

SOCIAL ASSESSMENT

Based on the Environmental and Social Safeguards Screening Form that evaluates the proposed sub-project for eligibility for PRDP funding, the proposed farm-to-market road project is eligible for funding provided that social and environmental safeguard instruments shall be complied.

1.1 Project Beneficiaries

The proposed farm-to-market road may have direct and indirect benefits to the population of the municipality particularly to the people living in the concerned barangays where the road project will traverse. The population of the municipality of San Ildefonso registered at 95,000 with more than 21,000 households (as of the 2010 Census of Population and Housing by the NSO) will indirectly be benefitted by the project and so with the traders/buyers/sellers/processors of *ampalaya* in and outside the province. However, the population of the four concerned barangays totaled to more than 7,000 which is equivalent to more than 1,600 households will directly be affected by the project. A total of 1,984 from Bubulong Malake, 1,814 from Bulusukan, 2,078 from Bubulong Munti, and 1,302 from Bohol na Mangga are also considered to be the direct beneficiaries of the project for majority of the residents in the said barangays are farmers.

Table 1: Project Beneficiaries of the Proposed Farm-to-Market Road

Barangay	Population			*Households	**Affected Households Along the Proposed FMR
	Total	Male	Female		
Bubulong Malake	1,984	994	990	447	15
Bulusukan	1,814	908	906	409	20
Bubulong Munti	2,078	1,041	1,037	468	44
Bohol na Mangga	1,302	652	650	293	26
Total	7,178	3,595	3,583	1,617	105
San Ildefonso	95,000	47,575	47,425	21,413	

Source: NSO 2010 and Municipal Assessor's Office

Notes: * Estimated number of HHs is computed using Participation Rate (Pr) Method. The ratio or % share of the 2010 population and households of the Mun/City to the total 2010 population and households of Bulacan is applied.

** Actual Survey

More than 6 percent of the total number of households in the four barangays or equivalent to 105 households living along the access road will be affected by the project construction. Barangay Bubulong Munti has the most number of affected households accounted to 44 households. This proportion represents almost 10 percent of the total number of households in the said barangay.

Relative to this, to ensure social safeguard, barangay resolution supporting the project was secured from the four barangays. Likewise, several consultation meetings were conducted and were attended by the head of the affected households or their representatives. The first batch of consultation meeting was held in the morning of February 28, 2014 at the Multi-Purpose Cooperative in Bulusukan for households living in Barangay Bubulong Malake and

Bulusukan. The second batch of consultation meeting was held in the afternoon at the Bubulong Munti Chapel for households living in Barangay Bubulong Munti and Bohol na Mangga.

During the consultation, the attendees were given an overview about PRDP, the description of the proposed improvement of the farm-to-market road, and the possible effects of the project to the property of the people living along the stretch of the access road. The barangay officials as well as the household representatives both men and women conveyed their appreciation of the project and expressed their concurrence to quit claims or donate the required land area for the widening of the said road. There were 119 deeds of donations for the 119 parcels of affected lands executed by the 105 land owners. As agreed upon during the consultation with the affected persons at the same time the beneficiaries of the sub-project, monetary compensation for the affected structures will also be waived. The farmer beneficiaries expressed that the land needed for right-of-way (ROW) acquisition will be their contribution to the project for the development of their respective barangays. Further, some household representatives affirmed support as they said that the project will improve their access to basic services and will stimulate economic development in the area.

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

The project is located outside the ancestral domain and will not affect any Indigenous Cultural Community or Indigenous People. To support this claim, the provincial government has requested the National Commission on Indigenous Peoples to issue a certification that the proposed site is not covered by any Ancestral Domain. Consequently, the NCIP Bulacan Service Center has conducted the necessary filed-based investigation (FBI) and finds the area of the said project outside the Ancestral Domain of the Dumagats in Bulacan and its operation will not affect any Dumagat Community of the province. Further, the FBI team recommended the issuance of a Certificate of Non-overlap/Certificate of Compliance for the said road project. Consequently, a Certificate of Non-Overlap was issued by the NCIP.

1.3 Site and Right-of-Way Acquisition

The occupants of the parcels of registered land along the FMR are either with Transfer Certificate of Title (TCT) as proof of ownership or just exercising the rights over the parcel they are tilling and/or residing. The Community Environment and Natural Resources Office (CENRO) certified that the affected land parcels have no adverse claimants.

The area is generally classified as agricultural and residential as indicated in the tax declaration of property. Thus, the built-up areas along the proposed road are sporadic. Based on the survey conducted, 105 households along the access road will be affected by the project. Shown in the Table below are the names of landowners/occupants and

the corresponding area to be acquired for the widening of the existing access road from the four concerned barangays.

Table 2: Total Land Area Affected by Right-of-Way Acquisition Per Land Owner/ Occupant

Name of Land Owner (Households Along the Proposed FMR)	Total Landholding (in sq.m)	Total Area to be used for the ROW (in sq.m.)
BUBULONG MALAKE		
1. Olivares, Josephine	32,972	591
2. Mangahas, Angel	14,976	53
3. Abdon, Tagumpay	57,468	292
4. Tacadino, Perla	17,882	150
5. Nunez, Nicanor	10,000	77
6. Solis, Cornelio	21,985	464
7. Ramos, Rosendo	3,127	96
8. Galvez, Francisco	28,495	42
9. Sy, Filipina	19,465	102
10. Inoncillo, Conrado	5,642	121
11. Inoncillo, Mario	19,200	16
12. Hizon, Severino	2,149	14
13. Hizon, Priscila	1,428	60
14. Mananguit, Pablo	10,709	52
15. Dela Cruz, Miguela	27,790	28
	273,288	2,158
BULUSUKAN		
1. Mario Inoncillo	60,856	414
2. Iluminada Calderon	23,921	66
3. Yolanda Anarcon	4,000	10
4. Miguelita Turla	320	51
5. Celerina Mendoza	320	37
6. Margarita Mendoza	10,274	33
7. Juanito Mendoza	10,276	22
8. Serafin Gatchalian	14,085	74
9. Rodolfo Hizon	26,976	86
10. Joel Hizon	6,666	54
11. Lamberto Hizon	6,666	145
12. Miguel Valdez	6,667	164
13. Rufino Hizon	6,667	261
14. Priscilla Hizon	6,667	115
15. Rufo Mauricio	23,734	218
16. Gilberto Pastrana	22,246	20
17. Victorio Lazaro	3,000	143
18. Danilo Constantino	1,000	48
19. Elma Dela Cruz	2,000	13
20. Domingo Pascual	12,223	324
	248,564	2,298
BUBULONG MUNTI		
1. Galvez, Diosdado	12,163	224
2. Gonao, Primitiva	3,508	199
3. Galvez, Juan	34,039	674

Name of Land Owner (Households Along the Proposed FMR)	Total Landholding (in sq.m)	Total Area to be used for the ROW (in sq.m.)
4. Galvez, Arcadio	76,957	247
5. Valdez, Guillermo	58,673	950
6. Esraita, Florinda	600	42
7. Bagsik, Arcadio	600	38
8. Nuñez, Josephine	2,847	19
9. Nuñez, Leopoldo	17,706	107
10. Cruz, Magno	20,495	64
11. Galvez, Maximo	13,071	413
12. Galvez, Concepcion	578	26
13. Valdez, Servillano	444	59
14. Valdez, Cirila	495	29
15. Victoria, Restituto	382	14
16. Reyes, Joselito	425	4
17. Caralde, Modesta	1,910	6
18. Santos, Demetrio	431	22
19. Gabriel, Fernando	322	1.27
20. Mauricio, Immaculada	28,613	575
21. Delos Santos, Editha	11,113	517
22. Inducil, Emilio	9,375	662
23. Ruben, Adelia	7,219	201
24. Santos, Jacinto	61,783	2,407
25. Inducil, Rosendo	11,978	1,159
26. Valdez, Luciano	23,527	187
27. Galang, Patricio	14,430	340
28. Ruben, Marcelo	1,612	23
29. Ruben, Arturo	1,605	31
30. Nuñez, Leuterio	1,590	73
31. Nuñez, Benjamin	1,799	81
32. Ruben, Leonora	2,961	236
33. Ruben, Porferio	2,961	125
34. Santos, Domingo	826	23
35. Valtiendaz, Generoso	39,978	6
36. Dela Cruz, Erlinda	41,614	179
37. Magtolo, Elizabeth	9,974	200
38. Valtiendaz, Fausto	19,948	186
39. Manalili, Gerry	49,048	407
40. Manalili, Silvestre	96,672	220
41. Salvio, Enrique Jr.	28,769	63
42. Pascual, Alvaro	18,882	406
43. Leva, Rafael	112,520	186
44. Maniquiz, Domingo	29,340	104
	873,783	11,735.27
BOHOL NA MANGGA		
1. Mapusao, Perfecto	12,409	21
2. Buan, Reynaldo	243,609	2,656
3. Buan, Serafin	20,511	711
4. Dinglasan, Jaime	45,617	1,364
5. Rivera Julian / Rivera, Demetrio	99,567	1,146
6. Ileteo, Reynaldo	57,457	2,252
7. Ileteo, Conrado	9,912	169
8. Dinglasan, Vicente	47,189	3,337
9. Santos, Elena	60,000	91
10. Santos, Marietta	23,693	1,472
11. Nuñez, Josephine	51,997	80

Name of Land Owner (Households Along the Proposed FMR)	Total Landholding (in sq.m)	Total Area to be used for the ROW (in sq.m.)
12. Nuñez, Rodrigo	48,610	2,023
13. Alejandrino, Demetrio	6,112	30
14. Mauricio, Ramon C.	17,836	3
15. Jamito, Amador	41,918	3,167
16. Cayetano, Rolando	117,595	2,615
17. Cunanan, Lamberto	70,604	1,754
18. Dela Cruz, Benigno	15,437	645
19. Cayetano, Reynaldo	14,824	442
20. Municipality of San Ildefonso	151,242	5,476
21. Cayetano, Marcelina	7,100	88
22. Viñas, Eugenio	32,390	2,032
23. Pangan, Rommel	142,712	108
24. Caperlac, Marcelino	27,381	325
25. Santos., Mario	10,000	96
26. Pangan, Andres	23,032	236
	1,398,754	32,339
Total area to be acquired for the ROW		48,530.27

The proposed project is concreting of 9.81-kilometer farm-to-market road with 5-meter carriageway and is designed in such a way that there is 1.5 meters shoulders and 1 meter ditch on both sides making its width 10 meters. The total area of the whole road project will be 98,100 square meters. Thus, widening of the 8-meter -width existing road is required. Based on the parcellary plan, the total area to be acquired for the widening of the existing road is 48,530.27 square meters from 119 parcels of land. The remaining 49,569.73 square meters will come from the existing road.

The households' willingness to support the project is expressed through the accomplished Entitlement Survey of Project Affected Persons form together with either notarized Deed of Donations or Waiver of Right/Quit Claim. All the affected households were consulted about the project either through the consultation meeting held on February 28, 2014 at Barangay Bulusukan and Bubulong Munti or through small group discussions.

Furthermore, the plotted road network in the parcellary plan shows that the project will only affect less than 20 percent of the property of households conforming to the PRDP guidelines. Thus, the social assessment shows that the project has no significant effect on the property of the Project Affected Persons (PAP) for it will not result in relocation nor displace any person.

1.4 Damage to Standing Crops, Houses and/or Properties

The proposed improvement of the farm-to-market road will not significantly affect permanent structures and standing crops. The existing residential structures have sufficient setbacks that may be provided for the road widening.

However, there are 72 temporary structures such as gates and fences that will be affected by the widening of the road. Specifically, there are 30 electric posts, 2 sari-sari stores, and 37 fences with different materials as shown in the Table below.

Table 1: Number of Temporary Structures Affected by the ROW Acquisition

	Bubulong Malake	Bulusukan	Bubulong Munti	Bohol na Mangga	TOTAL
Electric post	5	2	--	23	30
Fences					37
Cyclone wire fence	--	--	1	--	1
Bamboo fence	1	1	8	--	10
Barbed wire fence	7	2	8	6	23
Concrete fence	--	--	--	1	1
Wooden fence	2	--	--	--	2
Steel gate	1	1	--	--	2
Concrete terrace	1	--	--	--	1
Store	--	--	2		2
TOTAL	17	6	19	30	72

Almost 40 percent of the affected temporary structures are electric posts wherein 77 percent of them or 23 posts are located in Barangay Bohol na Mangga. While, 52 percent of the affected temporary structures are fences mostly made of barbed wires and bamboo. Almost half of the total number of fences or 17 fences is located in Barangay Bubulong Munti.

The affected steel gates and a terrace will not affect the residential structure of the households. Furthermore, the affected sari-sari stores will not cause the loss of livelihood of the concerned households because only the front wall will be affected. The demolition of the identified structures will be done by the contractor under the supervision of the Provincial Engineer's Office. The demolition of structures will start during the Clearing and Grubbing Phase of the implementation stage scheduled on 3rd week of September 2014. With regards to the affected sari-sari stores which are generally made of wood and bamboo, the store owners expressed agreement during the consultation to voluntarily move their goods/products few meters backwards to give way for the road construction. Further, as also agreed upon during the consultation with the beneficiaries, monetary compensation for the affected structures will be waived. The farmer beneficiaries articulated that it will be their contribution to the project for the development of their respective barangays. Subsequently, the reconstruction of the affected temporary structures will be provided by the municipal government in coordination with the concerned households, and the barangay.

As regard to the affected electric posts, the provincial government has requested the MERALCO for the transfer of the affected posts in the project area. Accordingly, the MERALCO Team surveyed the affected area for their initial assessment and have committed the preparation of the appropriate design of MERALCO facilities to serve the

affected area. On the other hand, there are standing trees along the project site that will also be affected by the widening of the road as shown in Table below.

Table 2: Number of Trees Affected by the ROW Acquisition

Location	Species	No. of saplings (for earth-balling)	No. of trees (for cutting)	Gross Volume (cu.m.)	Net Volume (cu.m.)
Brgy. Bubulong Malaki, San Ildefonso, Bulacan	Acacia	1	10	2.06	1.44
	Caimito	2	2	0.24	0.17
	Camachile	1	5	0.85	0.59
	Coconut	-	-	-	-
	Duhat	1	1	0.18	0.12
	Guava	6	-	-	-
	Ipil-ipil	1	-	-	-
	Kapol	-	3	1.05	0.74
	Mahogany	1	1	0.10	0.07
	Mango	1	8	1.87	1.31
	Misc.	1	-	-	-
	Narra	7	-	-	-
	Sampalok	2	5	0.87	0.61
	Santol	-	-	-	-
Sub-total		24	35	7.22	5.05
Brgy. Bulusukan, San Ildefonso, Bulacan	Acacia	-	6	0.26	0.19
	Camachile	-	1	0.03	0.02
	Gmelina	16	-	-	-
	Ipil-ipil	13	3	0.10	0.07
	Mahogany	226	8	0.75	0.52
	Mango	-	2	0.26	0.18
	Sampalok	1	1	0.07	0.05
Sub-total		256	35	1.47	1.03
Brgy. Bubulong Munti, San Ildefonso, Bulacan	Acacia	4	37	3.97	2.78
	Alagao	1	-	-	-
	Alibangbang	-	2	0.19	0.13
	Balite	-	-	-	-
	Binayuyo	-	3	0.17	0.12
	Camachile	-	2	0.08	0.06
	Duhat	-	4	0.50	0.35
	Gmelina	29	1	0.10	0.07
	Guava	5	-	-	-
	Guyabano	7	-	-	-
	Ipil-ipil	9	3	0.38	0.26
	Kakawate	1	-	-	-
	Lanete	4	3	0.06	0.04
	Mahogany	144	3	0.30	0.21
	Mango	8	11	1.12	0.79
	Misc.	12	3	0.24	0.17
	Narra	6	-	-	-
Neem tree	8	-	-	-	
Sampalok	2	19	4.21	2.95	

Location	Species	No. of saplings (for earth-balling)	No. of trees (for cutting)	Gross Volume (cu.m.)	Net Volume (cu.m.)
	Siniguelas	2	-	-	-
Sub-total		243	91	11.32	7.92
Brgy. Bubulong Munti, San Idefonso, Bulacan	Kakawate	10	-	-	-
	Misc.	25	-	-	-
Sub-total		35	-	-	-
G. TOTAL		557	147	20.01	14.01

The proposed road widening traversing the four barangays will require cutting of 147 trees and earth-balling of 557 saplings. The owners of the affected trees have already given their consent during the consultation to cut/earthball the affected trees without compensation. However, the logs or timber and derivable wood materials of the cut down trees will be handed to the owner of the trees. Moreover, the officials of the four affected barangays have signified consent to cut/transfer the affected trees through a certification issued by the municipal mayor of San Idefonso. Relative to this, the Department of Environment and Natural Resources (DENR) has issued a Tree Cutting and Earth-Balling Permit to the provincial government. Subsequently, the concerned local government units will observe appropriate measures based on the guidelines given by the DENR including the necessary replacements of trees based on the provisions in PD 935 regarding planting of trees in support to the National Greening Program and Climate Change initiative of the Government.

1.5 Physical Displacement of Persons

The proposed project will not result to relocation of households and will not displace any person.

1.6 Economic Displacement of Persons

The project will not cause any loss on livelihood neither will reduce access of families to the traditional livelihood sources but rather will improve mobility and market accessibility.

ENVIRONMENTAL ASSESSMENT

2.1 Natural Habitat

The proposed subproject is a 9.81-kilometer farm-to-market road traversing four barangays of Bubulong Malake, Bulusukan, Bubulong Munti and Bohol na Mangga in San Ildefonso. The subproject site is not within a declared or proposed protected area. The road passes through productive agricultural land. However, the project requires a total width of 10 meters, thereby expanding the existing road width of 8 meters. Based on a public consultation conducted in the concerned barangays, the affected communities in general are agreeable to the road width expansion and expressed support to the realization of the project for it is one of the long time aspirations of the residents.

2.2 Physical Cultural Resources

The project has no significant effect in the physical cultural resources which are defined as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. However, during the implementation, particularly during digging, drilling and other earthmoving activities, any discovery of artifacts, bones or other objects of interests will reported to RPCO-SES officer, and National Museum. The project implementer will observe all the provisions stipulated in the Integrated Environmental and Social Safeguards Framework (IESSF). Further, the Chance Archaeological/Paleontological Finds Procedure will be discussed by the provincial LGU to the contractor, site engineers and other on-site personnel for their reference. A copy of the Chance Archaeological/Paleontological Finds Procedure for the subprojects will be made available at the construction site at all times.

The existing access road traverses both agricultural and residential areas. Most of the existing residential structures have enough set back from the road. Thus, the widening of road will not affect any structure. However, some of the perimeter fences made of concrete and/or wooden materials, fruit-bearing and/or forest trees and electric posts will be affected. Appropriate actions to transfer, replace and rebuild said structures will be made. It is likewise worth mentioning that there is no cultural or historical monument or structure which will be affected by such improvement. In support to this, the DENR-EMB has already issued an Environmental Compliance Certificate (ECC) to the said project. The provincial government however will observe appropriate measures to protect and mitigate any adverse impact of the project on community health, welfare and the environment.

On the other hand, the agricultural land that will be affected by the widening is immaterial compared to the benefits of the project to the farmers in terms of agricultural productivity and increase in farmers' income. This perception was confirmed by the farmers during the consultation meeting conducted in the concerned barangays.

2.3 Terrain, Soil Types, and Rainfall

The Comprehensive Land Use Plan (2004-2010) of San Ildefonso describes that 85 percent of the terrain of the municipality is undulating, or having slopes less than 8 percent. Meanwhile, soil types in the project area are sandy clay loam, Buenavista Soil Series, and Sibul clay. These soil types are suitable for palay and vegetable farming. Specifically, the barangays of Bohol na Mangga, Bulusukan, and Bubulong Malake sit on sandy clay loam while Bubulong Munti is sitting on Sibul clay.

On the other hand, the Disaster Risk and Climate Change Vulnerability Assessment Report (DRVA) prepared by the Provincial Planning and Development Office in November 2013 mentioned that the Province of Bulacan, based on the Modified Corona Philippine Climate Classification, falls under Type I category or described as having pronounced wet and dry seasons. The rainy season, typically from June to November, coincides with the onset of the southwest monsoon that brings rainfall ranging from 1,000 mm to more than 5,000 mm. However, the eastern portion of the province has Type III climate which is a season not relatively pronounced and relatively dry from November to April and wet for the rest of the year. This climate condition in the eastern portion is influenced by the topography and geomorphology of the area.

The rain-induced hazard map of the Mines and Geosciences Bureau (MGB) revealed that the barangays of Bohol na Mangga, Bubulong Munti, and Bulusukan are susceptible to low level rain-induced landslides (RIL). Given the soil types and weather classification, the potential in erosion and sedimentation is low. In addition, the subproject should consider the following that affect the soil erosion such as rainfall, crop rotations, soil type, cultivation practices and topography.

2.4 Drainage Situations and Flooding Potential

There is no drainage system in the existing road except in the irrigation system coming from the creek and streams that connects to the nearby rivers which then supplies water to the agricultural land. Rain water coming into the right of way also increases the water level of the creek and streams. Mud and silt carried by heavy rains or storm flow could deposit gradually inside drains and channels and affect their effective capacity. Debris, large objects and tree fragments could also be washed down catch pits and channels and create serious flow restrictions going to creek and streams. In minimizing the increase of the quantity of flows on the receiving creek and streams, appropriate flooding measures should be consider in the construction of the farm-to-market road such as cross drain system to the drainage outlets, clearing of waterways and planting of trees to lessen the water flow by way of infiltration. These improvements could affect flow paths and could bring unexpected flow to certain section of the drainage system.

2.5 Pest Management

The KASAKALIKASAN was included as one of the key concerns in the conduct of season-long Farmers' Field Schools (FFS) specifically on integrated crop management on vegetable production. During the implementation of IPM and PalayCheck, several training for rice, vegetables and corn had been conducted in the project area. Since 2008, there were a total of 11 batches trained involving 140 farmers covering a potential adoption area of 550 hectares for rice. Recent assessment however showed that only about 50.85 % of the total trained rice farmers adopt IPM, which converts to an area of approximately 280 hectares.

As support to the Department of Agriculture's Integrated Pest Management (KASAKALIKASAN) Program, the farmer leaders had also introduced the said program to the farmer-beneficiaries thru series of orientations from June to July 2014. To further strengthen the advocacy, a 16 – week Farmer Field School-Integrated Pest Management training was also extended to farmers from August to November 2014. Based on the proposed action plan on KASAKALIKASAN implementation, important intervention anchored on holistic extension approaches will be carried out for the continuation of the farmers' development towards comprehensive adoption of the principles of integrated crop management that will last until 2016. The program aims to have a significant shift in agricultural extension exhibiting farming practices with reduced use of insecticides thus increasing insecticide non-users and reduce frequency of insecticide application. Through this methodology, ampalaya growers will not harm the environment and at the same time crops produced will be insecticide free (organic farming). It is worth mentioning that there will be no involved use of any hazardous chemicals during the vegetable growing phase until the transport stage.

2.6 Impacts during Construction

Despite the fact that some temporary structures and trees will be affected by the road widening along the road influence area, the project will not cause substantial damage to the environment whether on green field or previously developed sites. However, during road construction, the contractors should observe and considers the following:

- Temporary erosion and sediment control - Inadequately constructed farm-to-market roads can cause environmental impacts including road surface erosion and sediment yield, pollution of off-site waters, slope failures and mass movement direct loss of habitat (by the conversion of the original land cover into an artificial surface) and indirect loss of habitat (by the fragmentation of an ecosystem into smaller and more isolated patches). Therefore, farm-to-market road engineers should design roads by considering not only cost efficiency but also sustainable management of the forest environment. During the construction project of the farm-to-market road, the standard design must be carried out on the ground to achieve the desired road with minimal impact on environment. Sometimes the standard design cannot be useful for determining the clearing limit of farm to market road.

- Construction noise mitigation - There are some residents along the road influence area that will be affected by the noise during the operations of workers, facilities and heavy equipments. As mitigating measure, work activities and operations of heavy equipment should be avoided during night time.
- Minimize and control dust – The implementation of dust control will limit the area exposed to dust generation. Dust control measures include minimization of soil disturbance, water spraying, surface roughening, mulch and vegetation, and applying polymers and barriers.
- Proper handling of construction wastes - LGU should provide rules and regulations for the proper disposal of all wastes materials. Regulatory and enforcement powers with the public education, awareness, should be properly implemented. This will minimize the amount of site litters and will prevent the indiscriminate dumping of surpluses and wastes along the roadside.
- Safety - Safety of workers must be given priority as it is a very important aspect in a construction to ensure that all workers are not injured in whatever process they engage in. Safety standards protocols must be observed like posting, putting road signs and complete safety uniforms for all workers to avoid any accident.

2.7 Environment Issues and Mitigation Measures

Below are the prescribed mitigation measures to address potential impact of the project to the environment:

Table 3: Environment Issues and Mitigation Measures

Issue (Potential Impact)	Assessment	Mitigation Measure	Schedule/ Duration of the Mitigation Measures	Instrument of Implementation	Responsible Unit
1. Temporary increase in sedimentation during construction	Cut materials will consist mainly of hard rocks and are unlikely to generate significant sediments	<ul style="list-style-type: none"> • Proper disposal and compaction of spoils 	1 st and 4 th week of February 2015	DED/POW; Contract	PLGU; Contractor
2. Potential contamination of surface and groundwater with oil/grease	Waste oil and grease from equipment could contaminate surface and groundwater	<ul style="list-style-type: none"> • Proper handling and disposal of waste oil and grease 	1 st to 3 rd week of April 2015	Contract	PLGU; Contractor
3. Potential contamination with human waste	Construction workers would be temporarily housed in a base camp	<ul style="list-style-type: none"> • Set up adequate latrine/toilet facility at the base camp 	Before project starts	Contract	PLGU; Contractor
4. Potential disruption of traffic flow	The construction will not affect the daily movement of the residents and farmers	<ul style="list-style-type: none"> • Keep the road open to traffic flow and minimize disruptions along the access road and/or construction area; Provide adequate warning signs and traffic personnel when necessary 	1 st week of February until the end of the construction	Contract	PLGU; Contractor
5. Potential dust/mud nuisance during construction	<p>Roads could become powdery during dry days and muddy during rainy days of the construction period</p> <ul style="list-style-type: none"> • Access road and/or construction/rehabilitation does not pass through any populated 	<ul style="list-style-type: none"> • Undertake sprinkling of road (including access roads) during dry days, and filling up of potholes during rainy days, especially in residential areas • Set up speed limits for 	2 nd week of March until the end of construction	Contract	PLGU; Contractor

Issue (Potential Impact)	Assessment	Mitigation Measure	Schedule/ Duration of the Mitigation Measures	Instrument of Implementation	Responsible Unit
	area	vehicles, especially within residential areas			
6. Landslide / erosion of exposed road sides resulting in sedimentation of waterways	The rehabilitation work does not involve additional road cuts	<ul style="list-style-type: none"> • Placement of adequate drains outlets and turn outs • Seeding and planting on erodible surfaces 	1 st week of April to 1 st week of May 2015	DED/POW Contract	PLGU; Contractor
7. Inadequate drainage resulting in flooding or ponding.	The road will block runoff, resulting in flooding on one side of the road during rainy days.	<ul style="list-style-type: none"> • Installation of cross drain system 	2 nd week of May 2015 until 4 th week of November 2015	DED	Provincial Government of Bulacan
8. Potential increase use of pesticides due to intensification of cash crop production in the area.	There is an ongoing IPM program (KASAKALIKASAN) of DA in the service area	<ul style="list-style-type: none"> • DA to continue support IPM Program 	June-July for the orientation of farmers August to November 2014 (16 weeks per FFS-IPM)	Capacity Building Plan O&M Plan; Capacity Building Plan	Provincial Government of Bulacan
9. Potential acceleration of denudation of the upland/hilly areas due to intensification of crop production	The road connects only lowland farms to the market	<ul style="list-style-type: none"> • DA to coordinate with LGU for the introduction of sustainable upland farming systems in the area 	Last quarter of 2015 (before the completion of the project) and onwards	O&M Plan; Capacity Building Plan	Provincial Government of Bulacan
10. Potential increase 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	<ul style="list-style-type: none"> • Coordinate with DENR for the enactment of ordinance deputizing the local community to enforce forestry laws 	Last quarter of 2015 (before the completion of the project) and onwards	O & M Plan Capacity Building Plan	Provincial Government of Bulacan
11. Local employment	The construction will provide local hire employment opportunities	<ul style="list-style-type: none"> • Hiring priority shall be given to local residents Implement RI Manual on local hiring 	1 st week of February 2015 (start of implementation)	Contract	PLGU; Contractor
12. Potential to accidents to workers	Workers are exposed to work related hazards such as tripping, slippage that may result to injuries and even loss of life	<ul style="list-style-type: none"> • Sealing of construction site. • Placement of warning signboards • Use of proper construction uniform 	1 st week of February 2015 until the end of the construction	Contract	PLGU; Contractor
13. Potential disturbance of noise	Noise generation maybe at its peak during certain phases	<ul style="list-style-type: none"> • Avoid use of heavy equipment during night time. 	2 nd week of March 2015 to 4 th week of November 2015	Contract	PLGU; Contractor
14. Potential disturbance to wildlife	Closure of migratory routes, disturbance of habitats and noise related problems.	<ul style="list-style-type: none"> • Intermittent use of heavy equipment • Distance from thickly vegetated areas. 	2 nd week of March 2015 to 4 th week of November 2015	Contract	PLGU; Contractor
15. Potential to siltation	Stack file of soil and rocks could be eroded during heavy rains and silt up creeks and streams	<ul style="list-style-type: none"> • Enclose hazardous area with fence and barriers. 	1 st week of February 2015 to 3 rd week of April	Contract	PLGU; Contractor
16. Potential landscape damages	Scarred from road cuts and induce landslides	<ul style="list-style-type: none"> • Maintenance and restoration of roadside vegetation • Construction spoils and other waste materials are properly disposed 	2 nd week of May 2015 to 4 th week of November 2015	Contract	PLGU; Contractor

Issue (Potential Impact)	Assessment	Mitigation Measure	Schedule/ Duration of the Mitigation Measures	Instrument of Implementation	Responsible Unit
17. Potential on vegetation control	Avoid cutting of trees as necessarily	<ul style="list-style-type: none"> Replanting of plants and trees to allow it to regenerate and also to protect embankment. Adherence to the guidelines stipulated in the permit to cut trees given by the DENR 	3 rd to 4 th week of February planting within construction period and onwards	O & M Plan Contract	PLGU; Contractor
18. Potential on domestic solid waste	Lack of garbage disposal of construction waste materials and workers garbage	<ul style="list-style-type: none"> Coordinate with LGU in enforcement of solid waste laws Efficient housekeeping services Proper collection and disposal of construction waste 	Before projects starts and onwards	Contract	PLGU; Contractor
19. Potential issue on right-of-way acquisition	Affected land owners will voluntarily donate or waive their rights on the affected portion for the road widening	<ul style="list-style-type: none"> Conduct of consultation meeting with the affected land owners Establish Grievance and Redress Mechanism in accordance with the IESSF accessible to the beneficiaries/ affected households for their feedbacks. 	last week of February Whole duration of the project	notarized Deed of Donations and Waiver of Quit claims. O & M Plan Contract	PLGU; Contractor
20. Potential issue on compensation for the demolition and restoration of affected structures	The affected structures for the road widening are temporary structures such as fences and makeshift sari-sari store.	<ul style="list-style-type: none"> Proper dissemination of information during the consultation meetings. The demolition of the affected structures will be done by the contractor under the supervision of the Provincial Engineer's Office The reconstruction of the affected temporary structures will be provided by the municipal government in coordination with the concerned households, and the barangay. 	Consultation meeting – before the implementation stage starts (February 2014) Demolition of structures – Clearing and Grubbing Phase (1 st to 2 nd week of February 2015) Reconstruction of structures – After the clearing and grubbing phase (3 rd week of February 2015)	DED/POW Contract	PLGU; Contractor Municipality of San Ildefonso
21. Potential discovery of artifacts, bones, or other objects of interests during the implementation stage	The project has no significant effect in the physical cultural resources that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance.	<ul style="list-style-type: none"> The adoption of the Chance Archaeological/Paleontological Finds Procedure will be observed. 	Start of construction schedule (1 st week of February 2015) until the end of the project	Contract	PLGU; Contractor
22. Potential negative feedbacks from the affected households	Implementing Agency (LGU) is open for feedbacks and concerns arising from the project performance in all phases.	<ul style="list-style-type: none"> Grievance and Redress Mechanism will be established in accordance with the IESSF accessible to the beneficiaries/ affected 	Whole duration of the project	O & M	PLGU

Issue (Potential Impact)	Assessment	Mitigation Measure	Schedule/ Duration of the Mitigation Measures	Instrument of Implementation	Responsible Unit
		households for their feedbacks.			

Source: Environmental and Social Management Plan/PRDP

2.8 Responsible Unit

The Provincial Government of Bulacan, which is the implementing body, is responsible for the proper implementation of all the mitigating measures and will conduct regular monitoring during project execution. Local planning and policies will take climate change into consideration and will make infrastructure such as roads and other development needs be climate proofed. Not only will all these increase regional production, and connectivity but ultimately, food security.