



FEASIBILITY STUDY

REHABILITATION/CONCRETING OF LIYA-LIYA TO CASIT-AN FARM TO MARKET ROAD

MUNICIPALITY OF LAUA-AN, PROVINCE OF ANTIQUE

PRDP-IB-R006-ANT-01-000-00-14

PROVINCE OF ANTIQUE
CY 2014

Feasibility Study

Municipality of Laua-an

Province of Antique

CY 2014

EXECUTIVE SUMMARY

- A. Project Title : **Rehabilitation/Concreting of Liya-liya to Casit-an FMR**
- B. Project Location : Brgys. Liya-liya, Omlot, Igtadio & Casit-an, Laua-an, Antique
- C. Project Category : Rehabilitation/Concreting
- D. Project Scale/Dimension : 1.382.30 Km.
- E. Project Proponent : Prov. Gov't. of Antique
- F. Implementing Unit : Provincial Engineer's Office, Province of Antique
- G. Total No. of Barangays of the: 40
Municipality
- H. Mode of Implementation : By Contract
- I. Road Influence Area (RIA) :
- J. Project Beneficiaries w/n : 1,769 Male : 878
The RIA Female : 891

Barangay	No. of Ha.	Crop
Liya-liya	*Area cannot be determined	**No thriving crops
Omlot	72	Sugarcane, Rice & Banana
Igtadio	74	Sugarcane, Rice & Banana
Casit-an	321	Sugarcane, Rice & Banana

Households : 383

- K. Total Project Cost and Cost sharing : **Php 11,952,472.92**
 WB Loan Proceeds (80 %) : Php 9,561,978.39
 GOP (10 %) : Php 1,195,247.29

PLGU Equity (10 %) : Php 1,195,247.29

L. Economic Viability Indicators : EIRR : 31.40%
ENPV: Php10,630,550.00 @ 15% discount rate
BCR : 2.04

M. Conclusions and Recommendations : The project is found to be feasible from the marketing, technical, social, environmental, financial, economic, and operational aspects of the study. Hence, the Rehabilitation/Concreting of Liya-liya to Casit-an FMR is strongly recommended for funding and implementation.

4.1 Social Analysis

4.1.1 Project Beneficiaries

The proposed sub-project will benefit a total population of 1,769 composed of 383 households of Barangays Omlot, Igtadiao and Casit-an. The residents who are mostly agricultural farmers and laborers will be the beneficiaries of the said project. All three (3) barangays are agricultural area with rice, sugar cane and banana as the prime crop. Rice plantation has an area of 167 hectares with an estimated annual production of 21,808 sacks; sugar cane plantation has an area of 50 hectares with an estimated annual production of 2,500 sacks; and banana plantation has an area of 51 hectares with an estimated annual production of 76.50 tons.

Consultation was conducted to the municipal officials and barangay officials of the three (3) beneficiary barangays, namely Omlot, Igtadiao and Casit-an, last June 17, 2014 while consultation to the residents of these three (3) barangays were conducted last June 23, 24, 25, 2014 respectively. (*Please see attached Minutes and Attendance*). The meeting was attended mostly by women including the barangay officials who are very supportive to the Rehabilitation/Concreting of the 1.923-kilometer Liya-Liya to Casit-an FMR. According to them, there has been a long clamor among the residents

on the improvement of the said road section so as to relieve them from difficulties and hardship of transporting their products to and from the market centers, thus, alleviating them from poverty.

It was also learned during the consultation that four (4) upland barangays namely Tigunhao, Latazon, Guiamon and San Ramon will likewise benefit from the proposed farm-to-market road during dry season. The project will bring many benefits to the local residents such as access to education and health facilities and improved socio-economic activities. The improved accessibility will also enhance the resiliency of the communities especially during calamities wherein evacuation will be made easier and faster.

Illustration 1. Consultation conducted at the three beneficiary barangays.



Indigenous Cultural Community/Indigenous Peoples (ICC/IP)

4.4.2 Indigenous Cultural Community/Indigenous Peoples (ICC/IP)

Indigenous Peoples (IPs) known as Iraynon Bukidnon are residing in the eastern upland barangays specifically in Maybunga, Guiamon and San Ramon. Based on the Ancestral Domain Sustainable Development Plan (2014-2019) the number of IPs totaled to 784 or 172 households.

However, the proposed road project is not within and will not traverse an ancestral domain nor affect any indigenous peoples. A Certificate of Non-Overlap will be secured as one of the requirements.

4.4.3 Site and Right-of-Way Acquisition

The proposed site is an existing provincial road with a standard width of 15 meters. The proposed road which is 9 meters wide (*4 meters concrete pavement, 1.5 meters shoulder on both sides and 1 meter for line ditch both sides*) is within the width of a standard provincial road.

During the consultation meeting and ocular inspection, it was noted that some houses have encroached the road but the affected residents are willing to give way for its improvement.

Result of the entitlement survey of affected persons show that relocation is not necessary. It only requires reconstruction of portion of the houses and some structures.

The Road-Right-of-Way (RROW) will affect both agricultural and residential lands with a total area of 4,988.40 square meters and a total Project Affected Persons (PAPs) of 199 as shown in Table 14 below.

Table 14. Land Classification, Number of Land Owners and Number of Household Members and Area Affected per Lot by Barangay

Barangay/ Lot No.	Classification of Land	Name of Head of Household	No. of Household Members	Area Affected sq.m	Remarks
Omlot					
1920	Agricultural	Edward Pon-an	4	228.00	Donated
1022	-do-	Joel Tasin	2	152.00	Donated
1968	Residential	Joel Tasin	-	34.00	Donated
1925	Agricultural	Felix Alpas, Sr.	6	90.00	Donated
1926	-do-	Felix Alpas, Sr.	-	77.50	Donated

	1927	-do-	Felix Alpas Sr.	-	60.00	Donated
	1928	-do-	Felix Alpas, Sr.	-	135.00	Donated
	1957	Residential	Felix Alpas, Sr.	-	22.00	Donated
	1931	Agricultural	LGU-Lauan	-	124.00	Donated
	1954	Residential	Analyn Samulde	4	22.00	Donated
	1955	-do-	Joseph Alamis	3	24.00	Donated
	1987	-do-	Joseph Alamis	-	25.00	Donated
	1956	-do-	Eladio Necesito	3	44.00	Donated
	1956	-do-	Erlinda Necesito	3	16.00	Donated
	1958	-do-	Candelaria Samillano	3	10.00	Donated
	1960	-do-	Melquiades Alegre	7	17.50	Donated
	1961	-do-	Anita Montano	4	9.60	Donated
	1962	-do-	Elpidio Necesito	6	10.80	Donated
	1966	-do-	Elpidio Necesito	-	64.00	Donated
	1963	-do-	Margarito Baldestamon, Jr.	2	9.60	Donated
	1964	-do-	Edmon Peroy	2	67.00	Donated
	1965	-do-	Edmon Peroy	-	26.00	Donated
	1967	-do-	Erlinda Bangcaya	2	49.00	Donated
	1974	-do-	Freddie Necesito	3	13.20	Donated
	1975	-do-	Barangay Omlot	-	37.00	Donated
	1982	-do-	Arnel Alegre, Sr.	6	19.60	Donated
	1983	-do-	Esmyking Necesito	7	17.00	Donated

	1984	-do-	Alfie Necesito	4	35.00	Donated
	1985	-do-	Norma Samillano	1	24.00	Donated
Igtadio						
	774	Agricultural	Ronnie Jungco	5	168.00	Donated
	779	-do-	Ronnie Jungco		57.60	Donated
	775	-do-	Remegio Constantino pla	5	132.00	Donated
	778	-do-	Remegio Constantino pla	-	282.80	Donated
	790	Residential	Primo Jungco	4	51.00	Donated
	791	Agricultural	Elpidio Necesito	-	102.00	Donated
	792	-do-	Elpidio Necesito	-	228.00	Donated
	796	Residential	Adela Jungco	4	14.00	Donated
	797	-do-	Emy Demetrio	7	14.00	Donated
	798	-do-	Samuel Francisco	4	17.00	Donated
	799	-do-	Myrna Manalo	3	17.00	Donated
	800	-do-	Ma. Belen Cayetano	3	28.00	Donated
	801	-do-	Violeta Singson	2	48.00	Donated
	802	-do-	Ma. Vernica Cordero	1	24.00	Donated
	803	-do-	Ronnie Condes	6	13.00	Donated
	803	-do-	Audita Nietes	3	10.00	Donated
	804	-do-	Jocelyn Atillo	5	8.40	Donated
	804	-do-	Calixto Samsona	5	11.80	Donated
	805	-do-	Josephine Samsona	5	9.60	Donated

	805	-do-	Saturnino Sanchez	6	12.00	Donated
	805	-do-	Teresita Aportadera	3	8.80	Donated
	805	-do-	Rey Cayetano	6	8.80	Donated
	805	-do-	Raymus Agoc	1	8.00	Donated
	826	Agricultural	Angelita Ramirez	5	180.00	Donated
	827	-do-	Alejandro Sarmiento, Sr.	4	186.00	Donated
	860	Residential	Barmy Agoc	6	60.00	Donated
	864	-do-	Melagrita Espino	6	11.20	Donated
Casit-an						
	6903-A	Agro-Industrial	Ernesto Espanola (Laua-an MPC)	-	123.60	Donated
	6904	-do-	Manuel Saturnino	3	228.00	Donated
	6905	-do-	Pelagia Bangcaya (D)	-	188.00	Donated
	6906	Residential	Pelagia Bangcaya	-	120.00	Donated
	6907	Agricultural	Denia Espanola	3	184.00	Donated
	6910	-do-	Denia Espanola	-	184.00	Donated
	6909	-do-	Jocelyn Duga-Duga	6	137.00	Donated
	6927	-do-	Felomino Omapas	1	74.00	Donated
	6975	Residential	Lauro Alojado	7	128.00	Donated
	6975	Agricultural	Vicente Saturnino	4	220.00	Donated
	6976	Residential	Ritchel Olasa	3	164.00	Donated
	6976	-do-	Portacio Alojado	1	164.00	Donated

		Agricultural			3,317.90	
		Industrial			123.60	
		Residential			1,546.90	
			TOTAL		4,988.40	

4.4.4 Damage to standing Crops, Houses, and/or Properties

Agricultural land planted with sugar cane with an area of 1,149.30 square meters will be affected with the rehabilitation/concreting of the farm-to-market road.

Trees along the roadside are mostly mahogany, gemelina, neem tree, palm tree, coconut and various fruit trees like banana, indian mango, jackfruit, guava, guayabano, star apple, santol and duhat. There are also a number of endemic species such as pyhood, ipil-ipil, laua-an, an-an, acacia and narra that thrived in the area. Table 2 shows the number and variety of trees to be cut with the implementation of the project.

A total of seven (7) semi-permanent houses (*made of Concrete Hollow Blocks, Wood and G.I. Sheets*) and ten (10) temporary houses (*made of bamboo, old G.I. sheet and nipa*) within the road right-of-way will be partly affected by the project. It has a total area of 43.60 square meters and 61.70 square meters, respectively. Most of the affected portions are the front structures of the houses and its fences. Owners are willing to donate this portion in lieu of the huge benefit that they will gain from having a good and passable road all year round.

Four (4) sari-sari stores which are made of light materials (*bamboo and nipa/old G.I. sheet*) with a total area of 11.70 square meters will be affected. Portion of the structures will be removed to give way to the project.

There are also some structures which portion will be affected like the training center, barangay plaza, stage, barangay marker and concrete fences. Likewise, ten (10) electric posts will be transferred since it is situated within the road right-of-way.

Despite that there will be damages on some parts of the houses and other structures with the implementation of the project, the owners agreed to reconstruct their partially damaged houses without monetary exchange as they signed the Waiver of Rights/Quit Claim. (*Attached Waiver of Rights/Quit Claim were duly signed by affected persons. Notary and annotation are on-process*). Yet, the Local Government Unit pledged support to the owners on the reconstruction of the damaged portion of their houses and the affected structures (*barangay plaza, stage and marker*) as discussed during the consultation (*Please see Minutes of Meeting held on June 17, 2014 at the Municipal Hall, Laua-an, Antique*).

Table 15. Name and Number of Trees Affected

Trees	Number
Atis	1
Avocado	1
Banana	90
Batwan	2
Cacao	2
Calamansi	6
Cashew	2
Coconut	10
Dalandan	1
Duhat	1
Guava	7
Guayabano	20
Indian Mango	36
Jackfruit	11
Kabugao	9

Lanzones	5
Mango	6
Papaya	7
Rambutan	1
Sampalok	2
Santol	5
Star Apple	2
Tisa	3
Acacia	11
An-An	3
Bamboo	3
Gemelina	33
Indian Tree	2
Ipil-Ipil	34
Kasla	1
Laua-an	6
Madre de Cacao	63
Mahogany	40
Narra	6
Neem Tree	4
Palma/Bunga China	42
Pyhood	2
Talisay	4
T O T A L	484

4.4.5 Physical Displacement of Persons

Based on the Entitlement Survey of Affected Persons, 17 households will be affected with a total of 49 household members. However, the proposed rehabilitation/concreting of farm-to-market road will not result to relocation of houses and will not displace any person. Most of the affected portion of the houses are walls made of light materials, hence the residents are willing to repair it by themselves in lieu of the huge benefit that they will gain from having a good and passable road all year round.

4.4.6 Economic Displacement of Persons

The proposed subproject will result to economic losses to the three influenced barangays. Agricultural production of muscovado sugar will decrease because portion of the area will be utilized for the implementation of the project. A total of 1,149.30 square meters will be affected and is estimated to produce 5.75 sacks muscovado sugar. It is assumed that 1 hectare will have a production of 50 sacks at P1,800 /sack . This means that agricultural annual income loss is P10,350.00.

Considering that only portion of the structure of sari-sari stores will be removed, business will continue to operate and become the source of income among households.

4.2 Environmental Analysis

4.5.1 Natural Habitat

The proposed project shall be located within the three barangays namely Omlot, Igtadiao and Casit-an in the municipality of Laua-an. Land use is focused on agriculture with sugar cane, rice and banana as major crops. There is a vast tree vegetation along the existing road which are mostly fruit trees, exotic trees and a few number of indigenous trees (*as shown in Table 11*).

The site has the presence of Omlot Creek, Igtadiao Creek and Cairawan River which supplies irrigation water to its rice land. It was also observed that there are no

endangered species of wildlife that thrives in the area, since the project site is not within an officially declared or proposed protected area of natural habitat.

4.5.2 Physical Cultural Resources

There are no structures, monuments, or physical historical resources present in the project site.

4.5.3 Terrain, Soil Types, and Rain Fall

Barangay Omlot has a predominantly steep and mountainous terrain with a slope of 50% on one side of the existing road and a flat rice land on the other side while Barangay Igtadiao has a rolling terrain. Soil type is Umingan Sandy Clay which is suited for sugar cane.

Climate condition within the municipality falls under the 1st type which has intense dry season for the months of December to May. Rainy season starts from May to December with heavy rainfall occurring during the months of August to October.

Considering the terrain of the project site, part of the program of work for the proposed project include the construction of slope protection and drainage along the road sides. This is to avoid soil erosion and flooding in the area particularly during rainy season.

4.5.4 Hazardous /Risk Assessment (Drainage Situations and Flooding Potential)

Location of the proposed project is safe from flooding because it is located in the elevated portion of the barangays which is 10 meters above the Cairawan River. Likewise, the location is not prone to landslide. Since the terrains of the project site are mostly steep to rolling, the water usually runs to the rice fields and on lowlands. Thus, drainage canal is recommended in these areas.

4.5.5 Status of Environmental Clearances – CNC/ECC

As the sub-project is not within an ancestral domain, a Certificate of Non-overlap will be secured at the National Community of Indigenous People. A letter was sent to NCIP Antique/Aklan Community Service Center, San Jose, Antique last July 4, 2014 requesting for the certificate. As a response, AACSC Head sent a letter received last July 10, 2014 inviting the proponent for a conference. *(Please see attached letters).*

As the sub-project is not considered an Environmentally Critical Project and the location does not fall under the category of Environmentally Critical Areas, this requires no Environmental Compliance Certificate (ECC). However, for purposes of compliance to Social and Environmental Safeguards, a letter was sent to the Regional Director of the Environment Management Bureau, Department of Environment and Natural Resources requesting for the issuance of a Certificate of Non-Coverage last July 10, 2014. *(Please see attached letter).*

As there are affected trees and coconuts, the proponent will secure clearance and certification from CENRO, DENR and the Philippine Coconut Authority (PCA) before the implementation of the project.

The proponent shall ensure that the award winning contractor utilizes quarry materials coming from quarry sites with approved Governor's Permit and is accredited by the Department of Public Works and Highways (DPWH).

Chainsaw that will be used in the tree cutting activity shall secure a permit from the Department of Environment and Natural Resources (DENR) in compliance with the Chainsaw Act.

4.5.6 Social and Environmental Impacts

Clearing and Grubbing shall affect number of various trees on both sides of the road. Trees which will be cut along the road must be replaced by the proponent by planting fruit trees along the new road and endemic tree species along riverbanks or the 10

meters easement area. This will protect the river banks from potential erosion. It can also protect the area from potential flooding.

Removal of Structures and Obstructions will involve clearing of partially damaged houses and other structures within the road right-of-way. Dumping site for all wastes will be provided by the Local Government Unit. A certification of the availability of dumping site was issued by the Municipal Environment and Natural Resources Officer noted by the Municipal Mayor. (*Please see attached certification*).

Excavated soil may cause river sedimentation when rain occurs and carry the soil to the river system, however only 25% of the excavated soil will be used for embankment. Excess excavated soil will be dumped properly at the provided dumping site. (*as stated above*).

Air pollution caused by dust will be insignificant during rainy days or when the soil and masonry materials are wet and will be moderate during hot days or when the soil and masonry materials are dry and powdery.

Noise Pollution due to use of heavy equipment. This can be minimized by having appropriate planning of construction schedules, such as the working hours and schedule of the hauling and delivery of materials. Activities at night/sleeping time will be minimized.

Waste Discharge will be caused by heavy equipment, however regular maintenance and check-up of equipment shall be done to increase its efficiency.

Soil erosion in land slide prone areas will be prevented by establishing slope protection such as riprapping and natural vegetation matting.

Road Canal linings will be established on both sides of the road with steep grades to prevent scouring, soil erosion and flooding.

Safety of workers and the public will be given priority. Standard construction safety protocols must be observed. Road signs will be posted.

Environmental and Social Management/Mitigation Plan

Name of Subproject : Rehabilitation/Concreting of Liya-liya to Casit-an
Farm to Market Road

Location : Laua-an, Antique

Implementing LGU : Antique Provincial Government through the
Provincial Engineers' Office

Rehabilitation or New : Rehabilitation

Estimated Total Cost : P11,952,477.97

a. Site and Design Consideration

The road does not encroach into or traverse any declared protected area of natural habitat. The subproject will not displace, disfigure or render inoperable/inaccessible any monument or physical structure of known cultural and historical significance.

b. Environmental Issues and Mitigation Measures

Table 16. Environmental and Social Management Plan (ESMP)

Issue (Potential Impact)	Assessment	Mitigation Measure	Schedule/ Duration of the Mitigation Measures	Instrument of Implementati on (POW, Con-tract, IDP, or O&M Plan)*	Responsible Unit
Delivery of constructi on materials; transport of equipment to site	Constructio n wastes (<i>sacks, cans, plastic, etc.</i>) will have a moderate impact to the environment	Segregation at source and regular disposal of construction wastes to the provided dumpsite. Monitor littering and provide trash can in the project site.	Pre-cons- truction phase		
	Air pollution due to dust and noise pollution pose a moderate impact to the environment	Cover hauling trucks with canvass or any equivalent materials. Supervise properly discharging of materials.			

<p>Potential contamination of Human and Domestic wastes</p>	<p>Construction workers (skilled) would be temporarily housed in a base camp. Workers (unskilled and laborers) would be mostly locals and are expected to go home to their respective houses after works.</p>	<p>Set up adequate latrine/toilet facility at the base camp. Collection and segregation of wastes. Regular disposal of wastes.</p>	<p>Construction phase</p>	<p>Contract</p>	<p>Contractor</p>
<p>Temporary increase in sedimentation</p>	<p>Excavated materials will consist of soil and likely to generate significant sediments.</p>	<p>Proper disposal and compaction of spoils. Excavation to be done during dry months.</p>		<p>Contract</p>	<p>Contractor</p>
<p>Potential contamination of surface and ground water with oil and grease</p>	<p>Waste oil and grease from equipment could moderately contaminate surface water.</p>	<p>Check equipment for leaks and repair as necessary. Observe proper storage of fuel and oil materials.</p>		<p>Contract</p>	<p>Contractor</p>

Potential disruption of traffic flow	The construction will not affect daily movements of residents and farmers	Undertake regular maintenance measures on the passable portions of the road		Contract	Contractor
Potential dust/mud nuisance during construction	Roads could become powdery during dry days and muddy during rainy days of the construction period Access road and/or construction/rehabilitation does not pass through any populated area	Undertake sprinkling of road (including access roads) during dry days, and filling up of potholes during rainy days, especially in residential areas.		Contract	Contractor
Landslide/erosion of exposed road sides resulting in sedimentation of waterways	[x] The road will traverse a mountainous area necessitating deep cuts on mountainsides, particularly between station 0+050-0+230, 0+580-0+590, 0+874-	[x] Include slope protection works at the following stations: 0+050-0+230 (L), 0+580-0+590, 0+874-0+884(L), 0+884-0+892(R), 0+906-0+926(L), 1+120-1+125,		Contract	Contractor

	0+884, 0+884-0+892, 0+906-0+926, 1+120-1+125, 1+422-1+432, and 1+718-1+728	1+422-1+432(R), and 1+718-1+728(R)			
Inadequate drainage resulting in flooding or ponding	The road will block runoff, resulting in flooding on one side of the road during rainy days.	Construction of Lined and Earth Ditch in stations 0+000-0+604, 0+654-1+922.875			Contractor
Potential increase use of pesticides due to intensification of cash crop production in the area	There is an ongoing IPM program of DA in the service area	Continuing IPM program of the province		Capacity Building Plan	
Potential acceleration of denudation of the upland/hilly areas due to intensification of crop	The proposed road will connect to the market an upland/hilly area where farmers are currently practicing	OPA will introduce of sustainable upland farming systems in the area		O&M Plan/ Capacity Building Plan	

productio n	erosive farming techniques. The road could help accelerate the denudation of the upland/hillsides rendering them unproductive in a few years.				
10. Potential increased in encroachments of human activities into the nearby public forest	The proposed road will improve human access to the nearby public forest, resulting in increased slash and burn cultivation, illegal logging and poaching.	DENR will deputize the local community to enforce forestry laws		Capacity Building Plan	
Local employment	Construction will provide local employment opportunities	Hiring priority shall be given to qualified local residents		Contract	Contractor /HRO
Decrease of tree vegetation	Rehabilitation will involve	Replace cut trees by planting			

	clearing and grubbing which will affect number of various fruit and forest trees	fruit trees along the new road and forest trees along riverbanks or within the 10-meter easement area			

