 2009. The agreement for grant 0175 (ADB) was signed on 01 December 2009 and became effective on 10 March 2010. The agreements for grants 0177 and 0210 (Australia) and grant 0207 (New Zealand) were signed on 02 August 2010. The agreement for grant 0176 (EU) was signed on 15 November 2012; this was delayed by three years due to prolonged discussions held between ADB and EU on the covenants of the EU contribution agreement.[7] As a result of this delay and additional works required after the 2010 flood, the original project completion date of 31 March 2012 was extended to 30 September 2013. The completion date was further extended to 31 December 2013 to enable MID to finalize contractor payments, close the imprest accounts, and submit the recipient's project completion report. The winding-up period was extended from 30 June 2014 to 31 January 2015 to finalize residuals of the grant accounts and to reimburse the government.[8] The project schedule is in Appendix 3.

F. Implementation Arrangements

30. Implementation arrangements were unchanged from those established under SIRIP. The executing agency was MID. The project steering committee comprising representatives from ADB, Australia, New Zealand, and the EU, and senior government executives oversaw all aspects of project implementation, including (i) policy guidance and coordination, (ii) approval of subproject feasibility study, (iii) project progress reports and other project documentation, (iv)

[7] ADB did not agree with the covenants of the contribution agreement originally proposed by EU as the template was geared towards international organizations that implement projects and less suited for development banks. ADB requested change of the language and this discussion took three years to reach an agreement.

[8] NTF resources were used to pay contractor outstanding amounts, and upon finalizing available funds in the respective grant accounts, part of such payments were reimbursed.

annual reports on road maintenance budgets and activities, and (v) audited accounts and financial statements.

31. The PMCBU, directed by MID's Director of TIMS and central project implementation unit (CPIU), was responsible for day-to-day implementation and reported to the Permanent Secretary of MID. The PMCBU was supported by various consultants, administrative staff, and accounting services. Counterpart staff assigned to the PMCBU included an economist, engineers, and an accountant. The PMCBU was to be fully integrated with MID. However, due to resource constraints, MID did not provide all required staff to PMCBU and national consultants from a domestic consulting firm supplemented as counterparts to the PMCBU. The PMCBU was responsible for design and supervision including (i) conducting subproject feasibility studies, (ii) managing bidding processes, (iii) managing and supervising contracts, (iv) preparing withdrawal applications, (v) preparing project progress reports, monitoring reports, and assisting with the recipient's project completion report, (vi) maintaining project accounts and completed grant financial records for auditing, (vii) monitoring the project's socio-economic impacts, (viii) training MID and Environment and Conservation Department staff, national consultants and contractors, and improving their project implementation capacity, and (ix) completing project management activities to implement the project successfully while complying with ADB requirements, and government policies and guidelines.[9]

32. Gender aspects were monitored by the PMCBU to ensure that contractors complied with requirements throughout their contract period. Gender elements included as provisions in contracts covered: (i) encouraging employment of women in road rehabilitation and labor-intensive maintenance activities, (ii) providing equal opportunities as well as equal payment to men and women for similar work, (iii) providing safe working conditions for male and female workers, and (iv) complying with applicable labor laws, and prohibiting the use of any child or trafficked labor. While a specific gender action plan was not prepared for the project, three of nine LBES contracts (33%) were awarded to companies managed by women, 8,472 of 21,178 person-days (40%) of work were undertaken by women. In addition, based on application of best practice to comply with contract items (i) – (iv) above, the PMCBU sought to incorporate gender dimensions into project activities as further described in Appendix 4.

33. Ahead of community consultations specific to feasibility studies and safeguards assessments, the project engaged with a wide range of stakeholders, including the private sector, provincial government, and directly affected communities. PMCBU developed a communication plan based on principles that supported the rights of affected and/or interested people to seek, receive, and impart information and ideas about project activities. Communication protocols between the government, ADB, PMCBU, PSC, CPIU, and the communities covered reporting relationships, regular dialogue meetings, clear responsibilities for policies and procedures, and authorities for addressing contractual and community matters. The plan also established a grievance redress mechanism for the project. This approach encouraged stakeholder participation across project activities.

G. Conditions and Covenants

34. The government, PSC, and PMCBU substantially complied with the grant covenants and the particular covenants provided in article 4 of the grant agreement, as amended throughout the project implementation period. The details of compliance with grant covenants are in Appendix 5.

[9] Each feasibility study included engineering design, economic analysis, safeguards and social assessments.

35. The Office of the Auditor General (OAG) audited the project financial statements to 2012 and submitted the audit report, including an opinion on the use of grant proceeds, compliance with financial covenants and use of imprest accounts, and a management letter in compliance with ADB guidelines. OAG has provided an unqualified opinion expressed by the auditor concluding that the financial statements were prepared in all material respects in accordance with the applicable financial reporting framework, and the statements fairly reflect cash receipts and payments of the project. OAG is yet to submit the audited financial statements for 2013 (to project closure 31 December 2013). The 2013 audit of the project accounts is ongoing and the delay in completing this is due to the cumbersome reconciliation and closing of three first generation and five second generation imprest accounts, as well as limited availability of the project accountant to wind up the imprest accounts after demobilization of the PMCBU staff (31 December 2013).

H. Consultant Recruitment and Procurement

36. The project included consulting services to ensure continuation of the PMCBU established under SIRIP. At approval, the project envisaged a total of 53 person-months of international consulting services and 202 person-months of national consulting services. The services included road and bridge engineering, contract management, procurement, construction supervision, community development, safeguards, asset management, maintenance, and accounting. The implementing consultants were recruited in accordance with ADB's *Guidelines on the Use of Consultants* (2010, as amended from time to time) using the quality- and cost-based selection method (80:20) and a simplified technical proposal.[10] This selection method was considered appropriate to attract firms to working in remote locations. At the request of the government, ADB administered the recruitment.

37. At completion, the project had financed 47.02 person-months of international consultants and 240.94 person-months of national consultants. The increase in national consulting input was primarily for project management and supervision services during the 18 month project extension. In addition, the project financed 13.5 person-months of international consulting inputs and 34.07 person-months of national consulting inputs for provision of procurement, contract management, community development, and safeguards services for restoration of connectivity in West Guadalcanal after the 2010 floods.

38. An additional 24.33 person-months of input were provided by an international consultant for procurement, contract management, and community development services under PMCBU. The consulting services for geographic surveying of North Road on Malaita and Naro–Lambi Road were obtained from a national firm through competitive bidding.

39. Procurement works were carried out in accordance with ADB's *Procurement Guidelines* (2007, as amended from time to time), the Government of Solomon Islands Financial Instructions 2010, and MID's Procurement Manual 2010. ADB's standard bidding documents for small and large civil works contracts were used for national competitive bidding and international competitive bidding contracts. The procurement procedures and the list of successful contract awards are detailed in Appendix 6.

I. Performance of Consultants, Contractors, and Suppliers

40. **Consultants.** The performance of the international and national consultants was *satisfactory***.** The PMCBU consultants were professional in all aspects of technical input including feasibility study, procurement, safeguards, contract management, supervision and

[10] ADB. 2010. *Guidelines on the Use of Consultants by Asian Development Bank and Its Borrowers.* Manila.

accounting. The MID, PSC, and the development partners were kept informed about project implementation progress. Due to acute shortage of MID staff, the inability to fully integrate the PMCBU into MID was beyond the control of the consultants. The criteria included in the selection procedures used to identify Makira, West Guadalcanal, and North Malaita as the most suitable sites for the rehabilitation subprojects, and to identify subproject options, were appropriate and aligned well with the priorities set in the NTP.

41. **Contractors.** The international contractor for the Makira subproject completed the works two months behind schedule due to variations in scope. The Taking-Over Certificate was issued on 25 April 2012. The one year defect liability period elapsed in April 2013 and all identified defects were rectified within the given period. The contractor performed well providing good designs for high level bridges, demonstrating sound construction practices, and implementing health, safety, and environmental management requirements in line with best practice.

42. However, during implementation, tension between the contractor's staff and the adjacent Kaonasughu village resulted in some problems. Before the conflict escalated, MID, PMCBU, and development partners intervened to resolve the situation, after which the relationship between the communities and the contractor significantly improved. An appropriate community consultation program with a full-time local coordinator from the government should have been implemented from the commencement of construction. Despite some minor shortcomings, which were dealt with and did not impinge upon the overall progress of the project, the contractor's performance is rated *satisfactory***.**

43. The international contractor for the West Guadalcanal subproject completed the works four months behind the original schedule due to extreme weather and variations to the scope. The Taking-Over Certificate was issued on 30 September 2012 and one year defect liability period elapsed in September 2013. The contractor rectified all identified defects within the period. The contractor performed well providing good designs for high level bridges, demonstrated sound construction practices, and implemented health, safety, and environmental management requirements in line with best practice.

44. The relationship between the contractor and the local communities was good, as MID appointed a staff to discuss and resolve community issues through grievance redress mechanism. The contractor engaged an experienced community liaison officer. Some minor incidents were recorded between contractor's expatriate staff and local counterparts. The contractor managed to resolve issues by improving communication between expatriate and local workers. Despite the above shortcomings, the contractor's performance is rated *satisfactory***.**

45. The contract for North Malaita subproject was awarded to an emerging national contractor in May 2012. Given the delay of the EU grant, the works did not start until October 2012. The works were completed on 25 August 2013 against scheduled completion date of 20 July 2013. The contractor was charged with 35 days delay damages due to late completion.

46. MID and the contractor's community liaison officer managed to resolve an incident at the site caused by a conflict between a community group and the contractor's personnel. The contractor employed a large number of local people, including women, in the workforce. Initially the contractor experienced project management and cash flow issues, and delays in implementing safeguards obligations. These issues were subsequently resolved upon intervention of the PMCBU. Overall, the performance of the contractor was *satisfactory*.

47. In general, the performance of LBES contractors was *satisfactory*. The contractors' execution and quality of work and ownership attitude improved, compared with SIRIP due to enhanced training during pre-bid and on-the-job training and continuous monitoring during

implementation. A total of 15 national contractors were engaged on separate maintenance contracts.[11] Monthly payments to contractors were based on the supervisors' certification of quality and specifications, and payments were not made until adequate quality was achieved.

J. Performance of the Recipient and the Executing Agency

48. The recipient's performance is rated *satisfactory*. The government displayed commitment to the project and met all significant covenants. The government obtained ADB's prior concurrence for subproject selection through the agreed process demonstrating that subprojects (i) had high development priority and met the NTP objectives, (ii) were screened for safeguards impacts, (iii) were economically viable, and (iv) were subject to feasibility study including technical, economic, social and poverty assessments, initial environmental examination, and due diligence report for resettlement. The government created and sustained a corruption-free environment during implementation of the project.

49. MID played a vital role in the implementation of the project. The TIMS and/or CPIU Director spent the majority of his time providing guidance to PMCBU. The MID ensured continuous consultation and disclosure of information to affected persons through implementation of a project communication plan, and establishing a formal grievance redress committee with affected community representation. The government met gender performance targets (para. 32). MID assigned six of its engineering staff to PMCBU to gain on-the-job-training in project planning, feasibility studies, engineering designs, procurement, and contract supervision and management. The skills staff acquired improved capacity of MID to design and implement externally financed projects currently being implemented under CPIU. Considering the achievements of the project, including success of the LBES maintenance program, the performance of MID is rated *satisfactory*.

K. Performance of the Asian Development Bank and Development Partners

50. ADB carried out supervision missions twice a year. The missions were timely and appropriately staffed. ADB processed EU financing and additional cofinancing provided by Australia and New Zealand expeditiously to proceed with emergency flood recovery works. ADB successfully managed administration of several grants received at various times during implementation. With each receipt of additional cofinancing, the financing plan was amended and available funds were reallocated between project components. The midterm review mission did not identify any significant issues. Minor issues were noted: (i) the possibility that the EU funds would not be approved, (ii) modification of designs for the West Guadalcanal subproject, and (iii) the shortfall in Makira subproject financing due to contract variations. The ADB safeguards review mission of December 2011 confirmed the project as Category B for environment. The review made recommendations to strengthen the government's capacity to manage safeguards and these were addressed by MID with support of the project and the Transport Sector Development Project.[12] ADB's in-country presence through its development coordination office provided close liaison with the executing agency and its development partners. ADB performance is rated *satisfactory***.**

51. In-country representatives of Australia, New Zealand and the EU participated in all joint supervision missions and were available to provide support to MID and the PMCBU throughout implementation. Development partner performance is rated *satisfactory***.**

[11] Includes (i) nine LBES contracts, (ii) two LBES contracts terminated due to non-performance, (iii) one periodic maintenance (resealing) contract, and (iv) three emergency temporary connectivity contracts.

[12] ADB. 2010. *Report and Recommendation of the President to the Board of Directors: Proposed Grant to Solomon Islands for the Transport Sector Development Project.* Manila.

III. EVALUATION OF DESIGN AND IMPLEMENTATION

A. Relevance

52. The design of the project is considered *relevant* and did not require adjustment during the course of implementation. The project design was based on development needs as identified by the government. The project's impact and outcomes remained relevant at completion as confirmed in the government's current National Development Strategy (2011–2020).[13] This strategy is supported by the current ADB *Country Partnership Strategy* [14] and is consistent with ADB's *Strategy 2020*.[15]

53. The design of the LBES component was aligned to the available resource capacity in the country to create business opportunities for small and medium national contractors, and was appropriate for efficient and effective maintenance of transport assets in remote locations. The LBES component supported gender and development goals as it benefitted both women and men, and provided women with opportunity to acquire productive assets and improve economic empowerment in their communities.

B. Effectiveness in Achieving Outcome

54. The project is rated *effective,* having substantially achieved its planned outcomes. The improved roads remain passable for all vehicles during floods and the number of impassable days decreased to 0.2 days from 4 days per year in Makira and West Guadalcanal, and from 11 days per year in Malaita. Rural residents in Makira province have improved accessibility to the provincial capital Kira Kira, with all-weather road connectivity. The average travel speed increased from 25 km/h pre-project to 45 km/hr post-project. Average travel time to the nearest health clinic decreased to 0.3 hours compared with 1.1 hours pre-project, a 70% decrease in travel time. By mid-2012 commercial transport operators had experienced a 71% increase in trips in the subproject area compared with 2007. Accessibility and mobility for West Guadalcanal residents improved significantly, with all-weather connectivity to the capital Honiara. Travel time between Honiara and Selwyn College decreased to 1 hour compared with the 3-hour boat journey before the project. Public transport improved with nine number of buses servicing 3–4 return trips a day. The cost of transport has decreased by as much as 50%. These benefits improved people's livelihoods by increasing access and service frequency, and reducing costs to get to the market, schools, clinics and/or hospital. An ancillary benefit is that enrolment at Selwyn College increased from 470 in 2013 to 560 in 2014 (forms 1–7); with improved public transport facilities students now can travel to school every day and from longer distances. In the surrounding communities, there has been some increased market productivity.

55. In Malaita, a survey conducted following completion of the works revealed that the access to basic needs had increased as evidenced by, among other things, people having increased access to water tanks and private household water supply. The raised road platform combined with retardation walls protect the road from storm surges and provide all-weather connectivity for road users.

56. The road maintenance works using LBES methods carried out in other provinces are rated *effective*. A total of nine maintenance contractors were trained on LBES methods and a small-scale private sector contracting industry was established in Central, Isabel and Western provinces.

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[13] Government of Solomon Islands. 2010. *National Development Strategy (2011–2020)*. Honiara.
[14] ADB. 2012. *Solomon Islands: Country Partnership Strategy (2012-2016)*. Manila
[15] ADB. 2008. *Strategy 2020: Working for an Asia and Pacific Free of Poverty*. Manila.

57. The capacity of MID significantly improved with 18 staff positions, 14 of which are filled (compared with two staff at approval). The competence of the staff has increased significantly with improved capacity for planning, assessing, monitoring and reporting on road rehabilitation and maintenance contracts. The MID staff are learning to independently carry out feasibility studies, including addressing related safeguard issues.

C. Efficiency in Achieving Outcome and Outputs

58. The project is rated *efficient*. The re-evaluation of the economic analysis three months after completion of the Makira subproject revealed an increased economic internal rate of return (EIRR) of 12.30% p.a., against 11.25% at approval. The economic re-evaluation of West Guadalcanal subproject indicated post-construction EIRR of 35.3% compared with 25% at approval. A similar economic re-evaluation conducted for North Malaita subproject (for the scenario with climate change adaptation) suggests a post-construction EIRR of 18.7% against 11.9% at approval. The implementation of the subprojects was rated *efficient* although some outputs were delayed, as the causes of these delays were beyond the control of the MID, PMCBU, ADB or development partners. The detailed economic re-evaluation is in Appendix 7.

D. Preliminary Assessment of Sustainability

59. The project is considered to be *most likely sustainable.* The project outputs were all designed to standards and specifications that could be maintained using the materials and methods available in the Solomon Islands with minimum or no adverse effects to the environment. The government was able to finance incremental project costs through NTF funds. The assets rehabilitated and improved under the project, including previous investments, are sustained through regular maintenance contracts managed by MID and implemented through CPIU. The maintenance contracts are financed by the government's recurrent budget and NTF resources. Staff trained by PMCBU in supervision and monitoring of the contracts are now assigned to the CPIU. The actual efficiency and effectiveness of subprojects rehabilitated under the project will depend on continued maintenance of the improved assets.

E. Impact

60. **Land acquisition and resettlement.** The project was category B for involuntary resettlement. An area of land less than 0.02 square km was acquired for the project. In Makira, land was acquired for two bridges (in areas already used for gardens and logging) but no dwellings or buildings were affected. In West Guadalcanal, land was obtained for the approach road to Sasa high level bridge through land owner communities donating the land voluntarily. The voluntary contributions followed the required procedures including: (i) landowners and users were not forced to donate, (ii) there were no major impacts to landowners and users donating land (i.e., less than 10% of land holding and no relocation), and (iii) agreements were verified by a third party. This did not trigger ADB's *Involuntary Resettlement Policy* (1995) requirements for a resettlement plan and the process of voluntary land donation and third party validation was documented in a due diligence report that followed the project's resettlement framework.[16] The North Malaita subproject did not require additional land.

61. **Indigenous People.** The project was categorized C for indigenous people according to the ADB's *Policy on Indigenous Peoples* (1998). This was confirmed through the social assessments undertaken for subprojects, which verified that the subproject populations did not

[16] The resettlement framework was updated for the additional financing component which was subject to ADB's Safeguard Policy Statement (2009).

maintain cultural and social identities, or social, economic, cultural, and political institutions separate from the mainstream or dominant societies and cultures. Further, the beneficiary communities did not self-identify, nor were identified by others, as being part of a distinct indigenous cultural group. Within the context of the policy, the communities could not be regarded as having a social or cultural identity distinct from the mainstream society and they did not exhibit characteristics that could make them vulnerable to being disadvantaged by the project.

62. **Environment.** The project was category B for environment. As envisaged at approval, the project did not create any significant adverse environmental impacts that could not be mitigated or managed. The feasibility studies prepared for each subproject included an initial environmental examination (IEE) and environmental management plan (EMP). In accordance with ADB's *Environment Policy* (2002)—and the updated Safeguard *Policy Statement* (2009) for the additional financing component—feasibility studies confirmed that the subprojects were category B for environment, because of the site-specific, low adverse risks and because the majority of the impacts could be mitigated and/or managed through implementation of the EMP. The government approved, and ADB endorsed, the IEE for each subproject. The PMCBU worked with the contractors to prepare the construction EMPs to ensure that construction of each subproject complied with IEEs and conditions of development consent. The contractors' compliance with the construction EMPs was monitored and reported through quarterly monitoring reports and semi-annual safeguards monitoring reports. The PMCBU provided capacity building to MID and Environment and Conservation Department staff so they could undertake the monitoring.

63. **Socioeconomic impact.** The project's anticipated impact was to enhance economic growth and reduce poverty as measured by an increase in jobs and income in the subproject areas. Based on surveys carried out in the three subproject areas, there are early signs of increased agricultural production and household incomes. There is clear indication of new markets for households from improved and reliable connectivity to schools, markets, hospitals, administrative and community facilities within the subproject areas. Improved connectivity helps agricultural products to be collected and stored at a central area, enabling more efficient collection by sea or land transportation, thereby increasing product demand.

64. Surveys in Makira subproject area conducted in May 2012 showed that compared with baseline surveys in December 2009, the number of households engaged in copra increased from 46% to 53% and those involved in cocoa increased from 43% to 60%. The surveys also showed that income from these products had also increased; copra increasing by 48% and cocoa increasing by 88%. Official data on copra production by province, which extends only to October 2012, showed rapid growth in Makira of 111% between 2009 and 2011 compared with national growth of 40%. The contribution of the project to incremental copra outputs seems a likely contributor but remains to be confirmed. The surveys also confirmed a switch from boat to road-based transport and more frequent trips to market and community centers.

65. The surveys conducted in June 2013 in West Guadalcanal subproject area showed that, compared with baseline surveys in December 2009, travel had improved and household incomes had increased. The average vehicle speed increased from 40 km/h to 60 km/h (a 33% reduction in travel time), the number of vehicles available to public transport services increased from 2 to 9, and the number of daily trips to Honiara increased from 5 to 18. Average annual incomes increased by 47% for daily labor, by 76% from selling agricultural products at market, by 50% for cocoa, and by 15% for copra.[17]

[17] The relatively low increase in income from copra is due to the sharp drop in market copra prices from SI$2 per kilogram to SI$0.70 per kilogram during the period.

66. In North Malaita subproject area, the main transport mode changed from walking to bicycle and vehicles for 95% of households, while all households that had previously traveled by boat changed to road transport after the project. The change in transport mode was found to be greatly affected by the all-weather and improved roads conditions. The survey also showed that since the road had been improved, 95% of households were producing and selling products at the market to earn regular income. The assessment of the project impacts and benefits of all three subprojects is in Appendix 8.

IV. OVERALL ASSESSMENT AND RECOMMENDATIONS

A. Overall Assessment

67. The project overall is considered *successful* on review of its relevance, effectiveness, efficiency, and sustainability.

B. Lessons

68. **Achieving sustainability requires a consistent and long term approach.** The sustainability of project outcomes is greatly dependent on an ongoing commitment by the government to road maintenance, rehabilitation and asset management. Significant steps have been taken to harmonize donor assistance to the transport sector in support of a sector-wide approach. The ongoing Transport Sector Development Project and its support to MID provides a predictable medium-term source of financing through NTF. CPIU already uses government systems, 'topped up' as required, for procurement and other technical and safeguard procedures, and policies for planning, implementing, and maintaining transport assets within the framework of the NTP.

69. **Sound technical and economic safeguard procedures are required to support NTP implementation**. All such procedures are essential for translation of the NTP into worthwhile and fully supported investments on the ground. Appropriate engagement and communication with stakeholders is essential to ensure these processes are fully understood as well as the reasons for particular technical decisions. A stronger country safeguards system, including guidelines on obtaining land for transport projects, is essential. ADB is assisting the government to strengthen its safeguards system in the transport sector, including developing guidelines on environment and land acquisition, and building capacity within MID, Ministry of Lands, Housing and Survey, and Ministry of Environment, Climate Change, Disaster Management and Meteorology.[18]

70. **Climate change adaptation**. The project implemented several measures to mitigate impacts from climate change. At present, these measures are effective and efficient. Continuous monitoring and maintenance of improved assets is needed to ensure sustainability of the adaptation measures.

71. **Community liaison.** Effective and efficient community liaison by experienced persons is important to resolving conflicts between the community and workforce, and between expatriate and local labor. Greater capacity will be required in MID to manage community liaison, identify affected people, and manage the process of compensation to avoid community dissatisfaction.

72. **Imprest accounts.** The project received financing from various sources at different time intervals through grant agreements 0175, 0176, 0177, 0207, 0210 and recipient's contribution

[18] TA 8271-SOL: Strengthening Country Safeguards Systems in the Transport Sector and TA 8737-SOL: Supporting Good Governance through Safeguards.

through government annual budget and the NTF. The disbursement of funds was carried out through direct payment and reimbursement procedures by maintaining three first generation and five second generation accounts. Even though PMCBU managed these accounts satisfactorily, substantial delay occurred at the end of the project due to cumbersome nature in reconciling and winding up the accounts.

C. Recommendations

73. **Future monitoring and follow-up action.** Continuation of road maintenance works commenced under the project is necessary to ensure long-term sustainability. The capacity of national contractors needs to be improved further for them to work independently and with minimum supervision. It will be vital to engage these contactors continuously in the road maintenance program to ensure capacity built under the project is retained. Monitoring of road conditions, traffic volumes, and impacts on jobs and rural household incomes is important to document the long-term economic and social impact of the project. Grant covenants require the recipient to submit annual monitoring and evaluation survey reports from 2015 to 2017.

74. **Cost overruns due to exchange rate fluctuations.** As the project included various financing sources in different currencies, available funds were vulnerable to exchange rate fluctuations. Where exchange rates are expected to be volatile, it is recommended that an additional component to the price contingency be incorporated in the project financing plan. The projected inflation rate is required to be assessed during processing of the project. The recipient can also be encouraged to undertake currency hedging to safeguard against large cost overruns due to exchange rate fluctuations.

75. **Speeding up restoration and recovery activities.** A disaster risk contingency fund may be needed to enable fast disbursement for emergency works. There should be clear rules on how the financing of the contingency fund would work and, while NTF would have a role in supporting it, funds needed for emergency works should not be at the expense of a normal, planned maintenance program.

76. **Universal accessibility and road safety.** The MID, consultants, and development partners need to ensure accessibility for people with disabilities and road safety during the design phase. Analysis should be based on local conditions and driver behavior rather than following international standards and guidelines. This can be achieved by conducting road safety audits, and assessing requirements for universal accessibility during the various project stages.

77. **Technical committee for project review.** The MID should consider forming a technical committee including road, drainage, and bridge specialists to review consultants' inputs and contractors' technical proposals rather than depending solely on consultants. This can be achieved by initially forming a committee with members from international and/or regional community and national experts that can be called upon as required to provide independent advice on, and review of, aspects of developments/projects.

78. **Continuation of the project staff**. When the project was close to its end, many of the project staff left the project for new employment. This caused delays in finalization of project closing requirements including preparation of final accounts, final audit, and the recipient's project completion report. It is necessary to consider providing financial motivation such as bonus payments and/or inducements, at least for roles such as project manager and project accountant, for them to stay until the project fully closes and facilitate smooth project completion.

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and Indicators	Data Sources and Reporting Mechanisms	Assumptions and Risks	Results at Completion
Impact Economic growth, social development, and hardship and poverty reduction	Overall: 25% increase in jobs in the project area by 2015 (Baseline: 55% employment rate) Overall: 25% increase in household income in the project area by 2015 (Baseline: average weekly household income is SI$565)	Development partners country reports Socioeconomic monitoring reports Household income and expenditure survey Monitoring and evaluation report	**Assumptions** Sufficient political stability Continued external financial and institutional support Sound management of financial resources Sufficient incentives for rural agriculture to expand in response to improved transport **Risk** Decline in commodity prices or access to international markets	To be assessed by the Ministry of Infrastructure Development (MID) in 2015 To be assessed by MID in 2015
Outcome Improved, safe, and reliable road transport services for economic and social activities	Fewer than 4 days per year of subproject roads not passable by four-wheel-drive vehicles. Baseline from Economic Reports: • 4 days for Makira • 4 days for West Guadalcanal • 11 days for north Malaita	MID road asset management system quantity and cost records Good, fair, or poor rating in quarterly road condition surveys Project baseline and periodic benefit monitoring surveys	**Assumptions** New or restored road connectivity stimulates vehicle ownership and transport services in subproject areas Vehicle operating cost savings are passed on to the public, making transport services affordable Vehicle owners respond by improving range and frequency of services MID asset management system is established successfully and maintained Maintenance arrangements are continued and expanded	Following completion of subproject works, the number of impassable days are: • Makira, 0.1 days/year • West Guadalcanal, 0.1 days/year • north Malaita, 0.2 days/year
	100% of subproject road length in fair or good condition			All subproject roads 100% maintained in good condition during subproject contracts

Design Summary	Performance Targets and Indicators	Data Sources and Reporting Mechanisms	Assumptions and Risks	Results at Completion
	25% reduction in travel time for a typical trip to markets, schools, and health facilities Baseline from Economic Reports: • 25 km/hr for Makira • 40 km/hr for West Guadalcanal • 24 km/hr for north Malaita 25% increase in public transport service availability in subproject areas Baseline average daily small and medium truck traffic from Economic Reports: • 0 for Makira • 45 for West Guadalcanal (average for 5 sites) • 28 for north Malaita		**Risks** Floods exceeding the 1-in-50 years design level are experienced in the near term, causing extensive damage The government fails to fund road and bridge maintenance or the asset management system beyond the term of the project **Assumptions** There are no interruptions from *force majeure* Villagers honor memorandums of understanding to provide land and material contributions to the subprojects PMU is staffed with qualified people Government counterpart cash contributions are made available Parallel financing of $4.3 million equivalent comes from Japan for the Guadalcanal subproject major bridges in 2011–2012 **Risks** Labor availability could be low, especially for women, on a seasonal basis National contractor personnel and equipment is not sufficient Staff turnover in PMU is high Adverse weather patterns prevail Prices of construction materials and oil could be volatile	Average speed for first 24km Makira subproject road is 45 km/hr, 45% travel time reduction Average speed for next 33km Makira subproject road is 40 km/hr, 37% travel time reduction Average speed for West Guadalcanal subproject is 60 km/hr,33% travel time reduction Average speed for north Malaita subproject road is 40 km/hr, 40% reduction in travel time Public transport on small and medium trucks: • Makira – at Kira kira in 2013 was 32 • West Guadalcanal – at Kokobona in 2013 was 93 • north Malaita – Malu'u in August 2013 was 57

Outputs 1. Improved network of national, provincial, and secondary roads	Overall: About 31 km of road rehabilitated and upgraded	Project progress and completion reports Field surveys		Makira (the project portion): 19.6 km unsealed gravel road rehabilitated with 200 mm base improvements, completed in April 2012 West Guadalcanal: 30 km unsealed gravel road rehabilitated with 200 mm base improvements and 18 km sealed with two-coat sealing, completed in October 2012 North Malaita: 14 km unsealed gravel road rehabilitated with 200–800 mm base improvement, completed in August 2013 Total: 63.6 km of road rehabilitated and upgraded
	Overall: About 45 major crossings repaired or reconstructed to adapt to climate change			Temporary Connectivity West Guadalcanal: One causeway Makira (the project portion): 11 major crossings and 29 new cross-road pipe culverts West Guadalcanal: 14 major crossings and 15 new cross-road pipe culverts North Malaita: Nine major crossings and six new cross-road pipe culverts Total: 35 major crossings and 50 new cross-road pipe culverts built to adapt to climate change
	About 2,450 m of coastal protection and about 1,000 m of sealed road constructed			North Malaita: 3,000 m coastal protection West Guadalcanal: 18,000 m sealed roads

	About 800 m of river training and retardation walls, and reshaping and realigning of river channels completed			Makira (the project portion): 200 m retardation walls West Guadalcanal: 750 m retardation walls and 250 m reshaping and realigning of river channels Total: 1200 m river training and retardation walls and reshaping and realigning of river channels
2. Sound and sustainable road maintenance policies and practices established	Rehabilitated roads maintained annually for the duration of the project	Asset management system		Labor-based and equipment-supported (LBES) contracts maintained 47 km of road in Isabel, Central, and Western Provinces annually
	Road maintenance policies established			Contributions were made to the road maintenance policies established in the National Transport Plan.
	Road maintenance training provided			Road maintenance training was provided at the start of each contract in the form of a two-week training course, and then on-the-job training provided as the contracts continued.
	Private contracting system institutionalized	Number of national contractors		As a result of the private contracting system established under SIRIP and the project, MID institutionalized the LBES contracting process by expanding the maintained road network in Guadalcanal, Isabel, Temotu, and Makira provinces.
3. Enhanced participation of communities and women in road maintenance	At least 25% of maintenance contracts with communities in the project area Baseline: Zero maintenance contracts with communities in the project area	Maintenance contracts Community contracts Number of contracts awarded		All nine LBES contracts are with contractors from local communities who subcontract out labor-intensive works to local community groups.
	At least 20% of road maintenance contractors being female, and contractors encouraged to fill at least 33% of wage jobs with women.			Of the nine LBES contracts, three, being 33%, are companies managed by women, and 40% of wage jobs are filled by women.

Activities with Milestones (at approval)	Activities with Milestones (Actual)	Inputs (at approval)	Inputs (Actual)
1.1 Rehabilitation of about 31 km of roads to fair conditions by the end of 2012	63.6 km of roads rehabilitated and upgraded by August 2013	Asian Development Bank: $15 million grant (Asian Development Fund)	Asian Development Bank: $15 million grant (Asian Development Fund)
1.2 Rehabilitation and/or reconstruction of about 45 major stream crossings by the end of 2012 to withstand natural hazards and floods.	35 major crossings and 50 new pipe culverts built to adapt to climate change by August 2013.	Government of Australia: $4.50 million grant	Government of Australia: $4.50 million grant (original) $0.25 million grant (first additional) $4.27 million grant (second additional) $2.14 million grant (third additional) Total: $11.11 million grant
1.3 About 2,450 m of coastal protection and 1,000 m sealed roads constructed by end of 2012	3,000m coastal protection and 18,000m sealed roads completed by August 2013		
1.4 About 800 m of river training and retardation walls completed by end 2012.	1,200m river training and retardation walls completed by August 2013	European Union: $3.34 million grant	European Union: $3.34 million grant
2			
2.1 Annual maintenance of rehabilitated roads throughout the Project.	Annually maintained 47km of roads in Isabel, Central, and Western Provinces during project period	Government of New Zealand: Nil	Government of New Zealand $0.35 million grant
2.2 Community participation in contract procedures fully integrated in MID procedures by the end of 2011	Contributions were made to the road maintenance policies established in the National Transport Plan	Government of Solomon Islands: $1.16 million	Government of Solomon Islands: $1.16 million (original) $3 million National Transport Fund
3			
3.1 International and national consultants in engineering design, project management, construction supervision, road maintenance training and supervision, and socioeconomic impact monitoring hired by October 2009.	Design and Supervision consultant recruited in 2010		
4 Training provided by PMU, representing an average of 40% of consultant inputs.	Over 40% of consultant input were utilized for training of government staff and domestic contractors		

Source: Asian Development Bank.

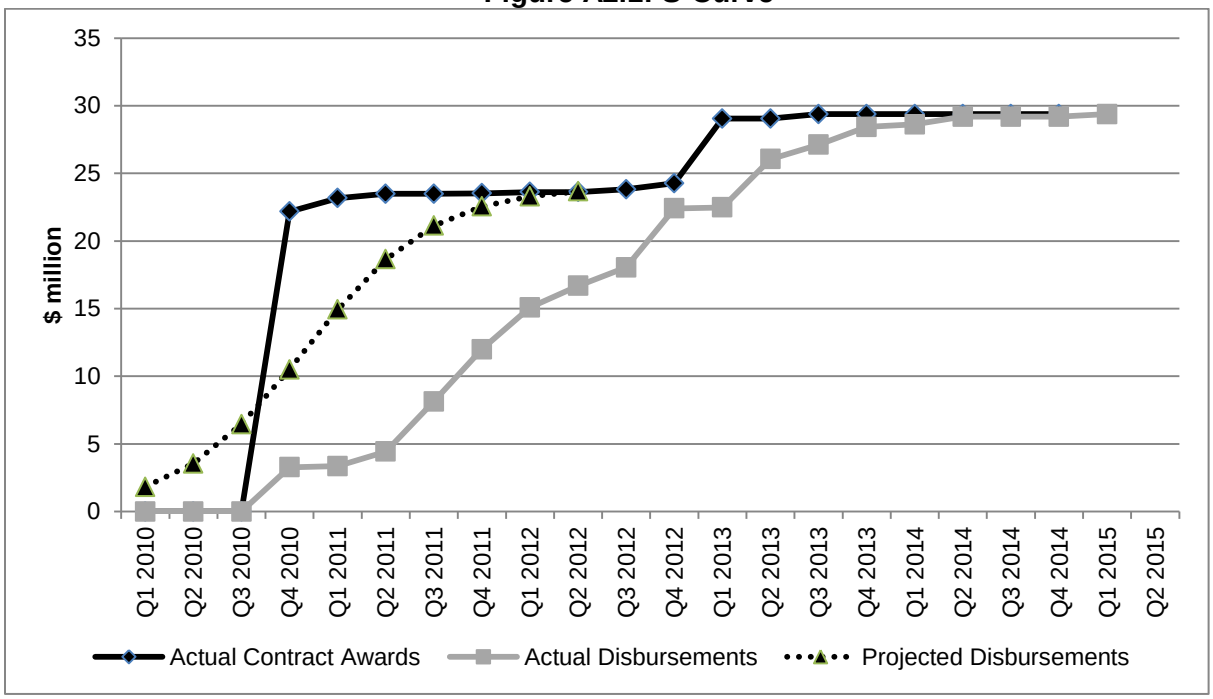
PROJECTED AND ACTUAL DISBURSEMENTS

Table A2.1: Total Disbursements
(Actual Cumulative, $ million)

Grant	2010	2011	2012	2013	2014	2015
0175	2.0747	8.2237	14.1203	14.9198	15.0000	15.0000
0176	0.0000	0.0000	0.0000	2.3942	2.9942	3.1041
0177	0.8958	3.2294	7.4730	8.5520	8.6875	8.7043
0207	0.1500	0.3072	0.3072	0.3286	0.3183	0.3273
0210	0.1500	0.2361	0.5153	2.2334	2.1908	2.2474
Total	3.2705	11.9964	22.4158	28.428	29.1908	29.3831

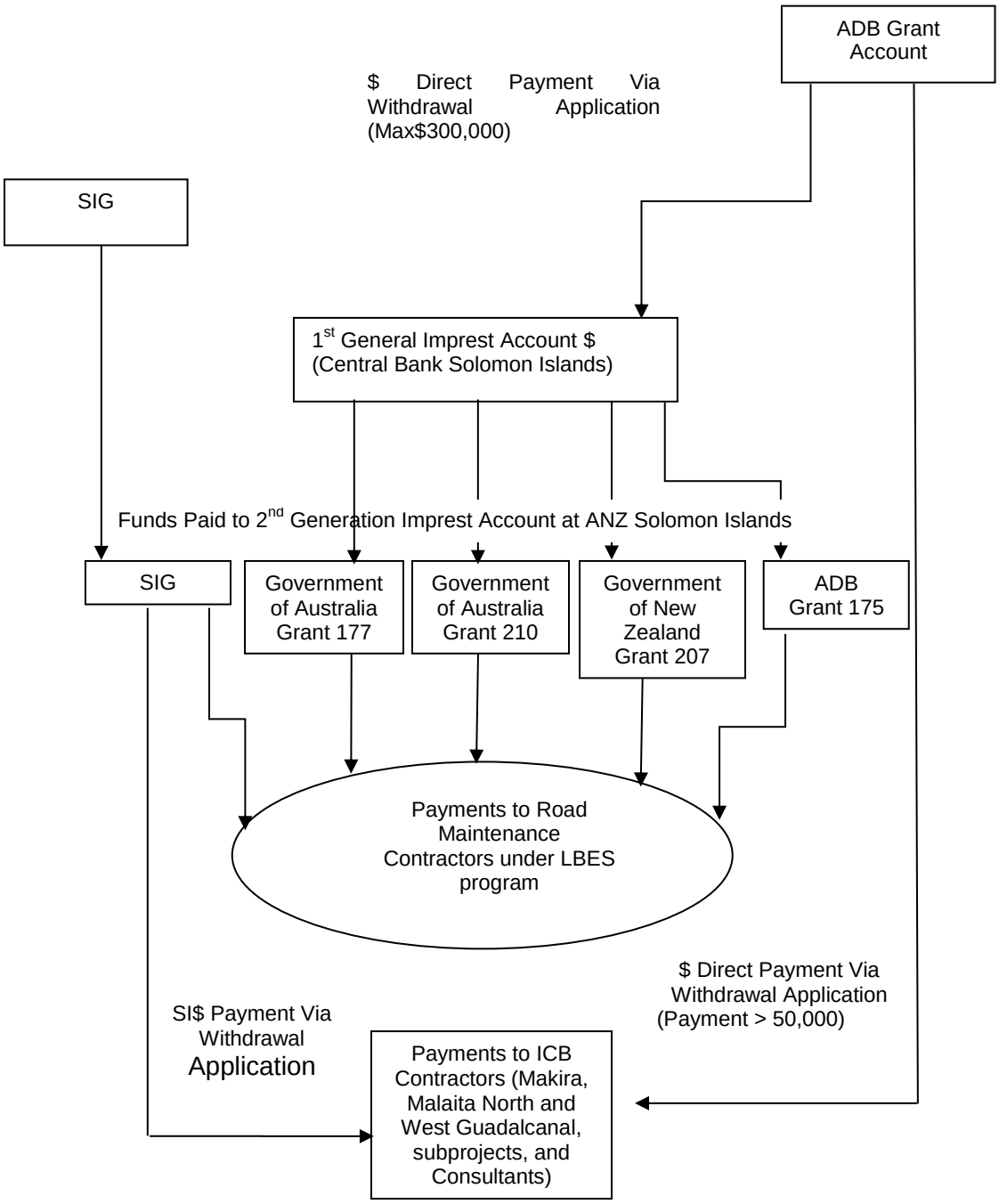
Source: Asian Development Bank.

Figure A2.1: S-Curve



Source: Asian Development Bank.

Figure A2.1: Financial Procedure Diagram



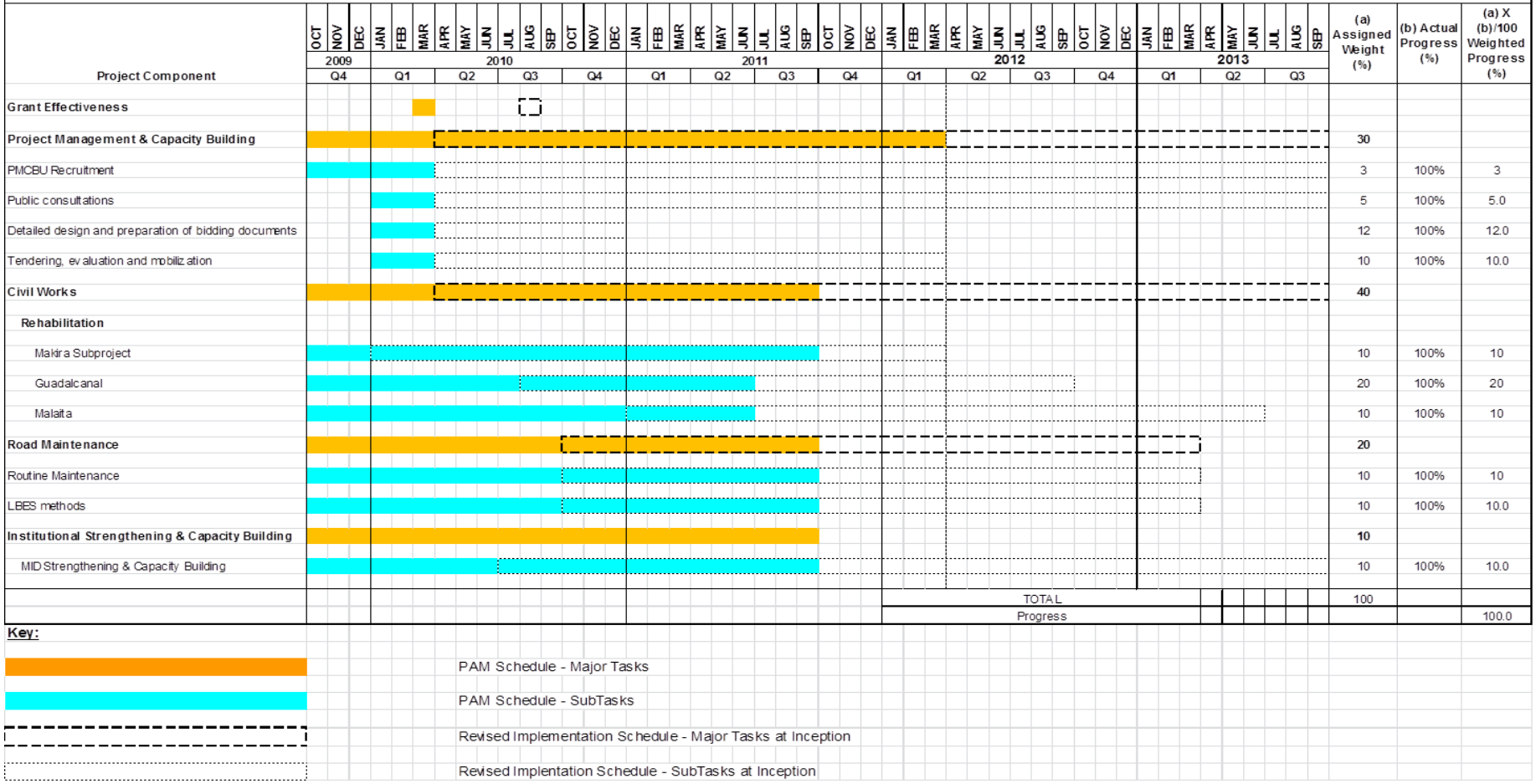
Notes:

1. Government of Australia, Government of New Zealand, and EU grant money processed through ADB Grant Account.
2. Second generation imprest account not set up for EU funds as EU funds are not used for maintenance contracts.

ADB=Asian Development Bank, EU=European Union, SIG=Solomon Islands Government, ANZ=Australia and New Zealand Bank, LBES=labor- based and equipment-supported, ICB=international competitive bidding.
Source: Ministry of Infrastructure Development.

PROJECT SCHEDULE

SIRIP 2: IMPLEMENTATION SCHEDULE



Source: Ministry of Infrastructure Development.

GENDER AWARENESS AND POVERTY IMPACTS

I. INTRODUCTION

1. The Government of Solomon Islands is committed to ending discrimination and violence against women. The Convention on the Elimination of All Forms of Discrimination Against Women was ratified by the Solomon Islands in 2002 and the government has also established a National Policy on Eliminating Violence Against Women. The Solomon Islands Ministry of Women, Youth and Children Affairs has developed a National Policy and Action Plan on Gender Based Violence in consultation with other ministries. The action plan was approved by the Solomon Islands Cabinet on 11 November 2009.

2. The National Policy on Gender Equality and Women's Development 2010–2015 seeks to advance gender equality and enhance women's development, ensuring the active contribution and participation of Solomon Islands' women and men in all spheres and at all levels of decision making. The goal of this policy aligns with the Medium Term Development Strategy 2008–2010, which recognizes that women's development will help address the basic needs of people in rural communities and ensure real improvement in people's standard of living. These policies and action plans help guide future work to end violence against women in the Solomon Islands and also provide leadership on these issues across the country.

II. METHODOLOGY USED TO ADDRESS GENDER ISSUES

A. At Planning Stage

3. During the pre-feasibility data collection in 2009, women were included in all participatory activities including key informant interviews, focus group discussions, and as respondents in the household survey.

4. Gender issues, such as ensuring equal share of benefits, emerged from the data collection interviews in subproject areas. The project also sought to identify how the outcomes and outputs could contribute to achieving the gender-based parameters in the Millennium Development Goals (MDGs). There were a number of small civil society and non-government organizations (NGOs) active in the provinces, but very little, if anything, was on gender. This led to the statement by the Ministry of Women, Youth & Children's Affair that Solomon Islands was unlikely to attain its MDGs by 2015.[21] The MDGs that include gender-based parameters are shown in Table A4.1.

Table A4.1: Gender Related MDGs

MDG	Status
Goal 3: Promote gender equality and empower women	The gender gap remains noticeable in education and literacy rates but has decreased. The gender gap in primary enrolment rates in 1998 was 3%, in secondary enrolment 12%, and in adult literacy 15%. The share of women in total employment is relatively high at 48%, but women's participation in the workforce is limited to menial tasks and few women penetrate the upper ranks of civil service. Women are particularly hard hit by rising unemployment.
Goal 5: Improve maternal health	Available data suggests that the maternal mortality rate has doubled between 1995 and 1999, while the proportion of births attended by skilled health personnel had decreased to 85% in 1999. The government has also been unable to pay doctors and other health workers regularly, causing general demotivation and even abandonment of posts.

Source: Asian Development Bank.

[21] Government of Solomon Islands. 2009. *Solomon Island Family Health and Safety Study*. Honiara.

B. At Feasibility Studies Stage

5. Feasibility studies, including poverty and social assessments (PSA), were prepared for candidate road sections and were carried out after the pre-feasibility studies. The PSAs produced in 2007 and 2008 were revised based on comments from MID, ADB and other development partners, with a number of comments concerning gender issues. These comments were addressed and gender assessments were included as an important part of the PSA.

6. The feasibility studies were based on comprehensive consultation, including focus groups, individual household surveys, and key informant questionnaires (transport owners, cocoa and copra buyers, small business operators including shop owners, and boat and truck operators). The facilitators undertaking the consultations were trained to encourage attendance and participation of women in the focus groups discussions. The facilitators also sought a balance of youth and children representatives at the discussions. Following national customs, men took the lead roles in the focus group discussions and community meetings and even in clan groups and areas that had a matrilineal social system. In the discussions, the facilitators ensured that women had adequate time to comment on any issues or problems they had concerning the accessibility to health, social, and education facilities and economic opportunities, as well as their views on the access improvements being proposed under the project, and how they could participate in the implementation and future maintenance.

7. For the individual household surveys, the enumerators ensured that equal numbers of males and females responded in each village. Also for the household surveys, whenever possible, the head of the household and their spouses were encouraged to participate; often the husbands answered the closed questions and referred the open ended questions to their wives for answering.

8. In Guadalcanal, Malaita and Makira, the project also conducted separate group meetings for women and men as, due to cultural values, some topics were not allowed to be discussed in the joint presence of men and women. This also gave opportunity for women to speak out on issues which they normally were afraid to do in the presence of men, village and community chiefs, and elders.

C. At Implementation Stage

9. The gender assessments and consultations included in the PSAs helped identify a number of measures that needed addressing during implementation. These were incorporated into the EMP or Social Development Plan, and included mitigations of risks and impacts such as spread of STIs and HIV, and the need to pay special attention to how women could become beneficiaries of the project. As a result, the project implemented a Gender Awareness Program (GAP), which included ongoing consultations (including workshops and training), implementation of a range of gender-specific mitigating measures (translated into two separate sections of the bid documents), and participation in maintenance contracts using LBES methods and monitoring . The various components of the GAP were implemented by different agencies including approved service providers (ASPs) for the STI and HIV awareness and prevention program, and civil society (CSO) and non-governmental organizations (NGO), to provide training, advice, guidance, and support on gender issues.

D. Gender Awareness Program and Training

10. Awareness programs were conducted by ASPs, CSOs, and NGOs who were engaged under the current project to carry out the GAPs. They included Save the Children, Government of Australia, Oxfam, Global Youth & Leadership Nexus, World Vision, and ASPs from the Provincial Health Authority. The highlight of the GAP was the promotion of equal opportunities for women and men as participants and beneficiaries of the project. The GAP also raised community awareness on:

- gender inequalities and attributing attitudes and behaviors,
- violence and abuse to women,
- women's role as decision makers in family, community, and society,
- women's rights,
- code of practice towards women and girls, and
- HIV/AIDS for workers and communities, and activities promoting access to health services, treatment, and counseling.

11. ASPs, CSOs and NGOs also engaged women and men together in development processes that promoted gender quality and empowerment throughout the development cycle.

1. Project Management

12. Female and male membership of the PMCBU was balanced. There were 9 female (Table A4.2), and 22 male full-time members between 2009 and 2013.

Table A4.2: Full-Time Female Staff in PMCBU for the Project

Name	Position
Jane Poloso	Accountant and Administration
Sikandra Kingkala	Assistant Accountant and Administration
Emmalyn Maelagi	Works Supervisor
Julie Surahao	Administration Support
Nelly Kalisago	Administration Support
Beretia Andrews	HIV Specialist
Wendy Mark Lamani	Environmental and Social Officer
Jaysie Boape Saeky	Environmental and Social Officer
Salome Pita	Environmental and Social Officer

Source: Ministry of Infrastructure Development.

2. Women's Participation in Road Maintenance under LBES Programs

13. Initial community consultations included general education awareness of the project; signing of memorandum of understanding (MOUs) with communities for access to material sources, etc.; pre-construction awareness of HIV/STDs; women and child protection; road safety; environmental, social and community development issues; and the interest and willingness to participate in LBES activities during construction and maintenance.

14. MID had established a 'community-based' maintenance model in the past, but this model was focused on piece work—mainly limited to grass cutting—rather than the full range of recurrent maintenance activities. SIRIP designed a model of LBES activities for small construction maintenance contracts for roads and bridges and this model was used for the project.

15. The project carried out a program of community awareness prior to advertising the Expression of Interest (EOI) on LBES methods of maintenance in the national papers. At the awareness sessions, facilitators encouraged females to participate in the discussions, and emphasized that females were required to be included in the EOI application. After the session, facilitators gave out the EOI forms to the interested groups, and encouraged women's groups to submit EOI forms. For the male groups, facilitators insisted that they include females in their EOI forms. Those groups that submitted the EOI forms were shortlisted and selected groups were invited to attend two weeks of LBES workshop training. Only the groups that attended the training were invited to submit bids for the road maintenance contracts using LBES methods.

16. The project included 15 routine maintenance contracts using LBES methods in the provinces of Guadalcanal (4), Central (2), Isabel (3), Renbel (2), and Western (4). Both contracts from Renbel province were subsequently terminated due to failure to perform the contract activities by the contractors. Women were encouraged to be involved in the LBES work program in two ways: (i) owning and operating, or being part of the operation of a small contracting business; and (ii) participating as laborers, either as part of a community group or engaged as subcontractors by main contractors.

17. Prior to inviting bids, PMCBU advised on the nature of the upcoming works, the process of registering as a small contractor or community group, and the training that would be provided to support newly-established contractors. In each of the four provinces, MID and PMCBU provided a two-week pre-bid training course for all the candidate contractors. The training focused on the requirements of bid documents and bid processes, bid pricing, bill of quantities, submitting an expression of interest, and the obligations of being a contractor. On completion of the training course, candidate contractors received a certificate.

18. In order to encourage women to participate in, and take advantage of opportunities being provided through the LBES work program, the project gave a higher weight to contractors that (i) included a female as one of the three co-signatories in the company register; (ii) included a woman in the pre-bid training and proof of this through the woman being identified on the completion certificate; and (iii) included a woman as co-signatory on the business bank account. The latter two requirements were to ensure that women would be actively involved in the management and financial aspects of the business rather than being a co-signatory in namesake for company registration purposes only.

19. Small and medium contractors operated in one of the two ways: (i) employed a few persons directly, e.g. supervisors and skilled workers and some permanent labor, and engaged community members for labor-intensive work; or (ii) directly engaged a subcontractor through community groups. The contractors used labor from adjacent villages for most of the works. Labor was provided by women and men, but there was a division of labor in terms of the types of activities men and women preferred or could do. Women preferred to be employed for grass cutting, weaving gabion baskets, and vegetation clearing, while men preferred to be employed for de-silting drains, excavating and laying cross culverts, and pothole patching.

3. Capacity Building and Gender Specific Training

20. Training was a key activity of the capacity development provided by PMCBU. This included capacity building and institutional strengthening of the staff of MID and Department of Environment and Conservation, along with community awareness and capacity building through initiatives implemented under the project.

21. Two female national consultants in PMCBU received gender awareness training conducted by the Government of Australia, and poverty, social and gender impact assessment training conducted by PMCBU. PMCBU also provided training for all national contractors, on contracting systems, procedures, and processes. Training on gender issues included focus on gender equity and equal gender participation, and helping the community to understand the gender impact and benefits of the project. Under Makira, Malaita, and Guadalcanal subprojects, contractors trained both male and female unskilled laborers to do skilled works, such as assembling gabion baskets, and installing and filling gabions baskets at the worksites. The PMCBU provided training to national contractors, including their supervisors and workers, in drainage slopes, road pavement cross falls, and properties of pavement materials.

III. OUTCOMES AND LESSONS LEARNED

22. Informal activities, primarily domestic food preparation and handicrafts, are an important source of income for women. A survey of women traders reported in United Nation Development Program (UNDP)'s Common Country Assessment, suggested that two-thirds are self-employed and that the small business is the sole income for half the female traders. The breakdown of activities shows that 38% are engaged in gardens, 21% in food preparation, 15% in craft, and 11% in textile production. The women traders are not well educated; 20% had no formal education, half had a primary level education only, and a quarter was illiterate.

23. Women's participation in LBES road maintenance was one of the main gender impacts of the project. Women were provided equal opportunities to acquire skills in road maintenance works, which they could then apply to community level infrastructure. Regular involvement in economic activities and engaging with others on a daily basis exposed women to public life and, as a result, increased their confidence in improving their own community. Participation of women in LBES activities provided them with an income through employment in road maintenance. In addition, the contractors for Makira, West Guadalcanal and Malaita North subprojects provided women with employment, such as weaving gabion baskets, collecting stones for the gabion baskets, and clearing overgrown grasses away from the roadsides. The women used the cash they earned to acquire productive assets, thus contributing to their economic empowerment. The improved earning capacity of women under LBES maintenance as well as subprojects gave women opportunities to improve their household welfare, and reduce poverty levels. Overall, the communities benefited from the increased purchasing power of workers as the government integrated LBES activities in maintaining all the rural road networks in Solomon Islands.

24. Despite being able to participate in LBES activities, women were still disadvantaged. After undertaking their LBES activities, the women then continued doing household chores and other unpaid work. They experienced even more fragmented use of their time and had less time for leisure and rest. In some cases, women were discouraged to undertake the LBES activities as their husbands thought that it was not culturally suitable for them. In some isolated cases, women wearing trousers when carrying out LBES activities triggered objections from men claiming it is against their custom and culture. This led to domestic arguments and potential violence against women. Apart from the above, women were still able to benefit through the sale of food to other workers on the roadside, and using that income for improving their livelihood.

25. The project addressed promoting women's participation in civil works contracts by including incentives to motivate contractors to employ women. Measures undertaken by the project to maximize benefits for women and to remove constraints on the participation of women included:

- potential gender-bias within the local procurement processes was removed;
- women had to be part of the pre-contract bidding; pre-qualifying contractors that included women and/ or awarding extra points according to the proportion of women;
- contractors were required to ensure that at least a third of the labor force were women. Women were invited to sign up for construction and maintenance activities rather than recruiting only those who showed interest; and
- contractors had to recruit new workforce at regular intervals to spread work opportunities and ensure that women were not discouraged by excessive distances to the workplace.

26. The experience provided by the project shows that women do avail themselves of the opportunities to participate in LBES work programs both as laborers, and as small contractors. Future projects will build on this foundation by providing support to women who would like to establish 'women's road groups' in their village. In future LBES training programs, MID can also include additional life-skill and micro-business training modules available for women that wish to operate businesses in their own right or in partnership with men. The main gender impacts of the project can be summarized as:

- reduced the risk of spread of HIV and STIs and its impact on women and men;
- encouraged greater female participation in LBES construction and maintenance;
- increased the gender impact of LBES road construction methods and maintenance; and
- increased the role of women as contractors in the implementation of a gender-equitable LBES road maintenance program.

27. There are significant benefits to be gained from gender equitable involvement in LBES approaches to road construction and maintenance. In addition to improving access, which will also have longer-term gender benefits, the education and health status of women are also improved. In addition, all communities now have better access to health care services, especially during emergencies.

IV. MONITORING AND EVALUATION

28. Monitoring and Evaluation of the Gender Awareness Program (GAP) developed under the project was undertaken in two phases: (a) initial monitoring and (b) follow-up monitoring.

A. Initial Monitoring

29. A checklist was prepared and used to monitor the contractors' compliance with their GAP. The checklist covered all the aspects of how the gender awareness would be delivered to the communities in the specific subproject areas. This ensured that the contractor had:

- identified an ASP;
- the ASP delivered the program to the communities and provided a report to the contractor on the awareness feedback (in Makira, Malaita, and Guadalcanal, the program was delivered to the communities along the subproject areas by the local health authority as it carried out the HIV/AIDS awareness);
- established a code of practice (COP) towards females in accordance with the GAP and contractor's gender plan; and
- included GAP in the induction courses for workers.

B. Follow-up Monitoring

35. Follow-up monitoring was undertaken every two months with the first visit two months after the initial monitoring. Gender awareness was monitored using the social interaction checklist. This checklist covered monitoring contractors with respect to:

- compliance with the COP and GAP towards women. This included how workers should behave towards women and if there was evidence of encouraging male workers to adhere to the COP by making sure the surrounding communities were happy with the behavior of workers. The complaint register recorded all behaviors and compliance matters. The register was checked against the contractors' records to ensure workers not complying with COP and GAP had been disciplined or terminated;
- evidence that posters and pamphlets relating to gender awareness had been distributed to the communities and workers, and were displayed at work sites and within the contractors' camp sites and communities that had received awareness training. However, in almost all local communities, posters and pamphlets were removed or vandalized;
- ensuring that women remained part of the stakeholders committee meetings; and
- verifying that women made up the required percentage of the workforce. However, in the monitoring visits, the PMCBU found that in some local communities, women were not encouraged to work alongside men and/or to do the same tasks as men in the construction workforce. Also, women were not allowed to wear trousers and there were some cultural norms that interfered with women who wanted to work. This was mainly in Makira where MacDow experienced some serious problems with recruiting women for their workforce whereas, in contrast, women actively participated in LBES activities in other provinces. A survey carried out by PMCBU in Makira, Malaita, and Guadalcanal provinces showed evidence that women wanted to work.

36. Most of the information needed to monitor gender awareness was taken from the contractors monthly reports, PMCBU's gender awareness reports, monitoring and evaluation reports, and the approved service provider's reports. The main topics of the GAP delivered by the contractor to the workers and the local communities along the subproject areas were:

- understanding of the definition of gender,
- developing and implementing a code of practice towards women,
- understanding and implementing equal rights for both women and men by promoting women's rights and eliminating inequality and discrimination,
- promoting women's rights to equal access to work,
- ensuring that contractors employed both men and a certain proportion of women in their workforce,
- ensuring women actively participated in information exchange and decision making, and women were part of the stakeholder committee, and
- promoting elimination of domestic violence against women.

V. GENDER DISAGGREGATED EMPLOYMENT AND INCOME

37. It was difficult to obtain data for actual person-days of employment generated as the numbers of workers and hours of work were beyond the control of the contractors. Initially, attempts were made to work with supervisors and contractors to pilot a process for collecting such data. In June 2010, some early data were collected and cross validated, which highlighted

several inconsistencies in the data collected. Further data collection methodologies were initiated with the assistance of PMCBU. This data revealed that, on average, contracts under LBES program generated about 17 person-days of employment per kilometer of road per month, with females accounting for about 40% of this. The contracts under LBES program generated an income to the value of SI$880 per kilometer of road per month. This methodology has been used to calculate income and employment generation under contracts using LBES methods. The employment income by women under rehabilitation subproject contracts was calculated through timesheet and daily attendance.

38. Obtaining correct information on wage rates from the contractors using LBES methods was difficult due to the type of community engagement for the works. It is known that often monies earned by community groups were utilized for community projects ranging from providing roof for a church to fares for a cultural group to travel to other provinces or overseas. Using the methodology discussed above, a breakdown by contract on employment and income by gender is summarized in Table A4.3.

Table A4.3: Estimated Employment and Income Generation by Contract

Contractor Name	Road Length (km)	Contract Duration (months)	Employment Person-Days		Income SI$	
			Total	Female	Total	Female
Glose Ukru	6.7	28	3199	1280	$ 183,322	$ 73,329
Kaolo Sunset	6.8	28	3589	1436	$ 185,777	$ 74,311
Kolomola Community	4.3	28	2266	906	$ 117,304	$ 46,922
Total Isabel	**17.8**		**9,054**	**3,622**	**$ 486,402**	**$ 194,562**
TC Company	5.0	15	1275	510	$ 136,400	$ 54,560
Tuhamoana Company	4.7	15	1199	480	$ 128,216	$ 51,286
Total Renbel	**9.7**		**2474**	**990**	**$ 264,616**	**$ 105,846**
Central Developers	3.8	31	1992	797	$ 103,118	$ 41,247
Minto Entreprises Ltd	3.7	28	1966	786	$ 101,754	$ 40,702
Total Central	**7.5**		**3958**	**1583**	**$ 204,873**	**$ 81,949**
Itorato Construction	6.0	24	2448	979	$ 126,720	$ 50,688
Hakaroa Construction	6.8	24	2774	1110	$ 143,616	$ 57,446
Triple KD	4.3	24	1754	702	$ 90,816	$ 36,326
Sunset Roadworks	5.0	14	1190	476	$ 105,600	$ 42,240
Total Western	**22.1**		**8166**	**3267**	**$ 466,752**	**$ 186,700**
Total Project	**47.4**		**21,178**	**8,472**	**1,158,027**	**463,211**

Source: Ministry of Infrastructure Development.

39. Employment details of the community groups derived from TableA4.3 are as follows;

No. of person-days/month/km	=	17
% women	=	40
$/month/km	=	880
Months worked in Isabel province	=	28

Months worked in Central province	=	31
Months worked in Western province	=	24
Months worked in Renbel province	=	15

VI. CONCLUSIONS

40. The project had neither a gender mainstreaming nor a specific gender action plan to be implemented, nor promotion of equal participation and benefits for women articulated as a specific objective. However, the PMCBU did strive to enhance women's participation in different aspects of design and implementation as explained below. The benefits of the project to women were anticipated in the PSA prepared for each subproject, translated into monitoring indicators, and included in overall project performance monitoring.

41. During the feasibility study, consultations were undertaken with small groups of men and women separately and then together. PMCBU also carried out key informant interviews with Women's Affairs in Honiara. Equality of decision-making was also encouraged through project policy to require both male and female directors (with signing rights to bank/cheque accounts, etc.) as part of the LBES and community contracting scheme to try to avoid benefits being captured by men and inclusion of women in name only (para 25). The initial PSA prepared for subprojects included a gender assessment, which included gender impacts and benefits that were translated into requirements and measures in the social development plan and/or EMPs. The initial PSAs included a gender strategy to maximize impact for women. Social impacts were monitored regularly. The income for women through subproject activities was recorded as part of monthly monitoring and evaluation, and updated every quarter.

42. The potential risks and impacts of the project were identified in the initial PSA of each subproject. In addition to the disaggregation of general data, the initial PSA contained a gender assessment that identified baseline conditions, gender benefits, and specific risks/impacts and proposals to mitigate those risks. The risk mitigation measures were incorporated into the social development plan or environmental management plan and included in bidding documents so they could be properly implemented, managed, and monitored by PMCBU.

43. Based on the outputs and outcomes of the project (as monitored and discussed during ADB review missions), the subsequent Transport Sector Development Project has been designed with effective gender mainstreaming and a gender action plan with required capacity building for MID staff. In 2009 the Government of Australia undertook an internal gender stock-take review of various projects and advised that the project was rated highly in terms of gender mainstreaming. The PMCBU went to some lengths to get contractors (especially community LBES contractors) to disaggregate employment data so participation of women could be monitored and reported through progress reports.

44. Although the project introduced gender into civil works contracts, not all village people have heard about the concept and their understanding of gender is limited. Some men think that this is a new system to get the women to be the head of the household or a company. This goes against their cultural norms even in the matrilineal system and has prompted arguments between husbands and wives. Lessons learned during pre-awareness sessions suggested that having the women and men work together in road maintenance contracts resulted in arguments among participants.Thus, early awareness to the subproject sites by professionals (approved service providers) and proper introduction to the communities is vital.

45. The subproject contractors, McConnell Dowell, Kitano, and Dalgro, have performed a satisfactory job handling and incorporating gender dimensions—not a core activity—into various aspects of construction. They had the gender awareness program carried out alongside the STI and HIV awareness program and it worked well. The contractors designed their own awareness report form to be filled out. The contractors also kept records of feedback from the awareness sessions, especially the responses from the communities. These records were then reviewed during the monitoring visits. For the road maintenance contracts using LBES methods, the PMCBU carried out the gender awareness programs.

STATUS OF COMPLIANCE WITH GRANT COVENANTS

	Covenant and Reference	Reference in Grant Agreement	Status of Compliance
	I. Project Covenant		
	1. Executing Agency		
1	The Ministry of Infrastructure and Development, as the Project Executing Agency, shall be responsible for overall execution and coordination of the Project.	Schedule 4, para 1	Complied with.
	2. Project Implementation		
2	The current PSC shall be responsible for guiding and monitoring all aspects of Project implementation, including: (i) policy and coordination, (ii) Subproject feasibility study and selection, (iii) Project progress reports and other Project documentation, (iv) annual reports on road maintenance budgets and activities, and (v) Submission of audited accounts and financial statements.	Schedule 4, para 2	Clauses (i)–(iv) complied and (v) partially complied. The audited accounts and financial statements were submitted up to 2012. The auditing of the project accounts up to closure of the project ending 31 December 2013 is yet to be submitted and is ongoing by the government due to (i) delay in reconciling and closing of three first generation imprest accounts and five second generation imprest accounts of the project, (ii) limited availability of the project accountant after demobilization of the PMCBU staff by 31 December 2013 for reconciliation of project accounts and closing of the imprest accounts.
3	A PMU will be established in MID to coordinate and implement the Project. The Permanent Secretary of MID will be responsible for overall management of the Project. The Permanent Secretary will assign a project coordinator to act as a liaison between the Permanent Secretary and the PMU in Project implementation. A professionally qualified civil engineer will oversee the PMU and be responsible for Project management and day-to-day implementation of Project activities, supported by technical and financial specialists, including administrative and accounting staff.	Schedule 4, para 3	Complied with. The PMU was established under SIRIP 1 and continued for the project.
4	The PMU shall (i) conduct Subproject feasibility studies, (ii) manage the bidding process, (iii) manage contracts, (iv) prepare withdrawal applications, (v) prepare Project reports, (vi) maintain separate Project accounts and financial records, (vii) monitor the Project's socioeconomic impacts, (viii) train MID staff and build their Project implementation capacity, and (ix) complete related Project management activities necessary to implement the Project and comply with ADB policies and guidelines.	Schedule 4, para 4	Complied with. Feasibility studies for north Malaita. Bidding process for West Guadalcanal, north Malaita and all maintenance contracts. Managing contracts for part of Makira, West Guadalcanal, north Malaita and all maintenance contracts.
	II. Project Covenant		
	1. Subproject Selection		
5	Prior to the detailed design of any proposed Subproject, the Recipient shall have obtained ADB's prior concurrence on the inclusion of such Subproject for financing under the Grant, based on the approval and selection criteria as described in this Schedule.	Schedule 4, para 5	Complied with. All rehabilitation subprojects and LBES maintenance contracts identified under the

	Covenant and Reference	Reference in Grant Agreement	Status of Compliance
	Subprojects shall meet the following general eligibility criteria: (i) Each proposed Subproject shall upgrade or rehabilitate roads of high development priority, assessed from their contribution to the objectives of the Medium Term Development Strategy and the National Transport Plan, including in particular: (a) improved accessibility to social services among poor and rural households, including schools, health facilities, and government extension services; (b) increased opportunities for employment and income generation among poor and rural households; (c) potential for increased private sector participation in provincial and national economic activities; (d) potential to catalyze development in remote areas with poor access; and (e) contribution to poverty reduction among poor and rural households. (ii) Each proposed Subproject shall be located within the Project area, shall not have significant adverse environmental impact, and shall not require land acquisition or resettlement. (iii) Each proposed Subproject shall have been endorsed by the Recipient through its inclusion and prioritization in the National Transport Plan.		NTP.
6	Environmental screening shall be conducted for all proposed Subprojects. No subproject classified as Category A in accordance with ADB's Environmental Assessment Guidelines (2003) will be eligible for funding as a Subproject. No Subproject will be eligible for funding if any of the following criteria are present: (i) roads in or adjacent to the proposed Subproject area are classified as ecologically sensitive; (ii) it requires major re-alignment of the existing road; (iii) there will be a significant loss of natural/primary forest; (iv) there will be significant loss or damage to near-shore marine environments, such as reefs, mangroves or other sensitive coastal areas; (v) there will be a permanent negative effect on a known rare or endangered species; or (vi) there will be permanent damage to irreplaceable cultural relics or archeological sites.	Schedule 4, para 6	Complied with. Required environmental screening conducted and clearance obtained for all subprojects.
7	Each proposed Subproject shall be economically viable and shall have demonstrated an economic internal rate of return acceptable to ADB. An economic analysis shall have been conducted in accordance with ADB's Guidelines for the Economic Analysis of Projects. In addition to the standard parameters of road sector analysis (including traffic forecasts based on forecast economic growth and income elasticity of travel demand in the Project area, and use of appropriate shadow pricing and conversion factors for economic benefits), the proposed Subproject shall have been assessed on quantitative grounds for its contribution to: (i) potential for increased agricultural production due to lower freight costs and more reliable access; (ii) employment of local communities and contractors for maintenance and small scale works; and (iii) increased incomes, particularly among poor and rural households.	Schedule 4, para 7	Complied with. The EIRR for all three rehabilitation subprojects exceed the minimum requirement of 12%.
8	Each Subproject assessment shall include: (i) a technical feasibility assessment; (ii) an economic impact analysis; (iii) a social and poverty analysis; (iv) an IEE; and (v) an IEE and environmental management plan in accordance with acceptable environmental assessment and review procedure processes.	Schedule 4, para 8	Complied with. All rehabilitation subprojects are subject to items (i) to (v).
	2. Financing of Road Network Maintenance		
9	The Recipient shall allocate, and make available on a timely basis, sufficient funds for the rehabilitation and maintenance of the Project facilities.	Schedule 4, para 9	Complied with. The Government of Solomon Islands initially provided $1.16 million equivalent as counterpart financing and subsequently increased to $4.16 million equivalent. Funds were

	Covenant and Reference	Reference in Grant Agreement	Status of Compliance
			available when required for contractor payments.
	3. Land Acquisition and Resettlement		
10	All proposed Subprojects will be screened for land acquisition or resettlement impacts and no Subproject shall be approved if it requires involuntary resettlement under ADB's Involuntary Resettlement Policy (1995).	Schedule 4, para 10	Complied with. No land acquisition and no resettlement were required.
11	The Recipient shall ensure that no land acquisition and resettlement is required for the Project and that all Project facilities remain within existing rights-of-way. In the event of any unforeseen land acquisition or resettlement needs, the Recipient shall inform ADB and prepare a Resettlement Plan according to relevant laws and regulations; ADB's Involuntary Resettlement Policy (1995); and the Resettlement Framework. The PMU shall ensure that no Project/Subproject Works commence until ADB has reviewed and approved any such Resettlement Plan.	Schedule 4, para. 11	Complied with. Bridge deviations at three locations were kept to the minimum. No resettlement plan was required. Land was obtained through voluntary contributions and followed the required procedures and the signing of an MOU, which were witnessed by a third party. Other bridges remained within existing right-of-way.
12	The Recipient shall ensure that consultation and disclosure shall be implemented during the Project through: (i) a Project communications plan acceptable to ADB; (ii) disclosure of a summary Resettlement Plan to affected persons; (iii) preparation and dissemination of a brochure in English, Pidgin and other relevant languages explaining the Project, works required and anticipated timing of the works; and (iv) establishing a formal grievance redress committee with representation of affected persons. The Works contractor(s) shall be responsible for managing the grievance redress program. Information regarding an approved Subproject and the proposed environmental management measures shall be posted at suitable locations at Subproject sites and accessible to interested persons and the general public.	Schedule 4, para.12	Complied with. PMCBU instituted a communication plan in English. Stakeholder meetings empowered communities to report any possible social or environmental risks through the GRM.
	4. Environment		
13	The Recipient shall ensure that no Subproject assessed as Category A (significant adverse impact) is approved under the Project. The Recipient, through the PMU, shall ensure that (i) the IEE and preliminary environmental management plan are reviewed and updated at the engineering design stage; (ii) each proposed subproject complies with the environmental management plan reflected in the updated IEE, all applicable national environmental laws, regulations, and guidelines, and ADB's Environment Policy (2002); (iii) the environmental management plan is included in bidding documents and Works contracts; (iv) any adverse environmental impacts arising from the Project are minimized by implementing the agreed mitigating measures; (v) environmental monitoring is done by the PMU and the contractors; and (vi) the required EARP are implemented.	Schedule 4, para.13	Complied with. The project was category B for environment. There were no significant adverse environmental impacts that could not be mitigated or managed in any of the subprojects. All subprojects were approved by the government and endorsed by ADB. PMCBU worked with contractors to prepare CEMPs, and complied with cleared IEEs. Implementation of EMPs were regularly monitored by PMCBU and reported through quarterly monitoring reports and semi-annual safeguards monitoring reports.
14	The Recipient's MECM shall take steps to expedite processing of the Guadalcanal Subproject, for which an IEE has been lodged, and for all subsequent Subprojects. Further, MECM shall identify a single point of contact within its Environment Unit with responsibility for the Project.	Schedule 4, para 14	Complied with. Environment clearance received for West Guadalcanal and north Malaita subprojects. Joe Horokou, the Director of MECCDMM, was the first point

	Covenant and Reference	Reference in Grant Agreement	Status of Compliance
			of contact.
	5. Gender and Employment		
15	The Recipient, through MID, shall (i) require that at least 20% of road maintenance Works contractors are female; (ii) require Project Works contractors to employ a minimum of 33% women in road rehabilitation and labor-intensive maintenance of selected national roads; (iii) provide equal pay to men and women for work of equal type, in accordance with national laws and international treaty obligations and to pay women's wages directly to them; (iv) provide safe working conditions for male and female workers; and (v) ensure that Project contractors comply with applicable labor laws, and abstain from child labor. Specific provisions to this effect will be included in the bidding documents. The PMU shall be responsible for monitoring the employment targets for women by reviewing periodically the payroll statements of Works contractors, and shall reflect progress in achieving the employment targets for women in the Project progress reports and Project completion report.	Schedule 4, para. 15	Complied with. PMCBU monitored gender aspects regularly and ensured contractors complied with requirements. Three out of nine LBES contracts (33%) were awarded to companies managed by women, and 8,472 of 21,178 person-days (over 40%) of work were undertaken by women.
	6. Health Risks		
16	The Recipient, through MID, shall ensure that all Project Works contractors engaged under the Project participate in an HIV/AIDS prevention program to be funded under the Project in construction campsites. In addition, the PMU shall ensure that similar information on the risk of transmission of HIV/AIDS and other sexually transmitted diseases is disseminated to local communities in the corridor of Project influence, in coordination with national agencies working on this issue. The .PMU shall include specific provisions to this effect in bidding documents and Works contracts, and shall strictly monitor compliance.	Schedule 4, para. 16	Complied with. HIV and AIDS awareness programs were organized and undertaken on the Makira, West Guadalcanal, and north Malaita subprojects.
	7. Anticorruption Measures		
17	The Recipient shall (i) undertake necessary measures to create and sustain a corruption-free environment; (ii) ensure that its anticorruption laws and regulations and ADB's Anticorruption Policy (1998, as amended to date), are strictly enforced and are being complied with during Project implementation, and that relevant provisions of ADB's Anticorruption Policy are included in all bidding documents for the Project; (iii) facilitate in ADB's exercise of its right to investigate, directly or through its agents, any alleged corrupt, fraudulent, collusive or coercive practices relating to the Project; (iv) ensure that MID conducts periodic inspections of the contractors' activities related to fund withdrawals and settlements; and (v) ensure that all contracts financed by ADB in connection with the Project include provisions specifying the right of ADB to audit and examine the records and accounts of MID and all contractors, suppliers, consultants and other service providers as they relate to the Project.	Schedule 4, para 17	Complied with. All procurement activities followed ADB procurement guidelines and were carried out by an international expert, and were fully scrutinized by ADB PLCO. Direct payment and reimbursement of payments through imprest accounts were regularly inspected by ADB review missions. MID provided audited annual financial statements for project accounts for 2010, 2011, 2012. Audited financials for 2013 are being finalized by the external auditor.
18	The Recipient, through MID, shall publicly disclose on the Recipient's website the use of the Grant proceeds. For each procured contract, MID shall disclose on the website (i) a list of the participating bidders, (ii) name of the winning bidder, (iii) basic details on the bidding procedure adopted, (iv) amount of the awarded contract, (v) list of goods or services purchased, and (vi) intended and actual amount of the Grant proceeds under each contract. MID shall ensure that all consultants, contractors and staff connected with the Project are fully aware of and comply with the Recipient's and ADB's procedures, including those particularly addressed at implementation, procurement, use of consultants, disbursements, reporting and prevention of fraud and corruption.	Schedule 4, para. 18	Complied with. The summary of procurement action was published in the government's website and newspapers. The procurement, disbursement, and contract management followed government and ADB standard procedures. PMCBU ensured prevention of fraud and corruption during the project.

	Covenant and Reference	Reference in Grant Agreement	Status of Compliance
19	The Recipient shall, through MID, establish a grievance and redress mechanism to (i) review and address grievances in relation to the Project, any of its service providers, or any person responsible for carrying out the Project; and (ii) establish threshold criteria and procedures, acceptable to ADB, for handling such grievances, for proactively addressing them and for providing complainants with notice of the chosen mechanism or action.	Schedule 4, para. 1	Complied with. Stakeholder meetings ensured reporting of, and resolving, unacceptable social behavior, health risks, and/or damage to the local environment through the GRM.
	8. Project Performance Monitoring and Evaluation		
20	Within six (6) months of the Effective Date, MID shall finalize and adopt a Project performance management system framework acceptable to ADB, based on indicators and procedures agreed between the Recipient and ADB. MID shall monitor the indicators according to the agreed framework on a quarterly basis to determine Project efficiency and effectiveness.	Schedule 4, para. 20	Complied with. PMCBU regularly monitored indicators and reported these in quarterly reports. Periodic monitoring report was also done by a M&E specialist.
	9. Reporting		
21	The Recipient, through MID, shall ensure that the following reports are submitted to ADB: (i) quarterly progress reports on preconstruction activities and construction of civil works, including (a) physical and financial progress, (b) status of land acquisition and resettlement (if required), (c) environmental management, (d) institutional development and capacity building, (e) public communication campaigns, (f) Project performance indicators, and (g) other activities critical to Project implementation; (ii) annual reports on road maintenance budgets, activities, and expenditures; and (iii) within three (3) months of physical completion of the Project, a completion report describing implementation, costs and benefits, and other information as requested by ADB.	Schedule 4, para. 21	Complied with. Reports were submitted progressively.
	10. Regular and Midterm Reviews		
22	Regular ADB review missions (approximately every six (6) months) and a midterm review about one (1) year after the Effective Date shall be undertaken jointly by ADB and the Recipient. The reviews shall evaluate in detail the scope, implementation arrangements, compliance with the Grant Agreement's covenants, institutional, administrative, organizational, technical, environmental, social, poverty reduction, resettlement, economic, financial, and other relevant aspects that may have an impact on the performance of the Project and its continuing viability and achievement of scheduled targets.	Schedule 4, para. 22	Complied with. ADB's first mission was undertaken from 24 Nov 2010 to 3 Dec 2010. The mid-term review was undertaken from 9 to 18 May 2011. Two review missions were fielded each year.

ADB=Asian Development Bank, CEMP=Construction Environment Management Plan, EARP=Environmental Assessment and Review Procedure, GRM=Grievance Redress Mechanism, HIV/AIDS=Human immunodeficiency virus infection and acquired immune deficiency syndrome, IEE=Initial Environment Examination, LBES=labor-based and equipment-supported, PLCO=Project Liaison and Coordination Office, MOU=Memorandum of Understanding, MID=Ministry of Infrastructure Development, MECM=Ministry of Environment, Climate Change, and Meteorology, MECCDM= Ministry of Environment, Climate Change, Disaster Management, and Meteorology M&E=Monitoring and Evaluation, NTP=National Transport Policy, PMCBU=Project Management and Capacity Building Unit, PSC=Project Steering Committee, PMU=Project Management Unit, SIRIP1=Solomon Islands Road Improvement (Sector) Project.
Source: Asian Development Bank.

PROCUREMENT

A. Procurement Guidelines and Threshold Limits

1. The procurement of works, goods, and services in the Solomon Islands were governed by Chapter 22 of the Financial Instructions (FI) of 2004, published under Section 6(2) of the Public Finance and Audit Act 1978. With the amendments to FI effective 1 July 2010, the country's entire procurement activities were governed by Chapter 7—Supply Chain Management.

2. In 2006, MID drafted a procurement manual based on FI 2004. All procurement under MID was required to comply with the provisions in this procurement manual. All the works contracts under the project were procured in accordance with ADB's Procurement Guidelines (2006, as amended from time to time) and FI 2004. They were based on the engineer's estimated value and had ADB's approval for the Bid Evaluation Report. All the contracts were procured through the Ministry Tender Board or the Central Tender Board (CTB).

B. Contracts Procured for Civil Works

3. As per the procurement plan, all works contracts were procured following the National Competitive Bidding and International Competitive Bidding procedures. Tables A6.1 and A6.2 below summarize the works contracts procured under the project. In addition, two consultant contracts were procured for surveying of north Maliata road and Naro to Lambi road in West Guadalcanal under NCB procedures.

Table A6.1: Procurement of Works under National Competitive Bidding Procedures

No.	Province	Contract Name	Contract Type	Contractor	Award Contract Amount (SBD)	Date of Award	Original Finish Date
1	Guadalcanal	Emergency Response to Restore Connectivity Contract	LBES and SOR	Islander Road Works (Guadalcanal)	359,600	10 Sept 2010	31 Dec 2010
2	Guadalcanal	Emergency Response to Restore Connectivity Contract	LBES and SOR	W & P Earth Works	1,477,709	10 Sept 2010	31 Dec 2010
3	Guadalcanal	Emergency Response to Restore Connectivity Contract	LBES and SOR	Jerisya Earth Works	2,302,400	20 Sep, 2010	30 Jun 2013
4	Central	Central Province LBES –Section 1–NFD Wharf Junction to 3.78 km	LBES and PB	Central Developers	308,463	9 Sept 2010	9 Sept 2012
5	Rennell and Bellona	Renbel Province – LBES Contract No. 1	LBES and PB	TC Company [a]	369,893	4th Oct, 2010	4 Oct, 2012
6	Rennell and Bellona	Renbel Province – LBES Contract No. 2	LBES and PB	Tuhamoana Company [a]	441,617	15th Oct, 2010	15 Oct, 2012
7	Central	Central Province LBES – Section 2–Tulagi Town and Coastal Road (3.78 to 7.51 km)	LBES and PB	Minto Enterprises Ltd	455,653	16 Nov2010	16 Nov 2012
8	Isabel	Isabel Province LBES – Section 1–Kaevanga Rd, Kaevanga Wharf to Muana Sch	LBES and PB	Glose Ukuru Group	373,112	18 Nov 2010	18 Nov 2012
9	Isabel	Isabel Province LBES – Section 3, Koge Rd	LBES and PB	Kolomola Community	240,500	18 Nov 2010	18 Nov 2012
10	Isabel	Isabel Province LBES – Section 2–Kaevanga Rd, Muana School to end of road	LBES and PB	Kaolo Sunset Rd Construction	498,747	23 Nov 2010	23 Nov 2012

11	Guadalcanal	Honiara Roads Resealing Contract	LBES and SOR	Dalgro (SI) Ltd	6,288,510	18 Feb 2011	4 Oct 2012
12	Western	Western Province LBES–Gizo Coastal Road, New Manda to Sageraghi Village Section 2	LBES and PB	Hakaroa Construction	938,182	8 Apr 2011	8 Apr 2013
13	Western	Western Province LBES–Gizo Coastal Road, New Manda to Sageraghi Village Section 1	LBES and PB	Itorato Construction	705,123	14 Apr 2011	14 Apr 2013
14	Western	Western Province LBES–Munda Section 2	LBES and PB	Triple KD	1,053,629	20 Apr 2011	20 Apr 2013
15	Western	Western Province LBES–Munda Section 1	LBES and PB	Sunset Roadworks	938,182	24 Feb 2012	24 Feb 2014

[a] LBES maintenance contracts in Rennel-Bellona province were terminated and subsequently removed from the project due to non-performance.
LBES = labor-based and equipment-supported, NCB = national competitive bidding, PB = performance-based, SOR = schedule of rates
Source: Ministry of Infrastructure Development.

Table A6.2: Procurement of Works under International Competitive Bidding Procedures

No	Province	Contract Name	Contract Type	Contractor	Original Contract Amount ($)	Start Date	Original Finish Date
1.	Makira	Road Rehabilitation and Bridge Construction	Unit Rates	McConnell Dowell Constructors Ltd New Zealand	14,909,692.86	18 Jan 2010	18Jan 2012
2.	Guadalcanal	Flood Damage Restoration Subproject	Unit Rates	Kitano Construction Corporation	12,540,382	18Nov2010	18 May 2011
3.	Malaita	Malaita North Road Climate Change Adaptation	Unit Rates	Dalgro SI Ltd	3,820,124	21 May 2012	21Nov 2012

Source: Ministry of Infrastructure Development.

4. The national competitive bidding contracts under the project comprised labor-based and equipment-supported (LBES) maintenance. These contracts were of two types (i) performance based (PB), and (ii) schedule of rates (SOR). In the PB contracts, the bidders were requested to provide monthly rates for road and bridge maintenance items that satisfied minimum standards laid down for each work item in the bid documents. Payments were recommended for those items that satisfied these performance criteria. In the SOR contracts, bidders were requested to provide unit prices for each work item. Payments were based on amount of work completed and measured quantities for each month.

5. The selection of type of maintenance contract was based on the capacity of the participants and their understanding of the technical requirements and business nature of such contracts. Two weeks pre-tender LBES training programs were conducted as part of capacity building of national contractors for greater private sector participation. In Guadalcanal Province most of the prospective bidders were experienced road contractors and, accordingly, PB contract type was used. In Central, Renbel, Isabel, and Western Provinces SOR type maintenance contracts were awarded. In Renbel Province, both maintenance contracts were terminated due to unsatisfactory performance.

6. Future programs should be mindful of matching the complexity of the road maintenance contract with the maturity of the contractor industry within the particular region. It is also recommended that the project practice of a follow-up session with prospective bidders be held after the two-week training session and before the bid closing date. This follow-up session

mitigates the risk of non-conforming tenders as the bidders are given the opportunity to clarify bid requirements before the closing date.

7. The bid documents for procurement of international competitive bidding contracts for the rehabilitation subprojects were based on ADB's Standard Bidding Documents for large works.[22] The road and bridge specification was prepared using MID's Specification for Road and Bridge Works (2006). Significant updates were applied to incorporate design build processes for larger bridges as well as technical updates to meet construction standards. In addition, considerable specification updates were included for HIV/AIDS awareness programs, gender awareness, grievance resolution processes, safeguards, and materials and laboratory testing requirements. The bid documents for procurement of road maintenance contracts using LBES methods were prepared based on ADB's Standard Bidding Documents for small works with significant modifications to suit labor intensive works.[23]

C. MID's Procurement Activities

8. MID did not have a dedicated procurement unit within its organization. In most cases an engineer within MID undertook procurement functions as and when required in addition to his/her normal duties. Due to shortage of skilled engineers and technical staff conversant with ADB and government procurement procedures, MID was unable to assign a counterpart to the PMCBU for capacity development in procurement. Accordingly, the services of an international consultant were sought to oversee the project procurement activities.

9. The long-term nature of the individual consultant's input provided an excellent opportunity for MID to appoint a counterpart officer to work with the consultant and to transfer technical knowledge on contract management and procurement techniques, procedures, processes, negotiation skills, and methodologies on risk mitigation. Due to lack of human resources within MID, the opportunity was missed to develop this capacity under the project.

10. MID established its Bid Evaluation Committee both for government and externally funded contracts. The committee comprised senior staff members of MID and the contract management and procurement specialist. The committee evaluated all bids with the active participation of senior staff members and with adherence to ADB's Procurement Guidelines (2013, as amended from time to time). The contract management and procurement specialist provided guidance and on-the-job training on bid evaluation methodologies and preparation of bid evaluation reports to the MID staff assigned to the committee. Bid evaluation reports were submitted to ADB for approval. The evaluation reports with ADB's recommendations were then submitted through the Secretary to the Central Tender Board (CTB) for approval.

11. The CTB consisted of five high ranking officials of the government, including a representative from the Attorney General's Office. The Secretary to the CTB was a permanent position and coordinated tenders between ministries. The meetings of the CTB were generally held monthly with the provision of holding extraordinary meetings if required. Minutes of the CTB meetings were prepared and signed by the Chairman of CTB and made available to MID.

[22] ADB. 2006. *Standard Bidding Document Procurement Of Works - Single Stage: Two-Envelope Bidding Procedure.* Manila.
[23] ADB. 2006. *Standard Bidding Document Procurement Of Works – Small Contract.* Manila.

D. Procurement Shortcomings

12. Although a satisfactory procurement system was in place, the following shortcomings were experienced due to lack of experience and understanding of the transparency, competitive nature, and value for money concepts in procurement of works, goods, and services:

- as a result of the inability of CTB to meet the required quorum to hold a tender board meeting, bids were not opened immediately after closing time for submissions;
- decisions on the award of a contract were delayed on several occasions; and
- functions of the CTB were on hold due to the absence of its secretary.

13. Most of the above shortcomings were addressed during the implementation of the project. It is recommended that an alternate set of committee members be available to fill the positions of CTB members who are unavailable. It is also recommended that FI 2010 is amended to include this change. The contract management and procurement specialist liaised with the secretary of CTB and assisted in all stages of the procurement process, from invitation to bid to contract award. Over time, those involved in the procurement process gained substantial knowledge of international best practice.

E. Contracts Working Group

14. During project implementation, several other projects, such as the Domestic Maritime Support Program were concurrently under implementation. To ensure consistency in procurement activities, streamline contracting processes, share experiences, and recommend amendments to existing MID manuals, a Contracts Working Group (CWG) was established by MID. The members of the CWG consisted of representatives from each project and officials from MID. CWG held a series of meetings to strengthen procurement processes and made recommendations in the following areas:

(i) revision of MID Procurement Manual 2006 to comply with FI 2010;
(ii) revision of MID Contract Administration Manual 2006 to address issues identified during contract implementation;
(iii) identification of knowledge gap that MID technical staff had regarding procurement of works, goods and services, and recruitment of consultants, and in the areas of contract management and administration; and
(iv) capacity building for MID staff and PMCBU national consultants.

F. Lessons Learned

15. The absence of a dedicated procurement unit and lack of staff to undertake procurement activities in MID were identified as the key factors limiting MID's procurement capacity. It is recommended that guidelines for assessing the performance of procurement staff be developed together with strengthening procurement capacity by providing additional training, and developing a professional network of procurement experts.

16. The financial authority of Solomon Islands is entirely with the Permanent Secretary Finance. As the Permanent Secretary Finance is also the Chairman of the CTB, the final decision to award contracts is obtained from the Secretary on all bid evaluation reports that come under the authority of CTB. CTB lacks resources as there is no other staff to oversee the CTB other than the Secretary. It is recommended that the terms of reference for the Secretary are revisited, that additional staff is assigned to CTB, and that training on procurement procedures is provided.

ECONOMIC RE-EVALUATION

I. MAKIRA SUBPROJECT

1. The economic re-evaluation of the Makira subproject has been included under SIRIP completion report.[24]

II. WEST GUADALCANAL FLOOD DAMAGE RESTORATION SUBPROJECT

A. Objective of the Re-evaluation

2. This examination recalculates the estimated close-of-project economic performance for the Guadalcanal Flood Damage Restoration Subproject. The subproject involved the reconstruction and rehabilitation of the roads, bridges, culverts, and a number of crossings and other drainage structures along the 50km stretch of road from White River to Naro Hill. The White River to Naro Hill section of the Honiara to Lambi Road in Guadalcanal Province was severely damaged during floods in early February 2009 and then again in early 2010. Poha Bridge, which had only suffered minor damage during the 2009 event, was significantly damaged in 2010.

3. The re-evaluation of the economic viability followed ADB's guidelines for the economic analysis of projects as did the original economic evaluation undertaken in the feasibility study.[25] Capital investment and annual maintenance estimates were calculated for each individual structure/crossing by experienced local practitioners, while annual flood damages were calculated based on expected flooding, local knowledge, and the flood immunity design of each structure. The evaluation itself was based on comparing the whole of life project investment and maintenance costs incremental to the base case (do-nothing option) with the expected incremental benefits to road users in the project case in discounted cash flow terms.

4. Sections B, C and D provide an overview of the economic methodology and background that were applied in Cardno (2010). Subsequent sections detail the review of parameters that were undertaken for this post-completion analysis.

B. Description of Base Case

5. The base case (do-nothing) option involves the maintenance of the roadway in its original, pre-project implementation state. The maintenance implies that the "emergency works" that were done as a result of the February 2009 floods had been left and became the permanent standard of the road. In the event of future storms causing the degradation and deterioration of roads, bridges and waterways, maintenance works would be conducted to restore the road to its pre February 2009 condition. In summary, the do-nothing option involves maintaining the "emergency works" in their original state.

6. The total population with access to the road was estimated at 7,500. The social survey undertaken as part of the initial poverty and social assessment indicated that 64% of road users obtained income through agricultural production.[26] Regarding modes of transport, approximately 36% of individual person-trips undertaken in the area were done by walking or other non-motorized forms of transport, while 59% of person-trips were undertaken by truck.

[24] ADB. 2014. *Completion Report Solomon Islands Road Improvement (Sector) Project*. Manila.
[25] ADB. 1997. *Guidelines for the economic analysis of projects*. Manila.
[26] MID.2010. *Initial Poverty and Social Assessment of West Guadalcanal Subproject.* Honiara.

7. In the do-nothing option, the road floods in events larger than a 1-in-3 months average recurrence interval (ARI) event. The overtopped road is not trafficable on the day of the flooding. Further, it takes approximately 3 days following the flood to carry out appropriate repairs to make the road safely trafficable.

C. Description of Project Case

8. The aim of the subproject was to provide a permanent rehabilitation of the road affected by the February 2009 and 2010 floods, thus moving away from using emergency works as permanent fixes. The strengthening of transports links and provision of structures to withstand certain levels of flooding was expected to improve the livelihood of the community by promoting trade and improving the local economy. The subproject involved building, replacing or protecting bridges in 13 locations, providing scour protection and causeways at fords in five locations, and providing scour protection of culverts or inclusion of culverts at new causeways in eight locations.

9. The total capital cost of the works was $15.6 million when the contract was awarded in 2010.

D. Methodology

10. Benefits and economic costs were analyzed using standard EIRR and NPV methodology, and the format complies with ADB's guidelines for economic analysis of the project (footnote 25). The analysis was done for both the existing climate conditions and the forecast climate change conditions for a period of 20 years.

11. Costs and benefits in the evaluation were calculated in 2010 prices. The evaluation assumed implementation occurred in one year with all benefits and recurring costs accruing over the subsequent 20 years. Due to the conservative nature of the evaluation no residual value was assumed. The evaluation was expressed in Solomon Island dollars using an exchange rate of SI$7.9 to $1.

12. Models such as the World Bank's Highway Design Model and Road Economics Decision Model were deemed inappropriate due to the low volumes of traffic present in the base case and the specific issues associated with road closures due to the flooding.

13. The evaluation of the economic viability of the subproject, both in the feasibility study and in the current re-evaluation, was therefore based on benefits assessed, including transport downtimes, travel time benefits and loss of bus revenues. The calculation of these benefits was based on data acquired from a series of statistically limited social and transport surveys. Due to the inadequacies of the data, a conservative approach was adopted at all times to prevent the over-estimation of benefits.

14. The reduction in the number of days lost due to road disruption was a key benefit likely to result from the subproject. The pre-project road conditions (which will be maintained under the do-nothing option) had minimal protection from wet-weather events and, depending on the event, resulted in road closure and inability to pass certain watercourses. The subproject ensured that the roads and crossing were equipped to withstand wet weather events. Downtimes were estimated based on local knowledge and experience, as well as the annual

exceedance probabilities—the probability that a given rainfall total accumulated will be exceeded in any one year—of wet weather events.

15. The capital and recurrent costs for the project were estimated based on the information gathered from the project team.

E. Review of Key Parameters

16. The same methodology described in Section D was applied to the economic re-evaluation. Key parameters and assumptions from the original methodology were updated to reflect the outcomes of the recent traffic surveys and social survey conducted in 2013 after completion of the subproject.

17. The values for the previous analysis were presented in 2010 prices. Therefore, where new information was available, it was converted from 2013 to 2010 Solomon Islands dollars, and converted to US dollars based on the exchange rate at that time, where applicable.

18. Consumer price index data was available from the International Monetary Fund. [27] This data was only available until 2011. A 5-year average inflation rate was therefore adopted to convert 2013 Solomon Islands dollars to 2010 dollars. This represents an average inflation rate of 8.1% p.a.

1. Household Income

19. An assessment of the data provided from the social survey suggested that household incomes had increased in the order of 48.7% from before the rehabilitation to after the rehabilitation. This is an approximation, as the survey asked for weekly, monthly and yearly incomes, and in many cases households provided different answers for each. This makes it difficult to directly compare, as a weekly income estimate may not take into account fluctuations from week to week, particularly in agricultural sales.

20. It was not clear from the survey what period of time that pre-rehabilitation income was meant to represent. However, for the purposes of this assessment this has been assumed to be in the order of 1 year, which is likely the period that most respondents would recall. Therefore, this represents a 1-year period during which inflation affected incomes, representing a total inflation of 8.1%.

21. Incorporating inflation into the calculations, the real growth in incomes was in the order of 38%. Therefore, the average hourly wage of SI$14.15 assumed in the original economic study had increased by 38% to SI$19.46, in 2010 dollars.

2. Traffic Counts

22. As part of the post-completion surveys, a traffic count was undertaken that mirrored the survey that was undertaken in the original study. A comparison of the original study and the traffic survey from 2013 is provided in Table A7.3 for Kakabona.

23. The data suggests that there had been a relatively significant increase in private vehicle usage (cars and 4WDs). While the number of small trucks had decreased, the number of

[27] http://www.imf.org/external/pubs/ft/weo/2013/02/weodata/index.aspx

medium and large trucks has increased. This data was incorporated into the original economic analysis.

24. The capacity of the different truck types was also defined in the new traffic data. Previously, this information was unavailable. The new capacity is provided below, along with the previously assumed capacities, within brackets:

- small truck—1.5 tons (1 ton),
- medium truck—2 tons (6 tons), and
- large truck—3 tons (10 tons).

25. These updated capacities have been provided in the economic analysis.

Table A7.3: Traffic Counts at Kakabona, Combined East and West Bound

Type of Vehicle	2008 Traffic Data	2013 Traffic Data
Motorcycle	2	5
Car	591	745
4 WD	180	554
Bus	225	232
Small Truck	263	44
Medium Truck	8	49
Large Truck	0	54

Source: Ministry of Infrastructure Development.

3. Market Price for Copra and Cocoa

26. The market price for copra and cocoa has fallen significantly from the original study due to changes in world market demand. Table A7.4 provides a comparison based on the results of the social survey. While a number of other goods are now produced and sold at market as a result of this reduction in price, these have been conservatively ignored for this assessment, to be consistent with the previous study.

TableA7. 4: Comparison of Before and After Prices for Copra and Cocoa

Copra			Cocoa		
Market Price SI$ (Before)	Market Price SI$ (After)	Market Price SI$ (After) (2010 dollars)	Market Price SI$ (Before)	Market Price SI$ (After)	Market Price SI$ (After) (2010 dollars)
>2/Kg	0.70/Kg	0.55/kg	20/Kg	10/Kg	7.9/kg

Source: Ministry of Infrastructure Development.

27. Using these values, the estimated value per ton of cocoa and copra were adjusted accordingly in the analysis.

28. For purposes of this analysis, a conservative approach was undertaken. If the long-term price of copra and cocoa have adjusted (and this is not a short-term adjustment), then farmers would likely adjust their farming practices accordingly. This would not have occurred within the relatively short period of this assessment.

29. **Bus Fares.** The social survey identified that typical bus fares increased to between SI$20 and SI$30, which represents an average price around of SI$25 (SI$19.8 in 2010 dollars). This is roughly equivalent to the previous average price estimated at SI$18. Therefore, no modification was made to the assumed bus fares.

30. **Road Closure Periods**. The road closure periods assumed from the previous analysis took into consideration the design capacity of the various structures and the expected frequency of closure based on the recurrence of floods. For the re-evaluation, it is assumed that these have not changed.

4. Travel Times

31. At the time of the 2010 assessment, the approximate travel time along the road was in the order of 1.25 hours. The 2010 assessment estimated a travel time saving of roughly 15 minutes, based on previous travel time assessments.

32. The travel time to key destinations is included in Table A7.5, from a household survey undertaken in 2013 after completion of the subproject. After the road rehabilitation, average travel time from subproject area (Selwyn College) to Honiara was around 1 hour. This generally aligns with the 2010 estimates of the post-rehabilitation time.

Table A7.5: Travel Time to Key Destinations (min)

Location	Before Rehabilitation	After Rehabilitation
Hospital	118	58
Main Market	115	60
Town	118	61
Police Station	114	59
Bank	116	61

Source: Ministry of Infrastructure Development.

33. The following has been assumed for the re-evaluation:

- public transport (buses and trucks) have a travel time saving of 1 hour, and
- private vehicles (cars, 4WDs, etc.) have a travel time saving of about 15 minutes, consistent with the 2010 assessment.

34. **Costs and Maintenance**. The capital costs were updated to the actual investment cost (based on the actual contract price). The contract capital cost applied was $15.6 million. This represents an economic cost of $13.2 million based on the methodology applied in the 2010 assessment. This is a reduction of $3.4 million in cost when compared with the 2010 assessment.

35. The ongoing maintenance and rehabilitation costs identified in the 2010 study remain unchanged in the analysis.

F. Economic Re-Evaluation Results

36. The original economic analysis included four options (i) Option A—pre-2009 road condition, with additional washout and scour protection and reinforcement, (ii) Option B—design for 2-year ARI with less than 300 mm overtopping for 10 ARI, (iii) design for 2 year ARI with less than 300 mm overtopping for 100-year ARI, (iv) Option B—CCA is Option B incorporating climate change adaptation. The results of the re-evaluation of the economic analysis for option B and option B-CCA are in Table A7.6 and Table A7.7, respectively. A detailed summary of the economic analysis for both options are in Table A7.8 and Table A7.9 respectively. The actual construction works complied with option B-CCA.

Table A7.6: Economic Re-Evaluation Results Summary—Option B with Climate Change (in $'000s, 2010 Prices)

	Pre-Construction Estimate (2010)	Post-Construction Estimate
PV Cost	$19,168	$16,334
PV Benefit	$25,860	$28,541
NPV	$13,529	$19,044
EIRR (%)	25.0%	35.3%

Source: Ministry of Infrastructure Development.

Table A7.7: Economic Re-Evaluation Results Summary—Option B without climate Change (in $'000s, 2010 Prices)

	Pre-Construction Estimate (2010)	Post-Construction Estimate
PV Cost	$19,230	$16,396
PV Benefit	$3,903	$3,244
NPV	$774	$842
EIRR (%)	14.4%	15.3%

Source: Ministry of Infrastructure Development.

37. The pre-construction estimate is based on the feasibility cost and benefit estimates from the 2010 assessment. The assessment demonstrates an improvement in the EIRR value from the feasibility assessment stage to the current post-construction assessment.

38. Table A7.6 provides a comparison of the distribution of benefits between the post-construction analysis and the 2010 assessment. There are a two key points to note:

(i) The reduction in cocoa and copra prices reduced the proportional benefits from the cargo down time; and,
(ii) The travel time savings increased as a result of the estimated higher reduction in public transport travel times.

39. The assessment was also undertaken in consideration of climate change, consistent with the 2010 assessment. This assessment was undertaken by comparing the incremental benefits of Scenario B-CCA over Scenario B. In this case, the cost estimates for Scenario B were adjusted in proportion to Scenario B-CCA 2010 estimate versus actual costs. This results in a Scenario B cost estimate of $11.6 million.

40. The climate change assessment showed that Scenario B-CCA was economically viable in comparison with Scenario B (Table A7.7). Given the EIRR increased from 14.4% to 15.3%, the economic outcome is strong and it is unlikely that the EIRR would fall below the 12% standard hurdle rate.

Table A7.8: Detailed Evaluation Results Post-Completion (Scenario with Climate Change)

Year	Economic Costs			Benefits					Net Benefit
	Do-Nothing	Option B-CCA	Net Cost	Travel Time	Cargo Down Time	Wage Cost Down Time	Loss of Bus Revenue	Total Benefit	
0	$691,401	$13,159,791	$12,468,390	$555,773	$577,504	$1,576,764	$117,870	$2,827,911	-$9,640,479
1	$707,193	$409,879	-$297,313	$570,779	$593,097	$1,619,337	$121,053	$2,904,265	$3,201,578
2	$723,775	$409,879	-$313,895	$586,190	$609,110	$1,663,059	$124,321	$2,982,680	$3,296,575
3	$741,185	$409,879	-$331,306	$602,017	$625,556	$1,707,962	$127,678	$3,063,213	$3,394,518
4	$759,467	$409,879	-$349,587	$618,271	$642,446	$1,754,077	$131,125	$3,145,919	$3,495,507
5	$778,662	$1,223,279	$444,617	$634,965	$659,792	$1,801,437	$134,665	$3,230,859	$2,786,242
6	$798,817	$409,879	-$388,938	$652,109	$677,607	$1,850,076	$138,301	$3,318,092	$3,707,030
7	$819,980	$409,879	-$410,101	$669,716	$695,902	$1,900,028	$142,035	$3,407,681	$3,817,782
8	$842,201	$821,479	$20,722	$687,798	$714,691	$1,951,328	$145,870	$3,499,688	$3,520,410
9	$865,534	$409,879	-$455,654	$706,369	$733,988	$2,004,014	$149,809	$3,594,180	$4,049,834
10	$890,032	$409,879	-$480,153	$725,441	$753,806	$2,058,123	$153,854	$3,691,223	$4,171,376
11	$915,756	$409,879	-$505,877	$745,027	$774,158	$2,113,692	$158,008	$3,790,886	$4,296,762
12	$942,766	$409,879	-$532,887	$765,143	$795,061	$2,170,762	$162,274	$3,893,240	$4,426,126
13	$971,126	$1,223,279	$252,153	$785,802	$816,527	$2,229,372	$166,655	$3,998,357	$3,746,204
14	$1,000,905	$409,879	-$591,025	$807,019	$838,574	$2,289,565	$171,155	$4,106,313	$4,697,338
15	$1,032,172	$409,879	-$622,293	$828,808	$861,215	$2,351,383	$175,776	$4,217,183	$4,839,476
16	$1,065,003	$821,479	-$243,523	$851,186	$884,468	$2,414,871	$180,522	$4,331,047	$4,574,570
17	$1,099,475	$409,879	-$689,596	$874,168	$908,349	$2,480,072	$185,396	$4,447,985	$5,137,581
18	$1,135,671	$409,879	-$725,792	$897,771	$932,874	$2,547,034	$190,402	$4,568,081	$5,293,872
19	$1,173,677	$409,879	-$763,797	$922,010	$958,062	$2,615,804	$195,543	$4,691,419	$5,455,216
20	$305,273	-$7,008,619	-$7,313,891	$946,905	$983,929	$2,686,431	$200,823	$4,818,087	$12,131,979
NPVs	$6,836,959	$16,333,646	$9,496,687	$5,609,170	$5,828,491	$15,913,582	$1,189,611	$28,540,854	$19,044,167
EIRR									**35.3%**

Analysis Period: 20 years
Currency: 2010 (SI$ '000)
Discount rate: 12%
Growth Rate (Traffic Growth Rate and Inflation): 2.7%
Source: Ministry of Infrastructure Development.

Table A7.9: Detailed Evaluation Results Post-Completion (Scenario with Existing Climate vs. without Climate Change)

Year	Economic Costs			Benefits					Net Benefit
	Option B	Option B-CCA	Net Cost	Travel Time	Cargo Down Time	Wage Cost Down Time	Loss of Bus Revenue	Total Benefit	
0	$9,785,646	$13,159,791	$3,374,145	$0	$63,325	$172,898	$12,925	$249,148	-$3,124,997
1	$508,652	$411,069	-$97,583	$0	$70,867	$185,514	$14,398	$270,779	$368,362
2	$511,878	$412,258	-$99,620	$0	$78,408	$198,130	$15,871	$292,409	$392,029
3	$515,104	$413,448	-$101,656	$0	$85,949	$210,746	$17,345	$314,040	$415,696
4	$518,330	$414,637	-$103,693	$0	$93,491	$223,362	$18,818	$335,670	$439,363
5	$1,334,956	$1,229,227	$105,729	$0	$101,032	$235,978	$20,291	$357,301	$463,030
6	$524,782	$417,016	-$107,766	$0	$108,573	$248,594	$21,764	$378,931	$486,697
7	$528,008	$418,206	-$109,802	$0	$116,115	$261,209	$23,238	$400,562	$510,364
8	$942,834	$830,995	$111,839	$0	$123,656	$273,825	$24,711	$422,192	$534,031
9	$534,460	$420,584	-$113,876	$0	$131,197	$286,441	$26,184	$443,823	$557,698
10	$537,686	$421,774	-$115,912	$0	$138,738	$299,057	$27,657	$465,453	$581,365
11	$540,912	$422,963	-$117,949	$0	$146,280	$311,673	$29,131	$487,084	$605,032
12	$544,138	$424,153	-$119,985	$0	$153,821	$324,289	$30,604	$508,714	$628,700
13	$1,360,764	$1,238,742	$122,022	$0	$161,362	$336,905	$32,077	$530,345	$652,367
14	$550,590	$426,532	-$124,058	$0	$168,904	$349,521	$33,551	$551,975	$676,034
15	$553,816	$427,721	-$126,095	$0	$176,445	$362,137	$35,024	$573,606	$699,701
16	$968,642	$840,511	-$128,132	$0	$183,986	$374,753	$36,497	$595,236	$723,368
17	$560,268	$430,100	-$130,168	$0	$191,528	$387,369	$37,970	$616,867	$747,035
18	$563,494	$431,289	-$132,205	$0	$199,069	$399,985	$39,444	$638,497	$770,702
19	$566,720	$432,479	-$134,241	$0	$206,610	$412,601	$40,917	$660,128	$794,369
20	$5,387,342	-$6,984,830	-$1,597,488	$0	$214,151	$425,217	$42,390	$681,758	$2,279,246
NPVs	$13,993,821	$16,396,016	$2,402,196	$0	$931,774	$2,125,891	$186,720	$3,244,386	$842,190
EIRR									**15.3%**

Analysis Period: 20 years
Currency: 2010 (SI$ '000)
Discount rate: 12%
Growth Rate (Traffic Growth Rate and Inflation): 2.7%
Source: Ministry of Infrastructure Development.

III. MALAITA NORTH ROAD SUBPROJECT

A. Objective of the Re-Evaluation

41. This examination recalculates the estimated close-of-project economic performance for the Malaita North Road Subproject, which rehabilitated 14.2 km of national roads from KM52 to KM84 from the capital city Auki.

42. The re-evaluation of the economic viability followed the ADB's guidelines for the economic analysis of projects (footnote 25) as did the original economic evaluation undertaken in the feasibility study. The evaluation was based on comparing the whole of life project investment and maintenance costs incremental to the base case with the expected incremental benefits to road users in the project case in discounted cash flow terms. The analysis follows the same methodology as outlined in the feasibility study report, and is summarized in the following sections.

B. Description of Base Case

43. Various sections of the road within the study area had been identified as being at risk of coastal inundation and erosion, which is expected to worsen with climate change. Many sections of the road were frequently flooded during high tides and coastal storms. Furthermore, along its 14.2 km, the unsealed road was in a poor state, and only passable to certain types of vehicles.

44. The flooding of the road during high tide prevented residents from conducting business in Auki. The original condition of the road also prevented residents from accessing health centers and schools.

45. The total population with access to the road was estimated at 27,270. The road had minimal motorized traffic prior to the subproject being implemented. Some passenger traffic and agricultural cargoes traveled by sea in small outboard motor vessels. The most common mode of transport, however, was by walking. Cash crops brought to market were chiefly copra, cocoa, and market produce (fruit, root crops and vegetables).

C. Description of Project Case

46. One of the key expectations of the subproject was to improve the livelihoods of communities living within the subproject impact area by strengthening transport links to better withstand extreme weather in the future using climate-proofing measures. This included the construction of coastal protection works for the road and the re-gravelling of the road within the study area.

As completed in August 2013, the subproject comprised the following activities:

(i) 200mm thick base construction over the existing road formation to a minimum width of 6m, 5m carriageway with approximately 0.5m shoulders; and
(ii) coastal protection measures including
    a. installation of gabion protection barrier structure along the existing foreshore areas,
    b. backfilling of any existing scour sections, and

c. raising road formation at nine low locations (1,840m of coastal protection in total).

47. The cost of construction was updated to the actual investment cost (based on the final contract price) of $5.5 million (and $4.2 million in 2010 dollars).

D. Methodology

48. Benefits and economic costs were analyzed using standard EIRR and NPV methodology and format in accordance with ADB guidelines for economic analysis of projects. (footnote 25) The analysis was done for both the existing climate conditions and the forecast climate change conditions until the end of the subproject design life in 2030.

49. Costs and benefits in the evaluation were assumed in 2010 prices. The evaluation assumed implementation occurred in one year with all benefits and recurring costs accruing over the subsequent 20 years. Due to the conservative nature of the evaluation no residual value was assumed. The evaluation was expressed in Solomon Islands dollars using an exchange rate of SI$7.9 to $1.

50. Due to the low volumes of traffic present in the base case, models such as the World Bank's Highway Design Model and Road Economics Decision Model were inappropriate. Further, the project was expected to have significant indirect impacts on agricultural transport efficiency, safety, social inclusiveness, and access to basic services.

51. The evaluation of the economic viability of the subproject, both in the feasibility study and in the current re-evaluation, was therefore based upon its (i) travel time benefits, (ii) reduction of lost income from road closures, (iii) reduction of lost cargo output from the region due to road closures, (iv) increased cargo output through reduced freight costs, and (v) health benefits associated with reductions in road closures (accessing health centers and hospitals).

52. In summary, the economic feasibility focused on the expected income generation and time savings for the community through the development of commercial transport services and through stimulus to agricultural production, the improved accessibility to services as well as the expected improvements to transport safety resulting from improved crossings.

53. The project team carried out surveys to determine the need for transport in the subproject area, together with the costs (and risks) of the modes in use. While undertaking the benchmark study, the team assumed the following potential benefits from this subproject:

(i) road infrastructure should improve livelihoods in the Solomon Islands. This is based on regional studies which suggest roads play a significant role in improving livelihoods, especially when combined with other investments in infrastructure and social services;
(ii) road rehabilitation should improve crop yields and harvests;
(iii) road rehabilitation would increase economic activity in the regional centers and in remote islands;
(iv) major crops such as cocoa and copra production will increase due to a number of enabling factors from road rehabilitation; and
(v) access to services would increase due to quicker access times and more direct routes of travel.

54. These assumptions were considered when designing the baseline study. The post construction survey followed this same set of assumptions to maintain consistency of data across surveys.

55. As identified during baseline survey for initial poverty and social assessment, copra and cocoa agriculture represents the primary form of income for the local population, with 61% of working population involved in this industry.[28] The road rehabilitation was expected to boost trade of copra and cocoa by improving road connectivity. As the subproject would greatly reduce the time and cost of bringing agricultural produce (chiefly cocoa and copra) to the market, it was forecast that the long-term benefits could potentially include increased agricultural production in the fertile plains accessible from the project area after subproject completion.

56. The main goal of the rehabilitation subproject was to reduce the number of days that the road was impassable due to flooding. Prior to the project, the road was adequate for both passenger and cargo vehicles, and pedestrians, but access and connectivity were often constrained by flooding. The lack of connectivity restricted movement of people and trade.

57. The subproject also aimed to improve accessibility to health services and schools, reducing the number of deaths and time lost due to unattended or belated attendance to illness or injury. Prior to the subproject, the community were at times unable to go to hospitals when sick due to the lack of transport or the road being in poor condition. The accessibility parameter was presented in terms of days the roads were impassable for medical or other accessibility purposes.

58. The above benefits of the Malaita subproject were estimated based on information gathered by the project team through household surveys in 2010. The subproject was evaluated as a whole assuming full connectivity. The capital cost and recurrent cost estimates adopted in this study are based on those provided in the engineering report.[29] While the capital cost and ongoing maintenance estimates are the same for both existing and forecast climate change analysis, the emergency repair costs due to coastal inundation are greater under climate change conditions. The benefits were estimated in terms of the reduction in travel times and the number of days when the road was closed.

59. The study was updated in 2011 following a revision of cost estimates for the preferred Scenario 3. This update included an extension of the works to include Malu'u Hill and an additional raising of the road for coastal protection.

E. Economic Re-Evaluation Results

60. The re-evaluation was carried out based on the data provided by the before and after construction report for Malaita North Subproject.[30] The data was gathered through a post-construction survey which was consistent with the baseline survey.

61. The survey was completed only about 1 to 2 months after the completion of the works. Therefore, it is unlikely that the community had sufficient time to modify their behavior, production and transportation as a result of the new road.

[28] MID.2011. *Initial Poverty and Social Assessment Malaita North Road Subproject*. Honiara
[29] MID. 2010. *Engineering Assessment North Coast Road Malaita Province*. Honiara
[30] MID. 2013. Before and After Comparison Report Malaita North Road Climate Adaptation. Honiara

1. Review of Key Parameters

62. A review of the key parameters to the assessment was conducted based on the results of the social survey.

63. The values for the previous analysis were presented in 2010 dollars. Therefore, where new information was available, it was converted from 2013 to 2010 Solomon Islands dollars, and converted to US dollars based on the exchange rate at that time where applicable.

64. Consumer price index data was available from the International Monetary Fund. (footnote 27) This data was only available until 2011. A 5-year average inflation rate was therefore adopted to convert 2013 Solomon Island dollars to 2010 dollars. This represents an average inflation rate of 8.1% p.a.

a. Traffic volumes

65. The project has only been completed for a short time and, therefore, the changes to traffic that were expected to occur as a result of the project may not have been fully realized as yet. Furthermore, no comprehensive traffic counts were conducted as a part of this work.

66. The 2011 baseline survey for initial poverty and social assessment estimated that traffic volumes would increase in the order of 33% due to a reduction in travel cost and time (footnote 29). The 2013 survey carried out for before and after comparison assessment suggests that 70% of respondents believe that traffic levels have increased, although there is no quantification of that number (footnote 31). Some of the data suggests that fare prices for public transport may have increased, although it is difficult to determine conclusively from the data. Furthermore, this may be a short-term response to increases in demand as a result of shorter travel times.

67. For the purposes of this analysis, it is assumed that the previous assumptions on traffic growth remain.

b. Household Income

68. The 2011 baseline survey concluded a monthly income of SI$1,874 based on the results of the household survey. Based on the outcomes of the post construction survey, the current monthly income per household is SI$1,943 (in 2010 dollars). This represents an effective income increase of approximately 3.7%.

c. Agricultural Production

69. Since 2011, the price of cocoa and copra on world markets has dropped. It is understood that the prices in the study area are around SI$1.50 to SI$2 per kilogram for copra, compared with SI$2.70/kg assumed in the initial poverty and social assessment (footnote 28).

70. This has had an impact on the production of cocoa and copra within the study area. A summary of the results from the post construction survey are in Table A7.10. It is important to note that these production numbers represent only the sample population from the survey.

Table A7.10: Average Quantity of Cocoa and Copra

	Average Quantity (Kg)		
	Daily	**Weekly**	**Monthly**
Green Copra (Before)	**540**	**2,160**	**34,560**
Green Copra (After)		**2,000**	**10,580**
% Change		**-7%**	**-69%**
Wet Cocoa Beans (Before)	**378**	**1,134**	**13,608**
Wet Cocoa Beans (After)	**155**	**990**	**11,880**
% Change	-59%	**-13%**	**-13%**

Source: Ministry of Infrastructure Development.

71. The before and after comparison report identifies that a number of the households have responded to the changing prices of cocoa and copra, and switched to other goods such as vegetables and fruits (footnote 30).

72. The economic assessment for Malaita North Road Subproject focused on the production of cocoa and copra, as these were the primary income producing crops, with 61% of people involved in the production of copra and cocoa for income.[31] The post construction survey estimates that the proportion of households involved in the production of copra and cocoa is now 40%.

73. It is understood that the change in pricing has occurred within a relatively short timeframe. If the long-term price of copra and cocoa have adjusted (and this is not a short-term adjustment), farmers are likely to adjust their farming practices accordingly. Based on the post construction survey, this would appear to have started, but it is unlikely that farmers will have switched fully to other crops. As this is a transitional period, and the effects of the road upgrade would not have been fully felt yet, then the 2010 assumptions on copra and cocoa prices and production have been adopted.

d. Access to Healthcare

74. Responses to the social survey would suggest an improvement in access to essential services such as health care. This would support the findings from the 2011 economic analysis. At this stage, the assumptions of the original study have not changed.

e. Flooding Frequency

75. One of the key assumptions in the 2011 economic analysis was the frequency of flooding of the road. As the flooding was based on elevations and expected ocean levels, this has not been altered in this re-evaluation.

f. Costs and Maintenance

76. The capital costs were updated to the actual investment cost (based on the actual contract price). The contract capital cost applied was $5.5 million ($4.2 million in 2010 dollars). This represents an economic cost of $3.7 million based on the methodology applied in the 2011 assessment.

[31] MID. 2011. Economic Assessment Malaita North Road Subproject. Honiara.

77. The 2011 economic assessment that was undertaken was updated in 2011 to reflect a change in costs. The actual costs of the works represent a reduction of $1.9 million in cost when compared with the 2011 estimated costs.

78. The on-going maintenance and rehabilitation costs identified in the 2011 economic analysis remained unchanged in the analysis.

79. It is noted that in the 2011 economic analysis, an emergency repairs estimate was not applied correctly, resulting in a slightly different EIRR reported. This has been rectified in this report and therefore the re-evaluation results for the pre-construction represent these revisions.

F. Economic Re-Evaluation Results

80. The revised economic analysis under existing climatic conditions for the subproject is in Table A7.11. This was undertaken on Scenario 3 from the 2011 economic analysis, which represents the final constructed scenario that was adopted.

81. The pre-construction estimate provided is based on the feasibility cost and benefit estimates from the 2011 assessment.

82. The analysis demonstrates that with a reduction in the capital costs for the works, as well as a marginal increase in incomes, the EIRR has improved from 7.7% in the 2011 analysis to 14.0% in the current assessment.

83. The results for climate change are provided in Table A7.12. These show a significant improvement in the EIRR over the 2011 assessment (18.7% up from 12%).

84. Since the costs are known, the key uncertainty for the road will be any changes to the benefits, as well as expected maintenance costs for the road. The 2011 assessment identified that the works were relatively insensitive to a change in an individual benefit by up to 40%. Therefore, this suggests that the results are reasonably robust. A detailed summary of the economic analysis without and with climate change are in Table A7.13 and A7.14 respectively.

Table A7.11: Economic Re-Evaluation Results Summary (in $'000s, 2010 Prices)

	Pre-Construction Estimate (2010)	Post-Construction Estimate
PV Net Cost	$4,805	$2,907
PV Benefit	$3,351	$3,384
NPV	-$1,950	-$477
EIRR (%)	7.7%	14.0%

Source: Ministry of Infrastructure Development.

Table A7.12: Economic Re-Evaluation Results Summary, Including Climate Change (in $'000s, 2010 Prices)

	Pre-Construction Estimate (2010)	Post-Construction Estimate
PV Net Cost	$4,780	$2,882
PV Benefit	$4,755	$4,799
NPV	-$26	$1,929
EIRR (%)	11.9%	18.7%

Source: Ministry of Infrastructure Development.

Table A7.13: Detailed Evaluation Results Post-Completion (Scenario with Existing Climate)

Years	Economic Costs								Benefits						Net Benefits
	Base Case - Do Nothing			Option				Net Cost	Travel Time Savings	Lost Income	Lost Cargo Output	Increased Cargo	Health Benefits	Total Benefit	
	Maintenance	Major Repairs	Total	Capital	Maintenance	Emergency Works	Total								
0	$73,489	$205,769	*$279,258*	$3,656,970	$0	$0	*$3,656,970*	$3,377,712						$0	-$3,377,712
1	$75,179	$205,769	*$280,948*	$0	$75,179	$142,756	*$217,935*	-$63,013	$21,970	$75,744	$251,045	$36,398	$7,142	$392,299	$455,311
2	$76,908	$205,769	*$282,677*	$0	$76,908	$142,756	*$219,664*	-$63,013	$22,475	$77,487	$256,819	$37,235	$7,306	$401,322	$464,334
3	$78,677	$205,769	*$284,446*	$0	$78,677	$142,756	*$221,433*	-$63,013	$22,992	$79,269	$262,726	$38,092	$7,474	$410,552	$473,565
4	$80,487	$205,769	*$286,255*	$0	$80,487	$142,756	*$223,243*	-$63,013	$23,521	$81,092	$268,769	$38,968	$7,646	$419,995	$483,007
5	$82,338	$205,769	*$288,107*	$0	$82,338	$142,756	*$225,094*	-$63,013	$24,062	$82,957	$274,950	$39,864	$7,822	$429,655	$492,667
6	$84,232	$205,769	*$290,000*	$0	$84,232	$142,756	*$226,988*	-$63,013	$24,615	$84,865	$281,274	$40,781	$8,002	$439,537	$502,549
7	$86,169	$205,769	*$291,938*	$0	$86,169	$142,756	*$228,925*	-$63,013	$25,181	$86,817	$287,744	$41,719	$8,186	$449,646	$512,659
8	$88,151	$205,769	*$293,920*	$0	$88,151	$142,756	*$230,907*	-$63,013	$25,760	$88,814	$294,362	$42,678	$8,374	$459,988	$523,001
9	$90,178	$205,769	*$295,947*	$0	$90,178	$142,756	*$232,934*	-$63,013	$26,353	$90,856	$301,132	$43,660	$8,567	$470,568	$533,580
10	$92,252	$205,769	*$298,021*	$0	$92,252	$142,756	*$235,009*	-$63,013	$26,959	$92,946	$308,058	$44,664	$8,764	$481,391	$544,403
11	$94,374	$205,769	*$300,143*	$0	$94,374	$142,756	*$237,130*	-$63,013	$27,579	$95,084	$315,143	$45,691	$8,965	$492,463	$555,475
12	$96,545	$205,769	*$302,313*	$0	$96,545	$142,756	*$239,301*	-$63,013	$28,213	$97,271	$322,392	$46,742	$9,171	$503,789	$566,802
13	$98,765	$205,769	*$304,534*	$0	$98,765	$142,756	*$241,522*	-$63,013	$28,862	$99,508	$329,807	$47,817	$9,382	$515,377	$578,389
14	$101,037	$205,769	*$306,806*	$0	$101,037	$142,756	*$243,793*	-$63,013	$29,526	$101,797	$337,392	$48,917	$9,598	$527,230	$590,243
15	$103,361	$205,769	*$309,129*	$0	$103,361	$142,756	*$246,117*	-$63,013	$30,205	$104,138	$345,152	$50,042	$9,819	$539,357	$602,369
16	$105,738	$205,769	*$311,507*	$0	$105,738	$142,756	*$248,494*	-$63,013	$30,900	$106,533	$353,091	$51,193	$10,045	$551,762	$614,774
17	$108,170	$205,769	*$313,939*	$0	$108,170	$142,756	*$250,926*	-$63,013	$31,611	$108,983	$361,212	$52,371	$10,276	$564,452	$627,465
18	$110,658	$205,769	*$316,427*	$0	$110,658	$142,756	*$253,414*	-$63,013	$32,338	$111,490	$369,520	$53,575	$10,512	$577,435	$640,447
19	$113,203	$205,769	*$318,972*	$0	$113,203	$142,756	*$255,959*	-$63,013	$33,081	$114,054	$378,019	$54,807	$10,754	$590,716	$653,728
20	$115,807	$205,769	*$321,575*	$0	$115,807	$142,756	*$258,563*	-$63,013	$33,842	$116,678	$386,713	$56,068	$11,001	$604,302	$667,315
NPVs	$721,918	$1,742,746	*$2,464,664*	$3,656,970	$648,429	$1,066,309	*$5,371,708*	$2,907,044	$189,491	$653,305	$2,165,297	$313,938	$61,599	$3,383,629	$476,585
EIRR															**14.0%**

Analysis Period: 20 years
Currency: 2010 ($ '000)
Discount rate: 12%
Growth Rate (Traffic Growth Rate and Inflation): 2.3%
Source: Ministry of Infrastructure Development.

Table A7.14: Detailed Evaluation Results Post-Completion (Scenario with Climate Change)

Years	Economic Costs								Benefits						
	Base Case - Do Nothing			Option				Net Cost	Travel Time Savings	Lost Income	Lost Cargo Output	Increased Cargo	Health Benefits	Total Benefit	Net Benefits
	Maintenance	Major Repairs	Total	Capital	Maintenance	Emergency Works	Total								
0	$73,489	$205,769	*$279,258*	$3,656,970	$0	$0	*$3,656,970*	$3,377,712						$0	-$3,377,712
1	$75,179	$207,245	*$282,424*	$0	$75,179	$143,780	*$218,959*	-$63,465	$21,970	$75,744	$251,045	$36,398	$7,142	$392,299	$455,763
2	$76,908	$208,731	*$285,640*	$0	$76,908	$144,812	*$221,720*	-$63,920	$22,475	$84,862	$281,574	$37,235	$7,550	$433,696	$497,615
3	$78,677	$210,229	*$288,906*	$0	$78,677	$145,850	*$224,528*	-$64,378	$22,992	$93,979	$312,102	$38,092	$7,958	$475,123	$539,502
4	$80,487	$211,737	*$292,223*	$0	$80,487	$146,897	*$227,383*	-$64,840	$23,521	$103,097	$342,631	$38,968	$8,366	$516,582	$581,422
5	$82,338	$213,256	*$295,594*	$0	$82,338	$147,950	*$230,288*	-$65,305	$24,062	$112,214	$373,159	$39,864	$8,775	$558,074	$623,379
6	$84,232	$214,785	*$299,017*	$0	$84,232	$149,012	*$233,243*	-$65,774	$24,615	$121,332	$403,688	$40,781	$9,183	$599,598	$665,372
7	$86,169	$216,326	*$302,495*	$0	$86,169	$150,081	*$236,250*	-$66,246	$25,181	$130,449	$434,216	$41,719	$9,591	$641,157	$707,402
8	$88,151	$217,878	*$306,029*	$0	$88,151	$151,157	*$239,308*	-$66,721	$25,760	$139,567	$464,745	$42,678	$9,999	$682,750	$749,470
9	$90,178	$219,441	*$309,619*	$0	$90,178	$152,242	*$242,420*	-$67,199	$26,353	$148,685	$495,273	$43,660	$10,407	$724,378	$791,577
10	$92,252	$221,015	*$313,268*	$0	$92,252	$153,334	*$245,586*	-$67,681	$26,959	$157,802	$525,802	$44,664	$10,815	$766,042	$833,724
11	$94,374	$222,601	*$316,975*	$0	$94,374	$154,434	*$248,808*	-$68,167	$27,579	$166,920	$556,330	$45,691	$11,224	$807,744	$875,911
12	$96,545	$224,197	*$320,742*	$0	$96,545	$155,541	*$252,086*	-$68,656	$28,213	$176,037	$586,859	$46,742	$11,632	$849,483	$918,139
13	$98,765	$225,806	*$324,571*	$0	$98,765	$156,657	*$255,423*	-$69,148	$28,862	$185,155	$617,388	$47,817	$12,040	$891,262	$960,410
14	$101,037	$227,425	*$328,462*	$0	$101,037	$157,781	*$258,818*	-$69,644	$29,526	$194,272	$647,916	$48,917	$12,448	$933,079	$1,002,724
15	$103,361	$229,057	*$332,418*	$0	$103,361	$158,913	*$262,274*	-$70,144	$30,205	$203,390	$678,445	$50,042	$12,856	$974,938	$1,045,082
16	$105,738	$230,700	*$336,438*	$0	$105,738	$160,053	*$265,791*	-$70,647	$30,900	$212,507	$708,973	$51,193	$13,264	$1,016,838	$1,087,485
17	$108,170	$232,355	*$340,525*	$0	$108,170	$161,201	*$269,371*	-$71,154	$31,611	$221,625	$739,502	$52,371	$13,673	$1,058,780	$1,129,934
18	$110,658	$234,022	*$344,680*	$0	$110,658	$162,357	*$273,015*	-$71,664	$32,338	$230,742	$770,030	$53,575	$14,081	$1,100,766	$1,172,430
19	$113,203	$235,700	*$348,904*	$0	$113,203	$163,522	*$276,725*	-$72,179	$33,081	$239,860	$800,559	$54,807	$14,489	$1,142,796	$1,214,975
20	$115,807	$237,391	*$353,198*	$0	$115,807	$164,695	*$280,502*	-$72,696	$33,842	$248,977	$831,087	$56,068	$14,897	$1,184,872	$1,257,568
NPVs	$721,918	$1,822,929	*$2,544,847*	$3,656,970	$648,429	$1,121,938	*$5,427,337*	$2,882,489	$189,491	$975,761	$3,247,961	$313,938	$71,700	$4,798,851	$1,916,361
EIRR															**18.7%**

Analysis Period: 20 years
Currency: 2010 (SI$ '000)
Discount rate: 12%
Growth Rate (Traffic Growth Rate and Inflation): 2.3%
Increase in Emergency Repairs with climate change: 0.7%
Source: Ministry of Infrastructure Development.

ASSESSMENT OF PROJECT IMPACTS AND BENEFITS

I. MAKIRA REHABILITATION SUBPROJECT

1. The assessment of project impacts and benefits of the Makira subproject has been included under SIRIP completion report (footnote 24).

II. WEST GUADALCANAL REHABILITATION SUBPROJECT

A. Methodology

2. The survey team consulted with numerous government departments including the Department of Statistics, Ministry of Finance, and the Department of Lands, and with the donors, the Government of Australia, the ADB and the EU.

3. In West Guadalcanal, populations along the road were subdivided into geographical units based on population density. The survey team then selected a sample of villages and surveyed at least five households in each village, as well as key informants (shop owners, coca and copra buyers, and transport owners) in the area. In the baseline survey 139 households were sampled, and for the 2013 post construction survey 200 households were sampled.

4. As there was no accurate village population count, it was difficult to use a traditional sampling frame whereby a random selection of households is chosen from a master list. The cluster sampling method provided an effective way of addressing this problem together with efficient resource utilization as it allowed the group to travel as a survey unit and to work together. Each village was surveyed by a team of enumerators.

5. A significant requirement was to gain some local understanding of the communities' attitude to road rehabilitation to understand the context of the questionnaire and further fine-tune the analysis. This was provided through discussions with the elders. In the morning, the team would depart for the villages to be surveyed. The survey teams would conduct 5–10 household surveys at one village depending on the size of the village, and undertake other key informant surveys. The research teams would record the responses on the survey forms.

6. The constraints for the survey team involved the distance and time it took to go out to the villages each morning. The consistency of answers from respondents to validate 'factual' quantities, such as the distance to the nearest health facility, required extensive training of enumerators to ensure the information entered into the questionnaires was accurate and reliable.

B. Traffic Growth and Travel Conditions

7. During the survey 100% of respondents responded positively to the increase of traffic level and public transport as compared to the past. Table A8.5 shows the total household expenses on fuel and fares for truck or bus had increased compared to the past, but the number of boat fares had decreased. This clearly shows that majority of the population along the road section are using road transport instead of sea transport.

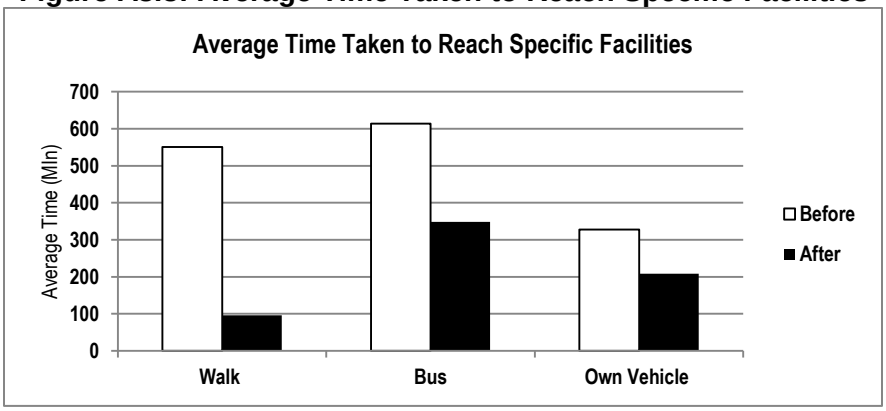
Table A8.5: Total Household Expenses

	Fuel for Vehicle	Truck/Bus Fares	Boat Fares
Before (Total Amount SBD$)	16,350	52,431	1,150
After (Total Amount SBD$)	18,300	100,209	150

Source: Ministry of Infrastructure Development.

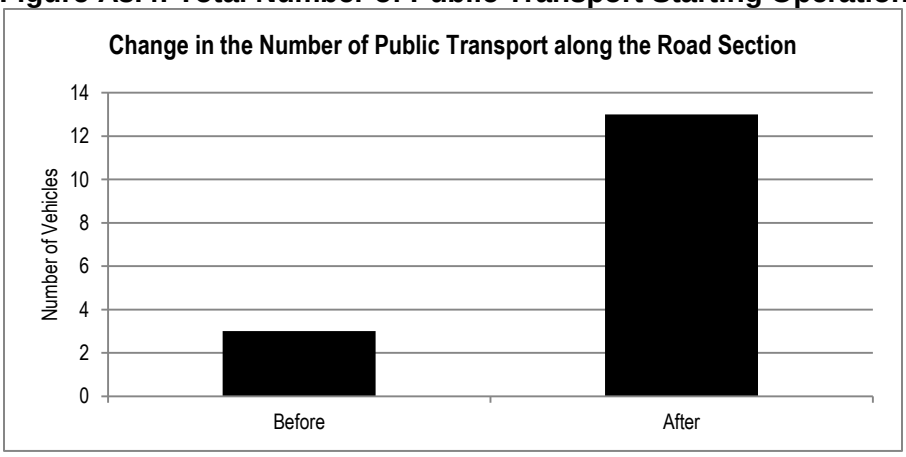
8. Figure A8.3 shows a reduction in the average time taken to reach specific facilities and services: primary and secondary school, health center, hospital, shop/canteen, local and main market, town, police station and bank. Travel times using public transport, privately owned vehicles or walking had decreased, indicating that more people tended to use vehicles to move from one location to another. The transport owner key informant survey in Figure A8.4 shows that more public transport options were available compared to the pre-construction and rehabilitation period.

Figure A8.3: Average Time Taken to Reach Specific Facilities



Source: Ministry of Infrastructure Development.

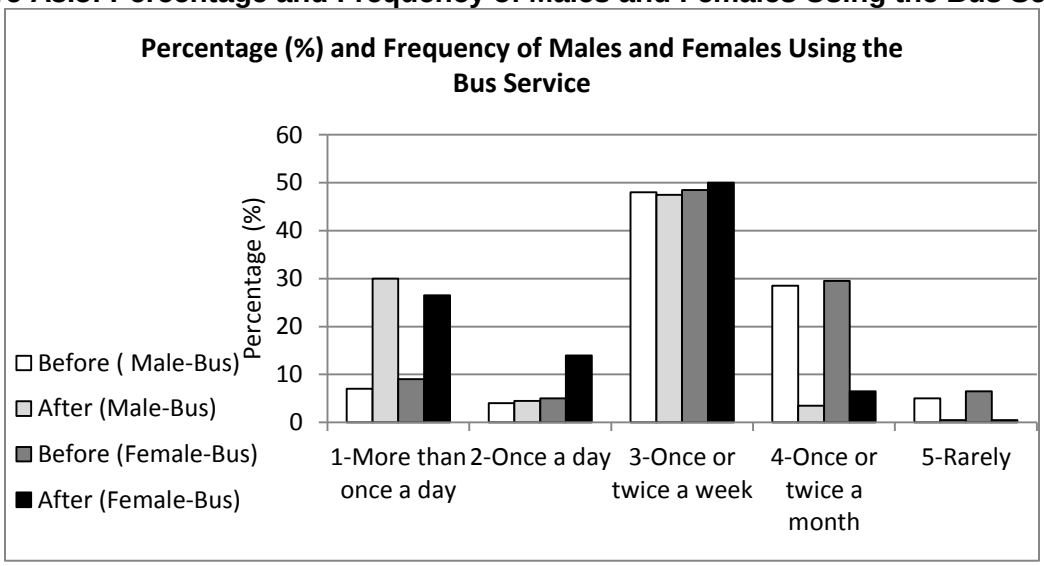
Figure A8.4: Total Number of Public Transport Starting Operation



Source: Ministry of Infrastructure Development.

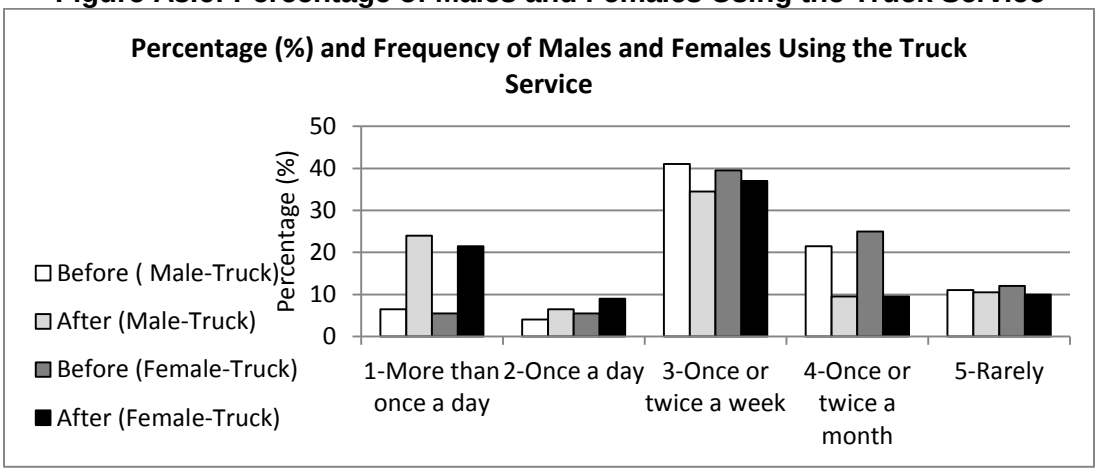
9. Figure A8.5 and A8.6 compare the percentage of males and females using the bus and truck services available before and after the road and bridge rehabilitation. The usage of the services had increased significantly for both males and females traveling more than once per day and females using the bus service weekly, but had decreased for those traveling monthly and rarely. This indicates that now more people are making more trips compared to the past and that more females are using the transport services compared to men.

Figure A8.5: Percentage and Frequency of Males and Females Using the Bus Service



Source: Ministry of Infrastructure Development.

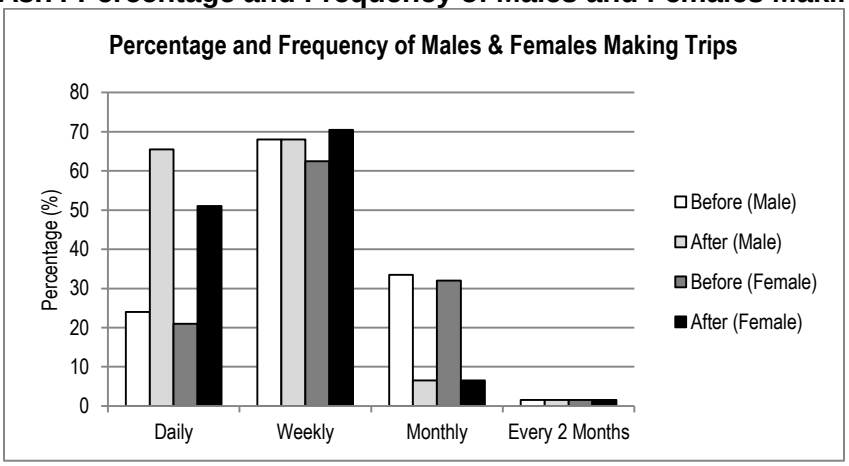
Figure A8.6: Percentage of Males and Females Using the Truck Service



Source: Ministry of Infrastructure Development.

10. Figure A8.7 shows that the percentage of females and males making trips daily had increased, and that the percentage of females making trips weekly also increased compared to males, which remained the same. The percentage of men and women traveling monthly and every two months decreased.

Figure A8.7: Percentage and Frequency of Males and Females Making Trips

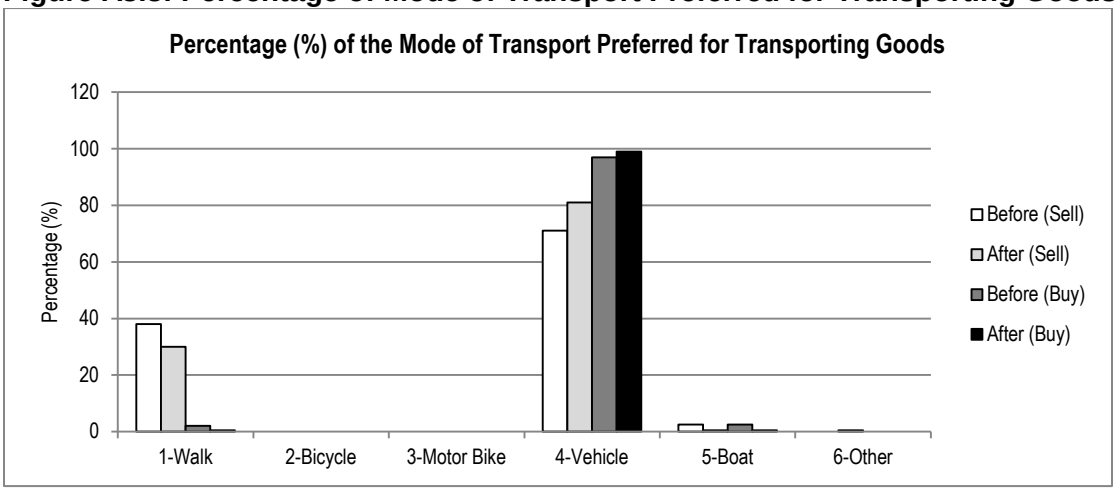


Source: Ministry of Infrastructure Development.

11. Due to the increase in the frequency of trips, percentage of people traveling from their villages to specific locations has been increased after the completion of the subproject. Figure A8.8 shows that there was an increase in the percentage of people who preferred using vehicles to transport goods.

12. The percentage of respondents who walk to sell goods at the market fell from 38% to 30%, showing a shift from marketing close to their villages to other places and at the main market. As reported, many people now sell their produce more often at the market in Honiara compared to the past.

Figure A8.8: Percentage of Mode of Transport Preferred for Transporting Goods



Source: Ministry of Infrastructure Development.

13. Only a few transport owners live along the subproject road and most of the public transport is owned by people living in Honiara, but people are satisfied with the services provided. Table A8.6 shows the list of transport owners along the road section, fares paid and number of vehicles used as public transport before and after the road and bridge rehabilitation. It shows that fares had increased and some vehicle owners had more than one vehicle used as public transport. This indicates a positive impact on the transport services to the communities in terms of traveling to and from their respective villages and access to important services.

Table A8.6: Public Transport Owners, Fares and Number of Vehicles Owned

			No. Of Vehicles Owned	
	Before Fares (SI$)	After Fares(SI$)	Before	After
Felix			1	1
Paul Kopuria	15–20	20–30	1	3
John Stewart		20–30		3
Francis Lima		20–30		3
Ini Kopuria	15–25	20–30	1	2
Selwyn		20–30	3	1

Source: Ministry of Infrastructure Development.

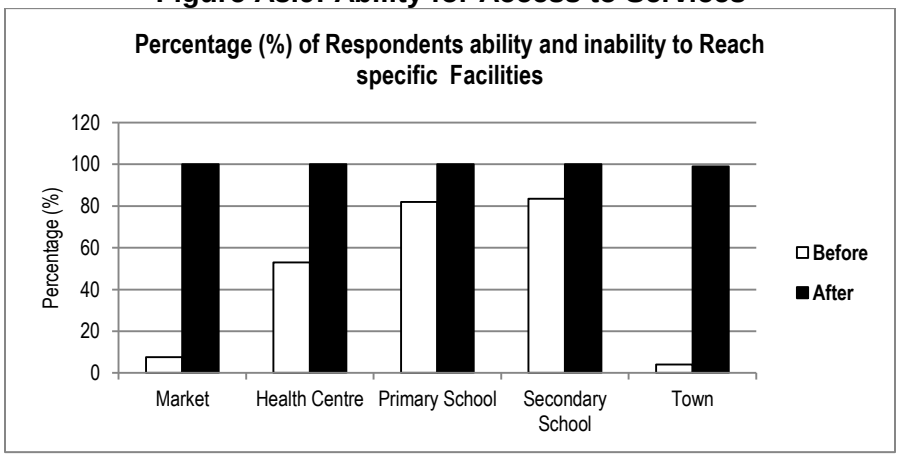
14. Privately owned cars and taxis, followed by public buses, and other privately owned vehicles constitute the highest proportion of vehicles traveling on the road. Most of the people living along the subproject area did not own a vehicle and mostly used available public transport to transport goods to and from town. The increase in privately owned vehicles using the road is due to people traveling for leisure activities as there are many places opened up for the public to use along the coast.

15. Many respondents stated that the North West Guadalcanal Road Rehabilitation and Bridge Construction Subproject had improved access to services and other facilities closest to villages and in Honiara. Also transport services had become more regular and reliable.

C. Emerging Key Impacts

16. Because of the improved road and bridges, 100% of respondents agreed that they could reach the market, health centers, primary and secondary school, but only 99% claimed they can reach town. This compares to before the project, when only about 50% to 85% found it easy to access schools and health centers, and less than 10% were able to access the market and town in all weather conditions.

Figure A8.9: Ability for Access to Services

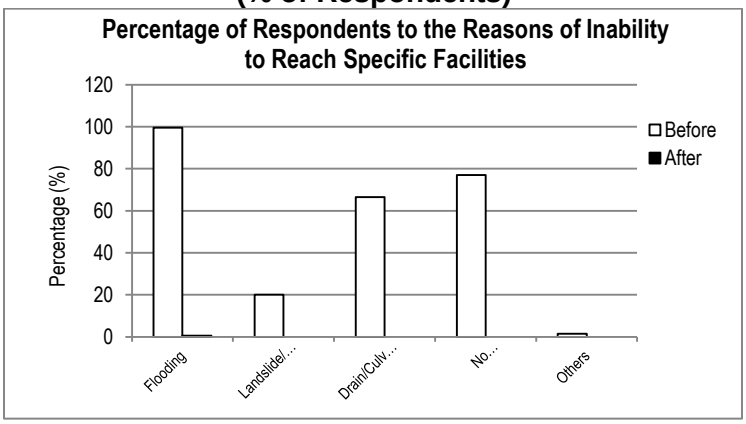


Source: Ministry of Infrastructure Development.

17. Figure A8.10 shows that 99.5% of respondents claimed that flooding was a major issue in the past, as they were not able to access facilities or services, compared to post-construction with only 0.5% claiming that flooding was still a problem. Approximately 20%–80% of respondents claimed that landslide, drain or culvert and no bridges were the reasons for not

able to access to the services. However, these are no longer a hindrance for accessing the services or facilities after the rehabilitation.

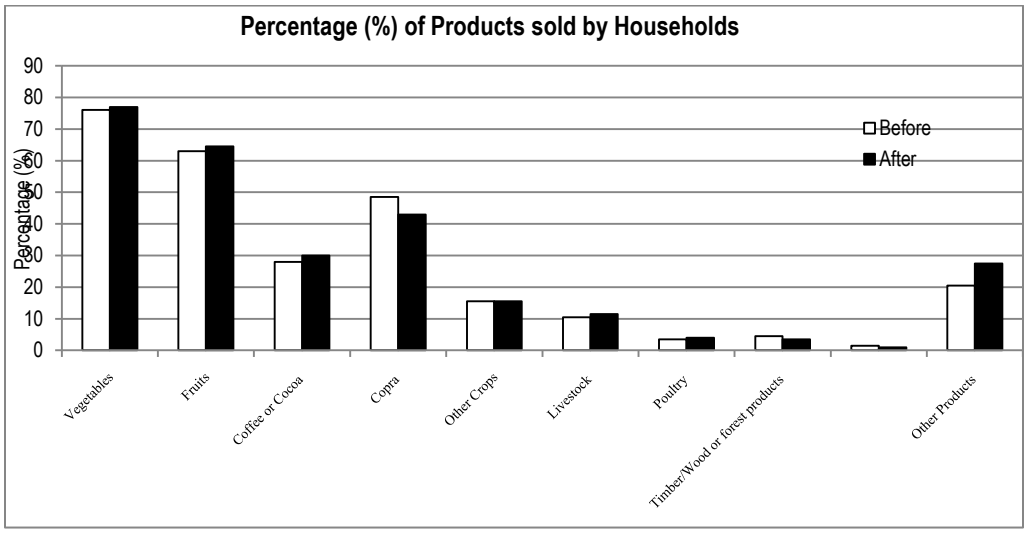
Figure A8.10: Key Reasons for Inability to Reach Key Facilities (% of Respondents)



Source: Ministry of Infrastructure Development.

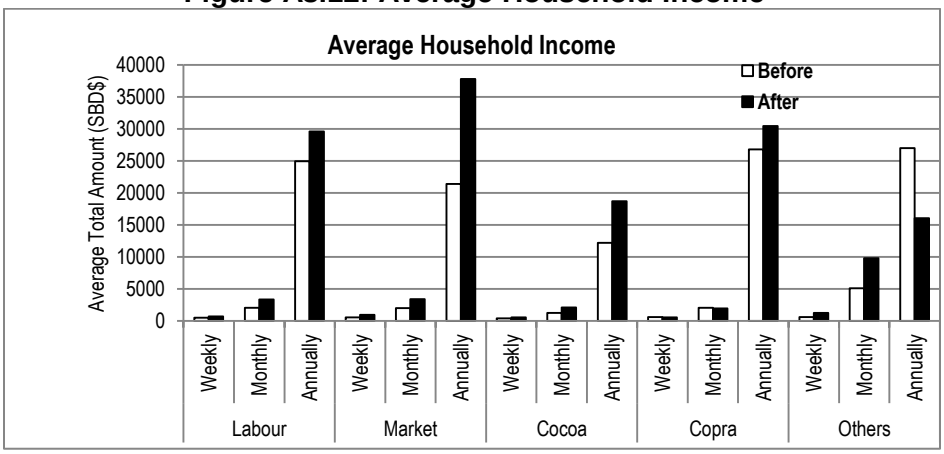
18. Figure A8.11 gives the percentage of people producing various products to sell. Figure A8.12 shows the average total amount of money earned from labor, market, cocoa and copra production, and other products. As shown in Figure A8.11, the households producing and selling vegetables, fruits, coffee and cocoa, livestock, poultry and other products had increased resulting in the increase of the average total amount of income derived from these sources, while it remained the same for the production and selling of other crops, and decreased for the production of timber/wood or forest products, non-timber/wood or forest products and copra.

Figure A8.11: Percentage of Products Sold by Households



Source: Ministry of Infrastructure Development.

Figure A8.12: Average Household Income

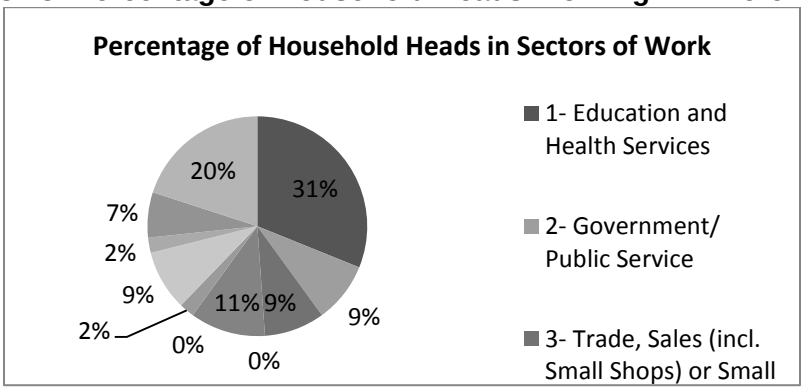


Source: Ministry of Infrastructure Development.

19. The reduction in the production of copra also reduced the total amount earned for this product. As reported by respondents and buyers during the survey, the price of copra before the project was more than $2/kg while at the time of the survey it was $0.70. Similarly, the prices of cocoa had also dropped from $20/kg to $10/kg, affecting production, selling and buying. Hence, many people from the road section had shifted to selling other products, and only a few are still producing and selling the commodities. Many locals no longer sell to local buyers, but to main buyers in Honiara.

20. The data collected showed that 21% of household heads work for regular wages and salary, while 79% were non-salary or wage earners. Figure A8.13 shows that of all people engaged in formal employment, a higher percentage are engaged in education and health services, followed by government, small businesses, agriculture and forestry, and transport.

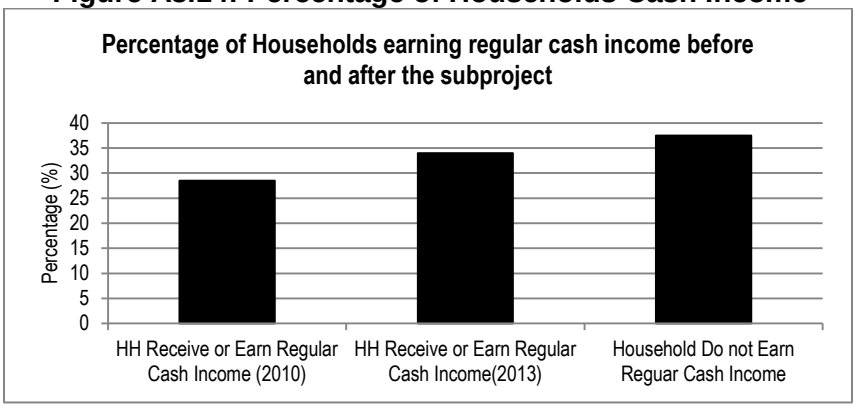
Figure A8.13: Percentage of Household Heads Working in Different Sectors



Source: Ministry of Infrastructure Development.

21. Figure A8.14 shows the percentage of households earning regular cash income (wages and salary) increased from 28.5% to 34% after the project; and 37.5% of respondents claimed that they did not earn regular cash income but were engaged in informal employment and livelihood activities to earn income for their households.

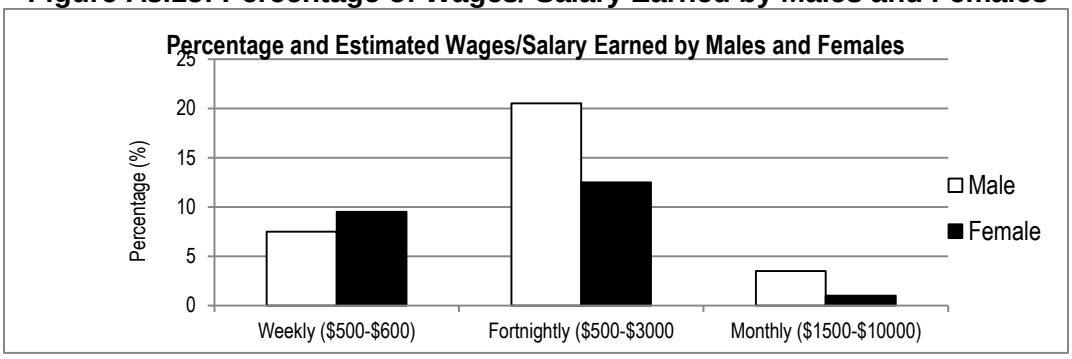
Figure A8.14: Percentage of Households Cash Income



Source: Ministry of Infrastructure Development.

22. Figure A8.15 shows the wages and salaries earned by members of households on a weekly, fortnightly and monthly basis. Higher percentages of females earn weekly income compared to males, who mostly earn on a fortnightly and monthly basis. More women are engaged in temporary labor intensive jobs and sell goods at the market, compared to men who are more often engaged in formal employment.

Figure A8.15: Percentage of Wages/ Salary Earned by Males and Females



Source: Ministry of Infrastructure Development.

23. There is also a significant increase in the percentage of households accessing basic services, such as tank water, piped water and agricultural land (Table A8.7). A major contributing factor as reported by the respondents was the rapid increase of traffic and transport services, which triggered the installation of water supply and tanks by constituency members at their respective wards.

Table A8.7: Access to Services and Land

	Before (%)	After (%)
Tank Water	17.3	40.5
Piped Water	20.9	83.0
Garden/Land	65.5	92.0

Source: Ministry of Infrastructure Development.

24. The road and bridge rehabilitation and construction also affected education attendance. Of a sampled total of 525 children—286 male and 239 female, aged between 5 and 18 years—84.3% of males and 88.7% of females attended school (Table A8.8). The results indicate that

the road project had a positive impact on children between the ages of 5 to 18 years attending formal education, especially females.

Table A8.8: School Attendance Rate by Gender

Gender	Total Aged 5-18yrs	Total Aged 5-18yrs (In School)	%
Male	286	241	84.3
Female	239	212	88.7

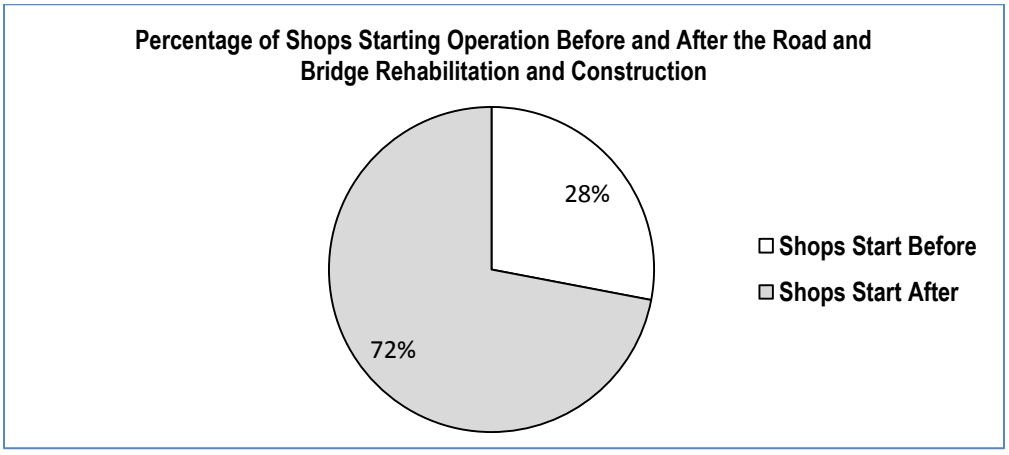
Source: Ministry of Infrastructure Development.

25. Additionally, as reported by a member of the national secondary school authority, the improved infrastructure had made great changes to Selwyn College's activities, with easier access to Honiara. Transportation of school rations and students at the beginning of each academic semester was no longer time consuming as most parents took their children to school using their own vehicles. Parents were able to visit their children more often, and sick students could be transported to the National Referral Hospital at any time of the day.

26. Regarding tertiary education, the proposed University of the South Pacific's fourth campus will be situated in the subproject area at Doma. This is a great achievement by the Government of Solomon Islands, the Provincial Government, and the aid donors. Many respondents stated it was a positive outcome from the improved infrastructure that the plan to construct the campus had been considered once again by the respective responsible authorities.

27. Key informant surveys were also carried out for shop and transport owners, and cocoa and copra buyers along the road section. Figure A8.16 confirmed that the road had made a significant impact on the shops that operate along the road section, with 72% of the shops sampled starting after the rehabilitation of the road and bridge.

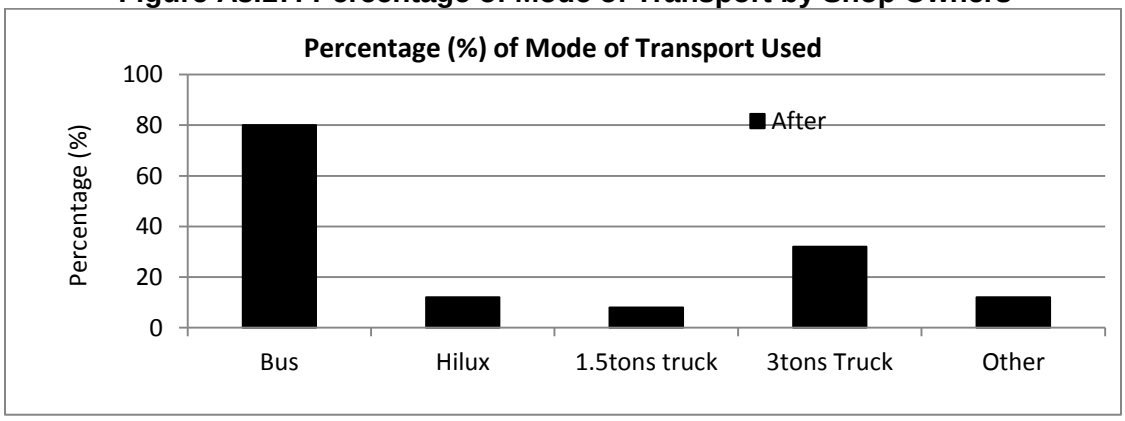
Figure A8.16: Percentage of Shops Starting Operation Before and After Road and Bridge Construction and Rehabilitation



Source: Ministry of Infrastructure Development.

28. Figure A8.17 shows that 80% of shop owners preferred to use buses to transport goods to their shops, while in the past most depended on 3-ton trucks. The shop owners stated that it was cheaper to use the bus service. The improved road had contributed a lot to the shift in the cargo transport mode, and the state of cargoes had improved a lot.

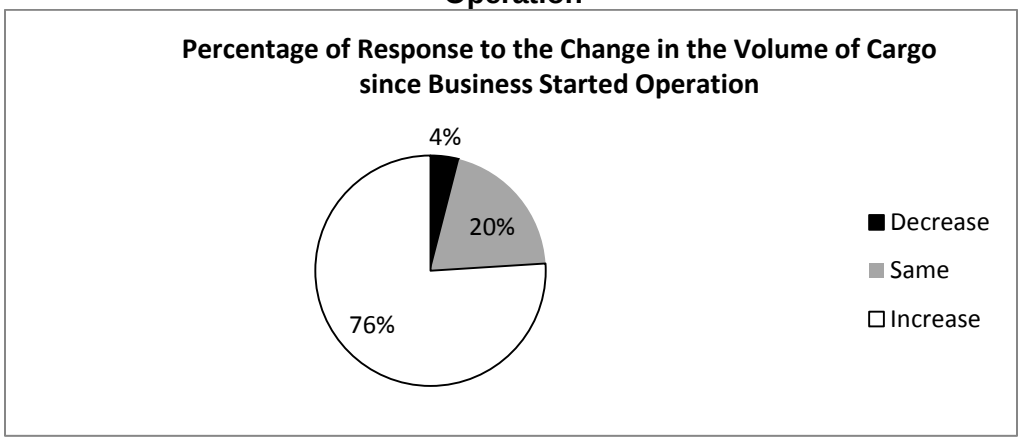
Figure A8.17: Percentage of Mode of Transport by Shop Owners



Source: Ministry of Infrastructure Development.

29. In Figure A8.18, a higher percentage of shop owners claimed that cargo had increased since their respective shops started operation, 20% claimed it was still the same, and 4% claimed that cargo had decreased because competition was high. With the increase in people using the road, there has been an increase in the number of canteens and shops. This has resulted in an increase in sales of goods.

Figure A8.18: Percentage of Change in the Volume of Cargo since Business Started Operation



Source: Ministry of Infrastructure Development.

III. MALAITA NORTH ROAD REHABILITATION SUBPROJECT

A. Methodology

30. In order to assure consistency in the comparison of indicators, the same survey methodology that was adopted before the subproject was maintained for the post-construction survey. Accordingly, the safeguard team of the project surveyed at least eight households in a village. While the total sample for the baseline survey was 165 households, 185 households were sampled as part of the after subproject survey.

31. As decided in the baseline study, the cluster sampling method was used whereby the survey group traveled to a village as a survey unit and worked together. Each village was surveyed by a two-person enumerator team.

32. The survey team had a variety of tasks to complete while working in the field. The initial tasks involved notifying communities of the imminent arrival of the survey team. This was done by the use of letters hand-delivered to the village chiefs in the area. As identified in the original survey, a couple of constraints were faced by the survey team:

- the post-construction survey was limited to households and was not extended to local buyers, and
- community attitudes towards road and bridge construction were not recorded at this survey.

B. Traffic Growth and Travel Conditions

33. Table A8.9 below shows the average time taken and fares paid to reach the nearest schools and clinics before and after the road rehabilitation. As illustrated, fares paid had increased while travel time had decreased. This indicates that people are starting to travel by available road transport to get to the facilities, giving rise to the decrease in travel time; although many people still walk. As shown in Table A8.10, the percentage of household members walking to the facilities decreased, people using bicycle and vehicles increased, while those using boats decreased to 0%.

Table A8.9: Average Travel Time and Fares to Reach the Nearest Schools and Clinic

Description	Before		After	
	Fare / SI$	**Time / min**	**Fare /** SI$	**Time / min**
Primary School	na	19.13	na	19.26
Secondary School	5.36	39.13	6.54	38.52
Health center (Clinic)	6.18	37.20	6.79	37.11

na=not applicable.
Source: Ministry of Infrastructure Development.

Table A8.10: Percentage of Respondents to the Mode of Transport to Schools and Clinics

Mode of Transport	Before			After		
	Closest Primary School (%)	Closest Secondary School (%)	Closest Clinic (%)	Closest Primary School (%)	Closest Secondary School (%)	Closest Clinic (%)
Walk	78.4	68.4	86.5	78.2	67.1	85.7
Bicycle	3.5	3.5	4.6	3.3	3.8	4.6
Motor Bike	0	0	0.3	0	0	0.3
Vehicle	0	0.8	7.9	0.6	2.2	9.2
Boat	0	0	0.5	0	0	0
Other	0	0	0	0	0	0

Source: Ministry of Infrastructure Development.

34. The shift in the mode of transport preference was greatly affected by the condition of the road, as rated by the respondents during the survey. Before the road rehabilitation only less than 2.5% of respondents claimed the road to be in average condition while more than 90% claimed the road was in bad condition. However, after construction, 97% of respondents claimed the road is in good condition and only 2.7% claimed it is in poor condition.

35. The survey indicated that after the road rehabilitation, people were able to access the market, health centers, schools, and town more easily. Also, the percentage of people claiming to be unable to access the facilities had fallen significantly.

C. Emerging Key Impacts

1. Education Sector and Health Sector

36. One of the benefits of the subproject is the reduction in time for children to reach school. Also as reported by a member of the extension school at Orukalia, the school board is currently pushing for establishing second primary school in the project area rather than an extension to the existing, with an expected increase in the number of enrolments per year as a result of the improved accessibility. However, other positive impacts on the national education goals in terms of accessibility and achievement of equitable access to education are yet to be determined.

37. The health center has also benefited from the road rehabilitation subproject. As stated by the Senior Nurse In charge of the Malu'u Clinic, awareness programs are now easily carried out to communities and schools along the subproject area in all weather conditions, although rain can sometimes be a problem to accessing some villages. In addition, many villagers are now accessing the Malu'u Clinic. For the health sector, the benefit from the subproject is not yet determined.

2. Agricultural Production and Economic Impact

38. It was found that the quantity of cocoa and copra being traded had decreased after the road improvement and bridge construction subproject. As stated by the major green copra and wet cocoa buyers, production of the commodities had been significantly affected by the falling market price. Before the project, the price of copra was $3 per kilogram, while at present it is

$1.50 to $2 per kilogram. The table A8.11 shows the average quantity of green copra and wet cocoa beans purchased from people along the road section.

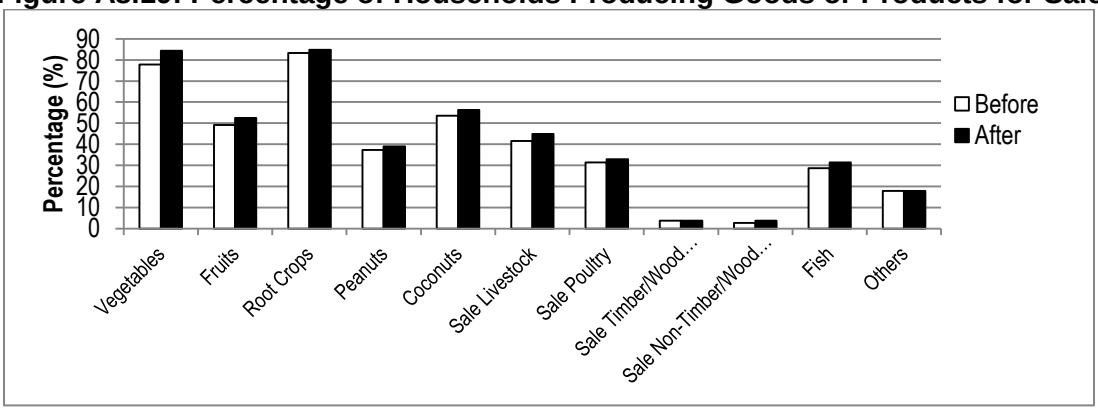
Table A8.11: Average Quantity of Green Copra and Wet Cocoa Beans Purchased

Type of Production	Average Quantity (kg)		
	Daily	Weekly	Monthly
Green Copra (Before)	540	2,160	34,560
Green Copra (After)	n/a	2,000	10,580
Wet Cocoa Beans (Before)	378	1,134	13,608
Wet Cocoa Beans (After)	155	990	11,880

n/a=not applicable.
Source: Ministry of Infrastructure Development.

39. The 2013 post construction survey showed that 95% of households were producing and selling products regularly to earn income. As shown in Figure A8.19, the percentage of households producing and selling commodities mostly increased after the subproject.

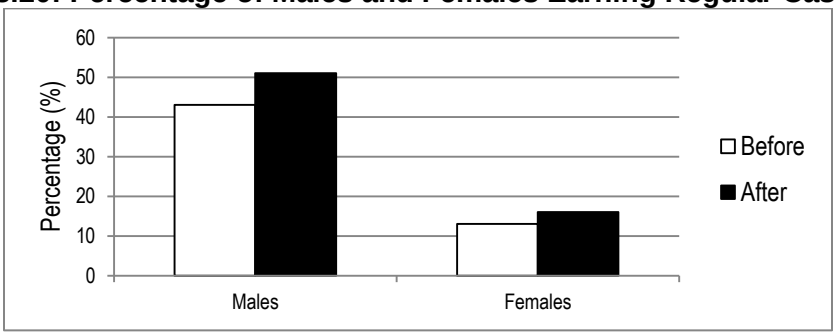
Figure A8.19: Percentage of Households Producing Goods or Products for Sale



Source: Ministry of Infrastructure Development.

40. The total percentage of household members earning regular cash income before the subproject was 19.4% and after it was 22.1%. Figure A8.20 shows the percentage of males and females earning regular cash income before and after the subproject had increased.

Figure A8.20: Percentage of Males and Females Earning Regular Cash Income



Source: Ministry of Infrastructure Development.

41. As shown in Table 8.12, the average income earned by households had increased between 21.7% and 37.6% compared to before the road rehabilitation.

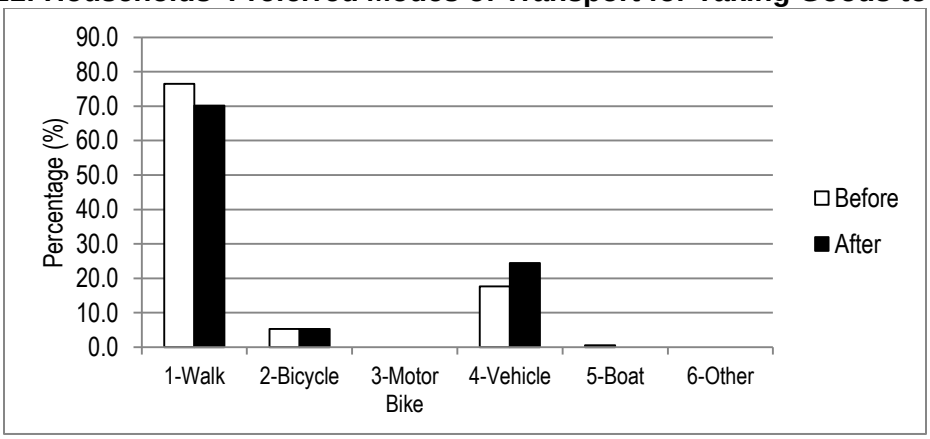
Table A8.12: Average Income Earned by Households

Description	Before	After	% of Increase
Total Weekly Income	427.84	520.70	21.7
Total Monthly Income	1783.59	2454.51	37.6
Total Annual Income	21475.07	29454.10	37.2

Source: Ministry of Infrastructure Development.

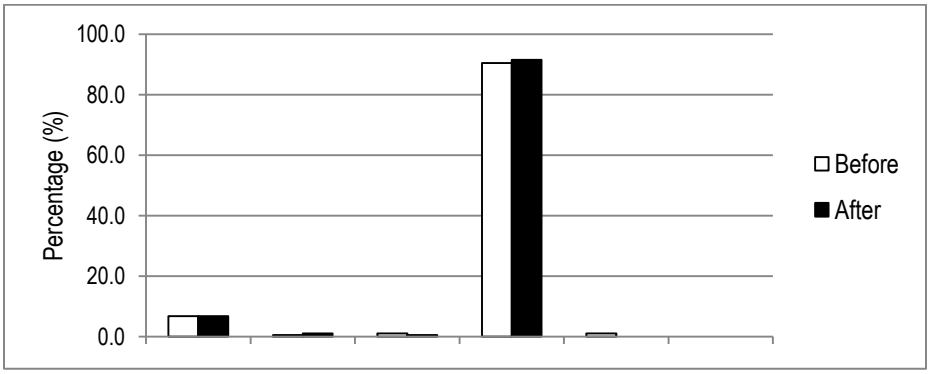
42. Figures A8.21 and A8.22 show the percentage of respondents using different modes of transport to and from town or market. The percentage of respondents who preferred to use vehicles or bicycles had increased while the percentage of those preferring to walk or use a boat had decreased. This indicates a shift to using vehicles as a means of transportation.

Figure A8.21: Households' Preferred Modes of Transport for Taking Goods to the Market



Source: Ministry of Infrastructure Development.

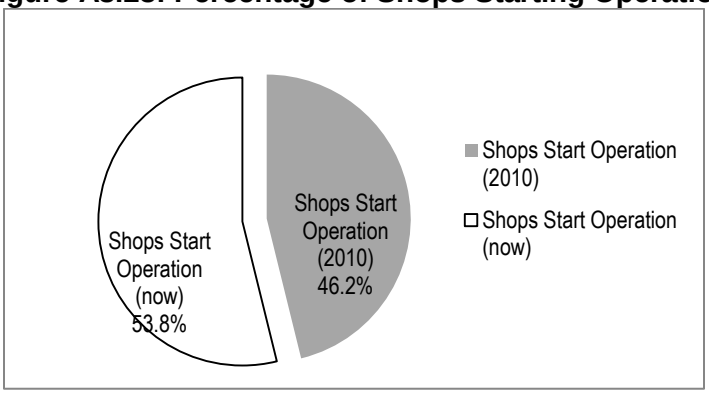
Figure A8.22: Households' Preferred Modes of Transport for Taking Goods to or from Town or Market



Source: Ministry of Infrastructure Development.

43. The key informant surveys also showed that 53.8% of shops along the road section had started operation after the road improvement and bridge construction subproject, and people did not have to walk long distances to get to shops (Figure A8.23).

Figure A8.23: Percentage of Shops Starting Operation



Source: Ministry of Infrastructure Development.