Department of Agriculture
Philippine Rural Development Project

Improvement of Capaoayan – Banaoang – Ablang Sapang Farm-to-Market Road
Moncada, Tarlac

Environmental and Social Assessment

Social Assessment

1. Project Beneficiaries

The proposed farm-to-market road will provide direct and indirect benefits to the population of the municipality, particularly, to the residents of the barangays traversed by the project. The lands used in the barangays are largely agricultural-based, totaling to 2,413.48 hectares of agricultural land out of the total 2,867.43 hectares.

The National Statistics Office pegs the total population count of Moncada at 56,183 with 13,491 households. Traders and buyers of farm produce will also indirectly benefit from the project. The four barangays will be directly affected by the improvement of the farm-to-market road. These barangays have a total population of 8,740, with 2,119 households. Ablang Sapang, being the largest, has a population count of 3,289 with 856 households. Banaoang East has the least population count with 1,233 and 267 households. For a breakdown of the gender of the project beneficiaries, refer to Table 15. Further socio-economic indicators are listed in Table 19 (Socio-economic profile of the four barangays).

The beneficiaries of the project are mostly farmers deriving income from planting rice, corn, yambean, onion, and sweetpotato, where the farmers follow crop rotation. Aside from farming, the fishing is also another form of income for the residents. Livestock raising is another form of agricultural activity that is quite popular in the project area. The fattening of cattle and the raising of pigs, ducks, chicken and goat are some of the animals raised.

Some off-farm activities include the establishment of sari-sari stores, employment as blue-collar workers – drivers and factory workers. The marketing of dried sweetpotato chips is also another form of off-farm activity.

Table 1 Project Beneficiaries Within the Proposed FMR

Barangay	Total Population	Number of Households
Ablang Sapang	3,289	856
Banaoang East	1,233	267
Banaoang West	1,515	382
Capaoayan	2,703	614
Total	**8,740**	**2,119**
Moncada	**58,418**	**13,743**

At the start of the site validation for the sub-project, beneficiaries within the road influence area were briefed about the project. Later, a series of consultation meetings ensued that lead to discussions and further clarifications about the projects and its possible effects on the beneficiaries and their lands. Consultation meetings were conducted in the months of November and December 2014 in the barangay halls and municipal auditoriums, and a final one in January 2015 that was also attended by the municipal Mayor Benito Aquino. In all consultation meetings, male and female farmers, residents, barangay and municipal officials, as well as the SES representatives from the PPMIU were present. Women farmers and residents were present during consultation meetings. The participation of the majority of the women, however, was limited to attendance and seldom raised concerns. Most of the concerns were brought up by the men.

During the consultation process, the beneficiaries were informed that the compensation may also be given should the ROW acquisition affect households. In that regard, the project beneficiaries willingly donated their lands, as evidenced by the notarized Deeds of Donation. All 120 affected persons signed, along with their tax certificates, conformed to the stipulations of the Deeds of

Donation. Refer to Annex 39 for the Deeds of Donation and to Item 3 Site and Right-of-Way Acquisition for more details on the consultations.

During the consultation meetings, some of the common questions that arose include the following:

- What if the landowner is abroad and the only representative is the tenant?
- If we are going to donate our lands, how will this affect the taxes we pay for our lands? Will the taxes of the donated lands be deducted from the taxes we originally pay?
- Once the project is done, what do we have to do to change the stated areas in our land titles to reflect the correct area after the donation?
- Who will handle the change in areas that is registered in the Assessor's Office?
- When will the project be implemented?
- Would it be possible to create a bridge instead of a road because the crops will be affected if a road will be built?

Given some of the concerns raised by the project beneficiaries, it is inherent that there be a focal person nominated, trained and appointed to receive any further concerns that may arise during and after the project implementation. Please refer to Annex 3 for the Executive Order 1-A that institutionalizes the Grievance Redress Mechanism and Grievance Point Person as part of the subproject's organization and implementation plan.

2. Indigenous Cultural Community/Indigenous Peoples (ICC/IP)

The project is located outside ancestral domains and will not affect any Indigenous Cultural Community or Indigenous People. To support this, the Provincial Government has requested the National Commission on Indigenous Peoples (NCIP) for a certification that the area is not covered by any Ancestral

Domain and that no Indigenous Peoples are affected. There are no Indigenous People beneficiaries or residents affected in the road influence area. Refer to Annex 18 for the request letter to NCIP.

3. Site and Right-of-Way Acquisition

The Zoning Official of the Municipal Planning and Development Office of Moncada generally classifies the area as agricultural and residential. The occupants of the parcels of land along the FMR possess Certificates of Title. The others exercise their rights over the area, and the rest were awarded lands by the Department of Agrarian Reform (DAR). The households' willingness to support the project is expressed through the accomplished Entitlement Survey and the execution of the Deed of Donation by the Project Affected Persons (PAPs). Likewise, the affected households agree that the trees will be removed or will be cut prior to the implementation of the project. The built-up areas are only within Barangays Banaoang West and Ablang Sapang. The existing width of the road is six meters that needs to be widened to ten meters.

Of the total number of households in the four barangays, only six percent that are along the proposed project, will be affected by the road improvement. Barangay Ablang Sapang has the most number of affected households totaling 61, followed by Banaoang West with 30 households. Capaoayan has 21 households and Banaoang East with eight. Refer to Tables 31-34 for more specific details of the affected persons' names, barangay locations, total land holdings, land areas to donate to the project, trees that will be affected and the type of land owned by the beneficiaries. All lands that are required for the subproject have already been donated and supported by notarized Deeds of Donation. Table 2 further specifies structures that will be affected by the project, along with the courses of action to be taken by the person or entity responsible for reconstruction or transfer.

To address the social safeguards in the affected barangay, a resolution was secured from the Barangay Councils of the four sites. Refer to Annex 7 for the Barangay Resolutions. A series of consultations and meetings was conducted to explain to the residents the components and effects of the project as to the social, environmental and economic aspects of the community. Pictures, attendance and minutes of the meeting can be found Annex 19.

The barangay officials, as well as the residents, expressed their great appreciation and acceptance of the project. Their concurrences to quit claims and to donate the required areas for the widening of road demonstrate their support for the project.

4. Damage to standing crops, houses and/or properties

The project will not pose any significant effect to structures and crops in the area. However, there are 42 structures that include 27 electric posts, gates and fences made of various materials, and small portions of concrete walls.

To address the affected electric posts, the Provincial Government has requested the Tarlac Electric Cooperative (TARELCO) to create a relocation plan for the transferring of the affected posts. No structures will be affected in Barangay Capaoayan. As listed in Table 2 below, the displacement or reconstruction of affected structures will be the responsibility of the affected owners or agency, as that of the electrical posts transfer by the electric company.

Table 2 Number of Structures Affected by the ROW Acquisition

Structure	Ablang Sapang	Banaoang West	Banaoang East	Capaoayan	Total	Remarks
Electric Post	10	17	-	-	**27**	To be displaced by Electric Co. per request submitted by the PGT
Cyclone fence	1				**1**	To be displaced by the owner
Bamboo Fence		3			**3**	To be displaced by the owner
Concrete Fence (portion)		3			**3**	To be

						reconstructed by the owner
Steel Gate		1			**1**	To be reconstructed by the owner
Store Wall (portion)		3			**3**	To be reconstructed by the owner
Concrete wall (portion)		2			**2**	To be reconstructed by the owner
Light Material Hut	1				**1**	To be set back by the owner
Fishpond (portion)			1		**1**	To be backfilled by the contractor
Total	**12**	**29**	**1**	**-**	**42**	

The table below details the trees that will be affected by the right-of-way acquisition.

Table 3 Number of Forest Trees Affected by the ROW Acquisition

LOCATION	SPECIES	No. of trees (for cutting)	Gross Volume (cu. m.)	Net volume (cu.m.)
Brgy, Banaoang West, Moncada, Tarlac	Camachile	1	0.35	0.24
	Acacia	8	0.26	0.18
	Ipil-ipil	9	0.396	0.27
	Mango	4	6.64	4.64
	Gmelina	15	10.00	7.88
	Mango	5	0.14	0.09
Brgy. Capaoayan, Moncada, Tarlac	Ipil ipil	10	0.44	0.30
	Rain tree	21	2.23	1.56
	camachile	34	12.02	8.41
	Gmelina	1	0.66	0.52
Brgy. Ablang Sapang, Moncada, Tarlac	Ipil ipil	9	3.62	2.53
	Gmelina	32	24.02	16.81
	Rain tree	1	1.54	1.08
	Mango	1	1.66	1.16
Total		**151**	**63.976**	**45.67**

The proposed road widening requires the cutting of 151 trees of different species. To address the utilization of matured trees, the Provincial Government will secure a cutting permit from the DENR-CENRO in Camiling, Tarlac.

A total of 120 households will be affected with a total land area of 10,769 square meters area acquired from the 120 parcels of land. The affected families have signified their support in the accomplished Entitlement Survey of Project Affected Persons Form together with the Deed of Donation. A series of

consultations have been undertaken to the four barangays in coordination with the barangay officials and municipal LGU. The following table lists the affected households per barangay.

Table 4 Barangay Ablang Sapang Households and Land Area Affected by ROW Acquisition

Land Owner	Total Land Area (sq.mts)	Area affected by ROW (sq.mts)	Trees/Crops Affected	Structures	Remarks
1. Jessie A. Gragasin	7,300	160	Sweetpotato		Donation of Agri. lot
2. Sonny I. Bumatay , Sr.	8,000	170	Sweetpotato		Donation of Agri. lot
3. Abelardo L. Facun	18,000	144	Sweetpotato		Donation of Agri. lot
4. Cipriano R. Garay	6,000	60	Sweetpotato		Donation of Agri. lot
5. Rizalino L. Facun	18,000	432	Sweetpotato		Donation of Agri. lot
6. Danilo Asuncion	5,000	240	Sweetpotato		Donation of Agri. lot
7. Bryan Asuncion	3,000	50	Sweetpotato		Donation of Agri. lot
8. Domingo A. Carpo	13,000	120	Sweetpotato		Donation of Agri. lot
9. Carlina N. Lorenzo	26,000	160	Sweetpotato		Donation of Agri. lot
10. Eddie M. Fernandez	5,000	400	Sweetpotato		Donation of Agri. lot
11. Mario F. Santiago	10,000	800	Sweetpotato		Donation of Donation of Agri. lot
12. Luvima P. Gragasin	8,000	400	Sweetpotato		Donation of Agri. lot
13. Abram B. Aguilar	4,000	64	Sweetpotato		Donation of Agri. lot
14. Dario S. Fernandez	5,000	48	Sweetpotato		Donation of Agri. lot
15. Filomino S. Fernandez	5,000	48	Sweetpotato		Donation of Agri. lot
16. Dino S. Fernandez	5,000	48	Sweetpotato		Donation of Agri. lot
17. Jun Yague	40,000	320	Sweetpotato		Donation of Agri. lot
18. Joel Yague	8,000	160	Sweetpotato		Donation of Agri. lot
29. Joey C. Balmocena	6,000	120	Sweetpotato		Donation of Agri. lot
20. Rolly M. Dugay	2,000	60	Sweetpotato		Donation of Agri. lot
21. Mauralyn A. Baldoria	15,000	160	Sweetpotato		Donation of Agri. lot
22.Marlon D. Soria	20,000	240	Sweetpotato		Donation of

					Agri. lot
23. Jonathan F. Bumatay	14,000	320	Sweetpotato		Donation of Agri. lot
24.Vicente A. Lactaotao	18,429	80	Yambean/Sweetpotato		Donation of Agri. lot
25. Eddie V. Gruspe	5,000	20	Corn/Sweetpotato		Donation of Agri. lot
26.PurificacionT.Pagaduan	18,166	40	Sweetpotato		Donation of Agri. lot
		20			Donation of Residential lot
27. Maya Pimentel	6,501	10	Sweetpotato		Donation of Agri. lot
28. Alfredo R. Figueroa	22,195	46	Sweetpotato		Donation of Agri. lot
29. Danilo F. Agustin	37,142	60	Sweetpotato		Donation of Agri. lot
30. Ricarte B. Denusta	18,786	28	Sweetpotato		Donation of Agri. lot
31. William I. Carnate	35,485	60	Sugar cane		Donation of Agri. lot
32. Igmedio H. Galang	39,454	60	Sweetpotato		Donation of Agri. lot
33. Fernando L. Adaoag	29,132	40	Sweetpotato		Donation of Agri. lot
34. Furtunato S. Guerrero	30,028	60	Corn/Sweetpotato		Donation of Agri. lot
35. Alfredo F. Gonzales	15,000	240	Sweetpotato		Donation of Agri. lot
36. Virgel R. Lauyan	11,698	120	Sweetpotato		Donation of Agri. lot
37. Joe V.Figueroa	150	10	Ipil-ipil-3-		Donation of Residential
38. Renato V.Figueroa	150	10	-		Donation of Residential
39. Jhonny V. Figueroa	1,300	10	Ipil-ipil-2		Donation of Residential
4o. Lorenzo Apaga	30,028	68	Sweetpotato		Donation of Agri. lot
41. Arturo A. Agustin Sr.	150	10			Donation of Residential
42. Moises V. Sagabaen	250	10	Gmelina-4		Donation of Residential
43. Conrado V. Valdez	20,222	85	Sweetpotato		Donation of Agri. lot
44. Benjamin Sagabaen	25,505	54			Donation of Residential
45. Amado F. Ganzagan, Jr.	20,000	68	Sweetpotato		Donation of Agri. lot
46. Bernardo Grospe	4,136	75			Donation of Residential
47. Ernesto Mejia, Sr.	1,933	30	Mango-1 Ipil-ipil-2		Donation of Residential
48. Amorsolo C. Mejia, Sr.	926	85			Donation of Residential

		5		Concrete piggery	Donation of the lot
49. Ester V. Baysa	926	30	Ipil-ipil-2	Bamboo hut	Donation of Residential
50. Melchor Mejia	200	30	Gmelina-15 Acacia-1		Donation of Residential
51.Vinzenso L. Figueroa	490	70	Gmelina-7		Donation of Residential
52. Domingo L. Fernandez	200	15	Gmelina-5		Donation of Residential
53. Consolacion C. Ramos	200	15			Donation of Residential
54. Ferdinand A. Pagaduan	650	25		Cyclone fence	Donation of Residential
55. Rowena B. Sison	45,000	200	Sweetpotato		Donation of Agri. lot
56. Gilberto Cesario	9,322	56			Donation of Residential
57. Quirino Gragasin	45,000	200	Sweetpotato		Donation of Agri. lot
58. Alfredo R. Figueroa	12,952	15	Sweetpotato		Donation of Agri. lot
59. Edgardo Cesario	8,675	72			Donation of Residential
60. Joel Francisco	9,901	20	Gmelina-1		Donation of Residential
61. Avelino R. Figueroa	1,000	80			Donation of Residential
SUB-TOTAL	**6,956 sq. m.**				

Table 5 Barangay Banaoang West Households and Land Area Affected by the ROW Acquisition

Land Owner	**Total Land Area (sq.mts)**	**Area affected by ROW (sq.mts)**	**Trees/Crops Affected**	**Structures**	**Remarks**
1. Regino Gamasa	510 sq.m	10sq.m			Donation
2. Gloria R. Balbuena	667 sq.m	100sq.m	Acacia-1		Natural growth Donation of lot
3. Harry F. Fradejas	1,500 sq.m	30sq.m	Ipil ipil-6	Concrete fence/Steel gate.	To be displaced by the owner; Donation of lot
4. Zaida M. Bayno	12,100 sq.m	10 sq.m	Bamboo	Concrete fence	Bamboo Poles to be cut by the owner. Fence will be displaced by the owner; Donation of lot
5. Rosalino P. Quinez	12,029 sq.m	20 sq.m	Sweetpotato	Concrete fence/Store wall	To be displaced by the owner; Donation of lot
6. Policarpio T. Morales	15,000 sq.m	10 sq.m	Acacia-6 Bamboo-5 Camachili-1	Bamboo fence	Bamboo poles and trees to be used in the repair of the fence; Donation of lot
7. Moises T. Role	18,000 sq.m	100 sq.m	Sweetpotato	Bamboo fence	To be moved

					back by the owner; Donation of lot
8. Jun R. Biares	500 sq.m	10 sq.m	Acacia-1	Concrete store wall	To be repaired by the owner; Donation of lot
9. Norman G. Balbuena	500 sq.m	50 sq.m		Balcony	To be reconstructed by the owner; Donation of lot
10. Renante G. Balbuena	500 sq.m	50 sq.m	Guava-1	Concrete house wall	Small portion to be repaired by the owner; Donation of lot
11. Melita P. Granil	8,000 sq.m	10 sq.m		Store wall	To be repaired by the owner
12. Alvin Galeon	100 sq.m	10 sq.m	Egg plant		Donation of lot
13. Novie Jane C. Capinuyan	350 sq.m	10 sq.m			Donation of Residential lot
14. Jessica C. Dupitas	350 sq.m	10sq.m			Donation of Residential lot
15.Dave T. Pangatihon	1,150 sq.m	8 sq.m			Donation of Commercial space
16. Fe B. Quinez	212 sq.m	10sq.m			Donation of residential
17. Marieta Q. Cabacungan	500 sq.m	40sq.m			Donation of residential
18. Lucita F. Santiago	24,000 sq.m	150sq.m	Corn/rice Mango - 1	Temp. fence	Donation of Agri. lot
19. Vicente A. Obligacion	190 sq.m	30sq.m			Donation of Residential lot
20. Carlito C. Arellano	12,000sq.m	50sq.m			Donation of Residential lot
21. Joel Martin	12,000 sq.m	50sq.m			Donation of Residential lot
22. Gloria R. Granil	610 sq.m	30sq.m			Donation of Residential lot
23. Armando Granil	1,000 sq.m	20sq.m			Donation of Residential lot
24. Romilo Seridon	1,000 sq.m	20sq.m			Donation of Residential lot
25. Dante Corpuz	100 sq.m	5 sq.m			Donation of Residential lot
26. Orlando Angco	3,140 sq.m	10sq.m			Donation of Commercial lot
27. Lolita Gounyarin	4,000 sq.m	30sq.m	Corn		Donation of Residential & Agri. lots
28. Atencio Gragasin	250 sq.m	10sq.m	Ipil-ipil - 3		Donation of Residential lot
29. Pacifico Quijano	8,000 sq.m	25sq.m	Mango - 1		Donation of Residential lot
30. Pelagio Ancheta	489 sq.m	60sq.m			Donation of Residential & Agri. lots
SUB-TOTAL		**978 sq. m.**			

Table 6 Barangay Banaoang East Households and Land Area Affected by the ROW Acquisition

Land Owner	Total Land Area (sq.mts)	Area affected by ROW (sq.mts)	Trees/Crops Affected	Structures	Remarks
1. Amado Ganzagan	5,000 sq.m	50sq.m	Onion, Corn, Sweetpotato		Donation of Agri. lot
2. Artemio Apaga	5,000sq.m	20sq.m	Sweetpotato		Donation of Agri. Lot
3. Cesar Pacunayen	5,000 sq.m	50sq.m	Yambean		Donation of Agri. Lot
4. Isagani S. Pacunayen	9,000 sq.m	60sq.m	Sweetpotato Mango-5		Donation of Agri. lot
5. Lorenzo Dela Cruz	10,000 sq.m	50sq.m	Sweetpotato Gmelina-15		Donation of Agri. lot
6. Pepito Apaga	20,000sq.m	100sq.m	Onion, sweetpotato		Donation of Agri. lot
7. Alberto S. Cesario	15,000 sq.m	60sq.m	Onion, sweetpotato		Donation of Agri. lot
8. Domingo Paclibon	20,000 sq.m	100sq.m		Fishpond	Donation of Agri. lot
SUB-TOTAL		**490 sq. m.**			

Table 7 Barangay Capaoayan Households and Land Area Affected by the ROW Acquisition

Name of Land Owner	Land Area	Area affected by ROW (sq.mts)	Trees/Crops Affected	Structures	Remarks
1. Ben C. Callorina	20,000 sq.m	50 sq. m.	Palay, corn		Donation of Agri. lot
2. Rudy Apostol	8,000 sq,m	30 sq.m	Palay, corn Acacia-1 Camachili-1		Donation of Agri. lot
3. Mario A. Ancheta	20,000 sq,m	70 sq.m	Corn Camachili-3 Acacia-1		Donation of Agri. lot
4. Iladio Sadural	4,946 sq,m	200 sq.m	Palay, corn Camachili-3		Donation of Agri. lot
5. Margarita S. Lapada	23,771 sq,m	200 sq.m	Corn Camachili-4 Acacia-3		Donation of Agri. lot
6. Alfredo Conde	8,000 sq,m	20 sq.m	Ampalaya Camachili-1		Donation of Agri. lot
7. Marcelino Cristobal	12,000 sq,m	200 sq.m	Palay Acacia-2 Camachili-1		Donation of Agri. lot
8. Eugenio Sadural	11,000 sq,m	50 sq.m	Sweetpotato Camachili-2		Donation of Agri. lot
9. Candido G. Duco	4,000 sq,m	20 sq.m	Palay, corn Acacia-3 Camachili-1		Donation of Agri. lot
10. Edgardo Bautista	12,000 sq,m	25 sq.m	Palay Camachili-2 Acacia-5		Donation of Agri. lot

11. Ernesto Sadural	11,000 sq,m	10 sq.m	Ampalaya Camachili-2 Ipil-ipil-10		Donation of Agri. lot
12. Alfonso A. Daileg	23,000 sq,m	50 sq.m	Corn Gmelina-1 Camachili-2		Donation of Agri. lot
13. Pia C. Cuchapin	10,000 sq,m	30 sq.m	Palay, corn, ampalaya Camachili-4 Acacia-5		Donation of Agri. lot
14. Gerardo D. Valledor	14,000 sq,m	50 sq.m	Palay, corn Camachili-3		Donation of Donation of Agri. lot
15. Aquilino Canlas	21,653 sq,m	40 sq.m	Corn		Donation of Agri. lot
16. Jesse Santiago	8,478 sq,m	200 sq.m	Palay		Donation of Agri. lot
17. Godofredo Cuchapin	21,929 sq,m	250 sq.m	Palay, corn Camachili-4		Donation of Agri. lot
18. Helmar Baldivicio	49,991 sq,m	400 sq.m	Palay, corn Camachili-1		Donation of Agri. lot
19. Noel Querido	8,688 sq,m	150 sq.m	Sweetpotato, corn, Camachili-1 Acacia-1		Donation of Agri. lot
20. Joel Villanueva	14,384 sq,m	200 sq.m	Ampalaya		Donation of Agri. lot
21. Geraldo Penaflor	10,000 sq,m	100 sq.m	Corn, ampalaya		Donation of Agri. lot
SUB-TOTAL	**2,345 sq. m.**				

5. Physical displacement of persons

The proposed sub-project will not result in the relocation of any affected households because the affected portions were insignificant. The owners have freely and voluntarily donated the portions of their lands that will be affected by the road widening. The owners of structures that will be affected by the road widening have took it upon themselves to conduct the repairs of affected houses.

The affected structures are of concrete or bamboo materials. Tables 31 and 32 provide details of these structures.

6. Economic displacement of persons

Landowners' economic losses, due to the donation or reduction of sections of their farmlands affected by the road widening, are deemed insignificant. This is relative to the size of their landholdings and incomes derived from the

farmlands. In the absence of the need to relocate houses, no resettlement plan was made. The road widening improves mobility and market accessibility for the project beneficiaries.

7. Chance Finds

In the event that artifacts, bones or other objects are found during the digging and drilling within a ten-meter radius of the construction, it is imperative that the operations should be suspended. Refer to Annex 36 for the procedures to follow.

Environmental Assessment

1. Natural habitat

The proposed sub-project is a 14.689-kilometer Farm-to-Market Road traversing Barangays Capaoayan, Banaoang West, Banaoang East and Ablang Sapang in Moncada, Tarlac. As the project lies within a lowland area, there are no indigenous eople affected. Furthermore, the project does not lie within an officially declared or proposed protected area of natural habitat delineated by the DENR. The improvement of the existing farm-to-market road in the barangays has been much desired by the residents. The PRDP makes this a reality. The affected barangays strongly support the project, as manifested by the resolution of the barangay councils.

The vegetation in the project site consists only of trees, shrubs and wild grass. Except for some birds, there is neither wildlife nor endangered species in the project site. Furthermore, Table 8 lists the actual sites of potable water sources in the road influence area, including the presence of water ecosystems. Table 16 shows the land use classification of the four barangays.

Table 8 Actual Site of Potable Water Source (PWS) for the four Barangays

Barangay	No. of HHs	Water Ecosystem	Potable Water Sources					
			No. of Shallow Well	%	No. of Deep Well	%	No. of Water Tank	%
Ablang Sapang	53	❖ Sapang River ❖ New Coarse Sapang River ❖ Pantol River	14	26.42	11	20.75	5	9.43
Banaoang West	30	❖ Banaoang river ❖ Morong Creek	7	23.33	10	33.33	4	13.33
Banaoang East	8	❖ Banaoang River	5	62.50				
Capaoayan	21	❖ Capaoayan Creek	8	38.10	1	12.50		

During the implementation of the project, the existing vegetation will be cleared. The water ecosystems will not be affected by the project construction.

1. Physical Cultural Resources

The project traverses a small portion of the residential areas and a dominantly larger portion of the agricultural areas. Some trees are growing in the areas to be widened. These include saplings for earth balling and matured/merchantable tress that are to be cut. The legal permit for the tree-cutting and earth-balling was already requested from the Department of Environment and Natural Resources. Refer to Annex 14 for the tree-cutting permit request sent to DENR. The widening of the road will not affect any major structures, except for some temporary fences made of light materials and small sections of concrete walls. The Provincial Government, in coordination with the

barangay officials, has settled the displacement with the owners. It is, likewise, noted that there are no cultural or historical monuments or structures which will be affected by the project. Moreover, it is not part of an important natural feature or landscape or archeological site. The project area is not a potential archaeological site. In the case that there be archaeological and paleontological finds, an Archaeological and Paleontological Chance Finds Procedure is in place. Refer to Annex 36 for the procedure. However, during the implementation, the Provincial Government will observe all measures to mitigate any adverse impacts of the project that could affect the environment and the people in the community.

During the consultation and meeting with the farmers and resident beneficiaries, they claimed that the benefits they will enjoy from the project is greater than the losses they will incur from the areas that will be donated to the road widening.

2. Terrain, Soil Types and Rainfall

The Tarlac Provincial Development and Physical Framework Plan (PDPFP) describes the topography of Moncada as gently sloping to level. The soil type ranges from clay loam to sandy loam. Most of the land is used for agriculture purposes. Livestock- raising is also practiced in the municipality.

Based on the modified Coronas Classification of Philippine Climate, Tarlac falls under Type 1 climate, i.e., two pronounced seasons: generally dry from December to April and wet from May to November. The main atmospheric systems controlling rainfall in the area are the southwest monsoon from June to September and northwest monsoon from December to February. The Inter Tropical Convergence Zone (ITCZ) and local thermal convection also contribute significantly to the total annual rainfall, especially during summer.

Records from the Philippine Atmospheric, Geophysical and Astronomic Services Administration station in Hacienda Luisita for 2001 show an annual

mean temperature of 22.69 °C for the province. The highest temperature occurred in April and was recorded at 35.3°C.

Heavy rainfall is usually experienced during the months of July, August and September, with rainfall depths of 468.2 mm, 299mm and 359.3mm, respectively. The typhoon season usually starts in June and lasts until November.

Relative humidity averages about 27.58%, which indicates dry air conditions throughout the year.

Given the soil types and weather classification, the potential in erosion and sedimentation is low, although several aspects contributes to the occurrence of soil erosion such as rainfall, crop rotation/cultivation practices and topography should be considered.

4. Hazard/Risk Assessment

There are 45 rows of existing reinforced concrete pipe culverts (RCPC) with sizes ranging from 0.45m to 1.00m in diameter in the proposed subproject. These are only 4.00m in the length, on the average. Some are partially clogged and are all proposed for replacement. Three (3) barrel culverts are proposed to be constructed in small waterways. All of these proposed structures are for drainage and flood mitigation measures.

The project site is a flood-prone area. The proposed road will be upgraded by placing a large volume of embankment. This will ensure that the road will not be submerged and will be passable in times of flood. As the area is generally flat in terrain, erosion problem is very minimal. The erosion problem is foreseen to be encountered in the road embankment works. As a safeguard, a grouted riprap is proposed to be constructed along deep roadside slopes. With all these measures proposed to be undertaken, the proposed project will not adversely affect the drainage situation, erosion, and flooding the area. Rather, the addition of new rows of RCPC is a drainage situation improvement measure.

The DA's Integrated Pest Management (KASAKALIKASAN) Program already exists in three out of the four barangays in the road influence area, namely, Ablang Sapang, Banaoang East and Banaoang West. In Ablang Sapang, one Farmer Field School has been conducted for rice and sweetpotato, with 59 participants and all of them adapting the methods taught. In Banaoang East, there have been two Farmer Field Schools conducted for 50 participants, with a 100% adoption rate. In Banaoang West, one Farmer Field School has been conducted each for rice, corn and sweetpotato for 82 participants, with a 100% adoption rate. The action plan to further support the program is to subsidize organic fertilizers for the farmers and to put up organic demonstration farms. Barangay Capaoayan has had no such trainings yet and is programmed for the next year.

5. Impacts During Construction

Although minimal structures and trees will be affected by the road widening along the influence area, the construction of the project will not cause substantial damage to the environment, whether on green fields or developed sites. It must be noted that during construction, the contractors should consider and observe 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 offsite waters, slope failures and mass movement, direct loss of land to plant on (by the conversion of the original land cover into an artificial surface) and direct loss of habitat (by the fragmentation of an ecosystem into smaller and more isolated patches.). Therefore, farm-to-market road engineers should design roads considering not only cost efficiency but also the sustainable management of the environment. During the construction 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. In determining the clearing limit of the farm-to-market road, it must be noted that there are instances wherein the clearing limit may require more than that prescribed by the standard design.

- **Construction noise mitigation-** There are some residents along the road influence area that will be affected by the noise during the construction. As a mitigating measure, work activities and operations of heavy equipment should be done only during daytime and be avoided at night.

- **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-** The LGU should provide rules and regulations for the proper disposal of all waste materials. Regulatory and enforcement powers with the public education and awareness generation 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-** The safety of workers must be given priority, as it is a very important aspect in the construction. All workers must not be injured in whatever process they engage in during construction. Safety standard protocols must be observed like puttingnup roads signs and wearing complete safety uniforms by all workers to avoid any untoward incident.

5. Status of Environmental Clearances

The application request for the Environmental Compliance Certificate has already been sent. In the process of securing the requirements for the set by the Department of Environment and Natural Resources (DENR), the initial documents required are the barangay resolutions and the zoning certificates. Refer to Annexes 17 for the aforementioned documents.

The quarry source is Electa Tarlac Aggregate Corporation located in Brgy. San Bartolome in Mayantoc, Tarlac. The Environmental Compliance Certificate is found in Annex 11. The batching plant and dumping site for the excavation and filling materials is to be willingly received by the lot owners are documented in Annex 40.

Environmental Issues and Mitigation Measures

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

Table 9 Environmental 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	Proper disposal and compaction of spoils		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	Proper handling and disposal of waste oil and grease		Contract	PLGU; Contractor
3. Potential contamination with human waste	Construction workers would be temporarily housed in a base camp	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	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		Contract	PLGU; Contractor
5. Potential dust/mud nuisance during construction	Roads could become powdery during dry days and muddy during rainy	Undertake sprinkling of road (including access		Contract	Contractor

	days over the course of the construction Access road and/or the construction/rehabilitation works passes through a populated area	roads during dry days, and filling up of potholes during rainy days, especially in residential areas) Set speed limits for vehicles, especially within residential areas			
6. Landside/erosion of exposed road sides resulting in sedimentation of waterways	The rehabilitation work does not involve additional road cuts The exposed slopes are minimal and do not consist of erodible materials	Placement of adequate drain outlets and turnouts. Seeding and planting on erodible surfaces.	During construction and included in POW and DED	DED/POW; Contract	PLGU; Contractor
7. Inadequate drainage resulting in flooding or pounding.	The road will block runoff, resulting in flooding on one side of the road during rainy days.	Installation of cross drain system		DED	Provincial Government of Tarlac; Contractor
8. Potential increase in usage of pesticides due to intensification of cash crop production in the area and extensive use of chemical pesticides within the road influence area	There is an ongoing IPM program by the DA in the service area Farmers in the service area have been trained on IPM	DA to continue to support IPM program LGU to coordinate with DA on IPM training	During and after the project implementation	Capacity building plan; O&M plan	PLGU, LGU and DA
9. Potential increase in encroachments of human activities into the nearby public forest	The proposed road does not improve access to a public forest	No measure required		O&M Plan Capacity Building Plan	Provincial Government of Tarlac
10. Local Employment	The construction will provide local hire employment opportunities	Hiring priority shall be given to local residents Implement RI Manual on local hiring		Contract	PLGU; Contractor
11. Potential accidents to workers	Workers are exposed to work-related hazards such as tripping, slippage that may result to injuries and even loss of life	Cordoning off of construction site. Placement of warning signboards. Use of proper construction uniform.		Contract	PLGU; Contractor
12. Potential disturbance of noise	Noise generation maybe at its peak during certain phases	Avoid use of heavy equipment during night time		Contract	PLGU; Contractor
13. Potential disturbance to wildlife	Closure of migratory routes, disturbance of habitats and noise related problems.	Intermittent use of heavy equipment. Distance from thickly vegetated areas.		Contract	PLGU; Contractor
14. Potential to siltation	Stockpile or soil and rocks could be eroded during heavy rains and silt up creeks and streams	Enclose hazardous area with fence and barriers		Contract	PLGU; Contractor
15. Potential landscape damages	Scarred from road cuts and induce landslides	Maintenance and restoration of roadside vegetation. Construction spoils		Contract	PLGU; Contractor

		and other waste materials are properly disposed.			
16. Potential impact on vegetation control	Cut trees only when deemed necessary	Replanting of plants and trees to allow them to regenerate and also to protect embankment. Adherence to the guidelines stipulated and the permit to cut trees given by the DENR.		O&M Plan Contract	PLGU; Contractor
17. Potential impact on domestic solid waste	Lack of proper garbage disposal of construction waste materials and workers garbage	Coordinate with LGU in the enforcement of solid waste laws. Implement efficient housekeeping services. Ensure proper collection and disposal of construction waste.	Before projects starts and onwards	Contract	PLGU; Contractor
18. Conversion of land use /natural habitat due to quarry	The proposed quarry site is within the private land and there is no need convert existing land use Quarry site is existing and is a proven source of good quality materials	Quarry materials will be procured from the accredited quarry site of DPWH		Certification of DPWH and PENRO	PLGU; Contractor
19. Potential damage to existing road due to hauling of quarry materials	Source of quarry materials is more or less 30 kilometers from project site; Transportation of quarry materials from source to FMR will cause damage to existing FMR	Regular monitoring of existing roads and strict enforcement of load limits		Certification of DPWH	Contractor
20. Potential unauthorized extraction of quarry resources	Possibility of others taking sources from the quarry	Implementation of Provincial Task Force for Monitoring	During project implementation		PLGU
21. Establishment of Grievance Redress Mechanism	Settlement of/addressing grievances of beneficiaries	Regular consultations and meetings in coordination with Barangay officials and LGU concerned	Before and during the implementation	Minutes of the meeting, attendance and photo docs.	PLGU
22. Potential to archaeological chance finds	Discovery of sites, structures with important cultural, historical or archaeological value and significance	Adoption of chance finds procedures	During the implementation		Contractor
23. Potential Right-of –Way issues or problems	Project beneficiaries are in full support of the project and have willingly signed the deeds of donation	Conduct of consultation meetings, minutes of the meetings, attendance, photos	Prior to implementation of project	Deed of Donation	PLGU/ MLGU
24. Compensation for and/or restoration of affected structures	Project beneficiaries have no demanded compensation	Conduct of consultation meetings, minutes of the meetings, attendance, photos	Prior to project implantation	Deed of Donation	PLGU/ MLGU

Responsible Unit

The implementing body of the Provincial Government of Tarlac 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 to be climate-resilient. These will not only increase regional production, and connectivity but will also, ultimately, leverage food security.