

**PROVINCIAL GOVERNMENT OF BOHOL**  
Province of Bohol, PHILIPPINES

**PROJECT ENVIRONMENTAL ASSESSMENT REPORT**

Project	<b>Provincial Road Maintenance Facility (PRMF)</b>
Implementing Partner	<b>Provincial Government of Bohol</b> (Hon. Edgar M. Chatto, Governor)
Project Name	<b>Rehabilitation of Pob. Valencia-Anoyon-Omjon Road</b>
Location	<b>Valencia, Bohol</b>
Duration	Approximately five (5) months
Project Description & Cost	Gravelling of 2.53 km earth section of existing earth Provincial Road with an estimated cost of Fourteen Million Pesos P14M. A detailed description of project activities is provided as <b>Attachment A.</b>

**Certification:** I, the undersigned, certify that:

1. The information in this form is correct and complete.
2. The following actions have been and will be taken to assure that the project complies with environmental requirements established under the Government of the Philippines and the Government of Australia.

**Prepared by:** Environmental Management for Infrastructure and Roads (EMIR) Program Core Team

<u>Name</u>	<u>Agency</u>	<u>Signature</u>	<u>Date</u>
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**Approved:**

Atty. Edgar M. Chatto	Provincial Governor	_____	_____
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**Noted:**

MANUEL JAMONIR	PRMF Infra Coordinator	_____	_____
DAVID GOODWINS	PRMF Technical Director	_____	_____

**Project Environmental Assessment Report  
Road Rehabilitation Project  
Name of Project**

**1.0 BASIC PROJECT INFORMATION**

**1.1. Background**

The proposed road rehabilitation project is located in Barangays Anoyon, Genoviva and Anonang \_ in the Municipality of Valencia, Province of Bohol. The existing 2.53 km earth road begins at the end of Anoyon Bridge, Brgy. Anoyon. The road serves as a the main route of transport of local agricultural Barangays of Anoyon, Genoviva, Anonang, Botong, Omjon and Canhuyupon and provides access to goods and services available in the town of Valencia. Presently, the road section is deteriorated, eroded, gutted and encroached by vegetation. During heavy rain, this road sections become muddy and slippery that poses safety risk for pedestrian and vehicles. The canopy provides shades which makes it longer to dry up. The rehabilitation of the deteriorated earth road is urgently needed. Refer to **Annex A** Location/Vicinity Map including Vegetative Cover.

**1.2 Rationale**

The purpose of the project is to upgrade the deteriorated earth road section along existing route to an all-weather gravel road. The rehabilitation work will include embankment fill in selected sections, graveling, and installation of slope protection and drainage structures without altering the existing hydrology of the surrounding area. PRMF will fund and implement the road upgrading along with a local counterpart contribution. The PLGU will carry out regular road repair and maintenance, and implement recommended environmental measures when operational.

**1.3 Expected Results**

When completed, the rehabilitated road is expected to provide safe year-round access and enable local residents to transport produce and avail of goods and services in the town proper of Valencia and its neighboring municipalities. It is anticipated that the road improvement will generate substantial savings in transport costs and vehicle operating costs, increase net value added of farm produce, and create incentives for local economic activities. In the long-term, the project is envisioned to help improve the living and economic conditions in Barangays Anoyon, Genoveva and Anonang.

## 2.0 PROJECT ACTIVITY DESCRIPTION

### 2.1 Project Components

The road rehabilitation project will be implemented according to the DPWH Standard Specifications for Highways and Bridges (2004), and Special Provisions and Supplementary Specifications for the project. The project component activities are described in **Table 1**.

**Table 1. Project Component Activities**

Project Phases	Activity Description and Assigned Responsibilities	Responsible Parties
Pre-Construction Phase	Technical and engineering, social and environmental data are available for the preparation of Site Development Plan for the road rehabilitation project. Refer to <b>Annex B</b> for the SDP and Site Photos.	BEMO PEO
	Conducted public consultation with local residents, officials, and including representative from women's group ( <b>Annex C- Attendance Sheet and Photos</b> ).	PLGU
	Confirm ROW prior to the start of construction ( <b>Annex D - Certification</b> ). Take responsibility for security, information dissemination, and securing of necessary government permits prior to the start of construction.	PLGU
Construction Phase	Supervise the contractor and monitor construction work to ensure compliance with contractual obligations.	PEO
	Carry out the scope of work for the road upgrading consisting of: <ul style="list-style-type: none"> <li>• Widening of narrow road sections to at least 5m wide carriageway prior to graveling or laying of subbase materials;</li> <li>• Embankment fill to raise the road elevation above the existing ground level, as deemed necessary;</li> <li>• Installation of canals, cross-drain and side slope protection on identified locations along the roadway, if applicable.</li> </ul> Carry out any clean up and restoration works at the construction area prior to demobilization.	PEO Contractor  Contractor
Operation and Maintenance	Operate the facility properly, provide necessary repair and maintenance works, and allocate adequate funds and personnel for implementation.	PEO
Implementation Schedule and Funding	The construction work will be approximately completed within five (5) months from mobilization with an estimated total cost of Fourteen Million Pesos (P14M) to be funded under the Provincial Roads Management Facility. Skilled and unskilled workers, local hired labor, including women will be utilized during the pre-during and post construction works.	PEO Contractor

### 3.0 ENVIRONMENTAL BASELINE INFORMATION

**Table 3** presents baseline environmental information to characterize the existing condition at the general location of the project site prior to implementation.

**Table 3. Baseline Environmental Information**

Site Location Characteristics	Environmental Parameters	Recorded and Reported Information
<b>Geographic Location</b>	Latitude	<b>9° 39" 37.44"</b>
	Longitude	<b>124° 11' 36.6"</b>
<b>Local Topography</b>	Terrain/Slope	<b>Combination of hilly, rolling and mountainous with slopes of more than 10 degrees</b>
	Elevation	<b><u>342.324</u> m AMSL</b>
<b>Local Geology</b>	Soil Type	The soil type within the project area is Faraon Clay. Faraon clay is found in well-drained areas (calcareous hilly and mountain land). The surface is black with good coarse blocky or granule structure; rich in organic matter and highly calcareous. The subsoil is yellowish brown to grayish brown; good coarse granular; more carbonates and lime rocks are present. The substratum is highly weathered limestone, light gray to gray; structure-less, holly made up of carbonates. The bedrock substratum is hard coralline limestone; gray to almost white, structure less mass. (CLUP Valencia, 2002-2012 Pg. 5)
	Minerals	Sands along the seashores and boulders in some barangays are the identified mineral resources found in the locality. (CLUP Valencia, 2002-2012 Pg. 43)
<b>Local Hydrology</b>	Rivers/ Creeks	The town has two major waterways, namely: the Cadija River that serves as the boundary of Barangay Canmanico and Canduaos Oriental and Panangatan River that separates barangays Canmanico and Poblacion Occidental.(CLUP Valencia, 2002-2012 Pg. 43)
	Present Use	Agriculture and Domestic Use
	Sensitive habitats/species	None within 6 km radius from the project site

<b>Local Climate</b>	Climate type	The climate in Valencia belongs to the third type. It is characterized by not very pronounced maximum rainfall with short dry season from one to three months and a wet season of nine to ten months. The dry season starts in February and last up to April sometimes up to the middle of May. The coolest months are November and December. (CLUP Pg. 5)
	Annual Rainfall	Average annual rainfall of Valencia is 217.8mm (source: PAG-ASA)
<b>Natural Physical Hazards</b>	Earthquakes/Volcanic	No reported of past occurrences
	Landslide/Erosion	Barangays Anonang and Genoveva have low susceptibility to landslide while barangay Anoyon is moderately susceptible to landslide. (MGB Summary Geohazard Assessment in Bohol 2007)
	Flooding	Based on the Summary Geo-hazard Assessment in Bohol in 2007, Barangay Anoyon is susceptible to moderate flooding while flooding susceptibility of Barangays Genoveva and Anonang is low.
<b>Forest/ Vegetation Cover</b>	Type	Forest/Agricultural (coconut, rice, corn, fruits, vegetables, pasture grasses, native and exotic tree species, banana, mangoes, rootcrops)
	Coverage area	About 5,215.90 hectares or 40.28% of the total land area of the municipality, which found largely in the lower and central portion of the municipality, are devoted for agriculture. (CLUP Pg 47)
<b>Protected Areas</b>	Forest	None within 6 km radius of the project site
	Coastal/Inland Waters	None within 7 km radius of the project site
<b>Land Area and Existing Land Use</b>	Land Area (ha)	12,950 hectares (CLUP pg 79)
	Land Classification & Use	Alienable and disposable land ( agricultural and residential)
<b>Population (Latest Census Data)</b>	Total Population	24,363
	Total Households	4,392
	Ethnic Group (%)	100% Boholanos
	Est. Total Beneficiaries	363 households for Barangays Anoyon, Genoveva and Anonang section
<b>Local Economy</b>	Total Labor force	13,576 or 56% of the total municipal population
	Main Income source	Farming / Agriculture

<b>Basic Services and Infrastructures</b>	Water supply	Level 3 water system 3,987 HH population served; Level II water system 3,592 of HH population served; Level I water system 37 HH population served.
	Sanitary toilets	4,156 or 94.63% Households have sanitary latrines; the rest are using unsanitary methods like antipolo, and open pit and about 4.07% of the total number of household does not have any toilet at all (CLUP p 26)
	Electricity	78.57% of the total household has electric connection with BOHECO II
	Transportation	Public passenger bus and PUJs, cargo trucks for agricultural products and consumer goods, hired motorcycles
	Communication	Cellphone, two-way radio, TV, print media, postal services, telecom , telephone and fax messages, BLECS and transistor radio
	Education	19 elementary schools out of 35 barangays and one secondary school located at Poblacion Oriental. (CLUP pg. 14)
	Health	Main Health Center (1); Barangay Health Stations (7) Private Hospital (1) (CLUP p 27)
	Social Welfare	21 Day Care Centers out of 35 barangays with registration services; Municipal Social Welfare and Development Office and Provincial Social Welfare and Development Officer
	Religious Buildings	Catholic Church (1) located at the Poblacion area
	Police/Fire Protection	Police, Barangay Tanods, fire station and civilian volunteers

#### 4.0 EVALUATION OF PROJECT ISSUES WITH RESPECT TO POTENTIAL ENVIRONMENTAL IMPACT

**Table 4** presents the Environmental Impact Screening Matrix for the proposed road rehabilitation project. No significant adverse environmental impacts have been identified and determined to arise during project implementation.

There is a portion of the road section that would require cutting of some planted tree species, like mahogany, gemilina and teak. Road design should consider adjustments on their design to preserve the trees that have been planted to serve as slope protection.

**Table 4. Environmental Impact Screening Matrix**

Project Activities	Potential Environmental Issues and Concerns Arising from Project Activities	None or Insignificant Impact	Significant Impact			Duration of Impact		
			Low	Mod	High	Short term	Long-term	
Pre-construct ion Stage	Affect existing forested area		✓			✓		
	Require tree cutting or vegetation clearing		✓			✓		
	Remove permanent structures of value	✓						
	Damage cultural and historic resources	✓						
	Impair local aesthetic or scenic resources	✓						
	Require additional land for ROW acquisition	✓						
	Cause relocation and resettlement	✓						
	Damage present local service facilities	✓						
	Damage to properties or belongings	✓						
	Impose additional demand on local services	✓						
	Restrict public access to the area			✓			✓	
	Pose human health and safety hazards			✓			✓	
	Create job opportunities/local hired labor	✓						
Construct ion Stage	Generate excess excavation materials		✓			✓		
	Generate construction wastes and debris		✓			✓		
	Generate wash/wastewater/runoff		✓			✓		

Project Activities	Potential Environmental Issues and Concerns Arising from Project Activities	None or Insignificant Impact	Significant Impact			Duration of Impact	
			Low	Mod	High	Short term	Long-term
	Induce topsoil erosion/deposition		✓			✓	
	Create nuisance noise, dust and vibrations		✓			✓	
	Pose human health and safety hazards		✓			✓	
	Impose additional demand for local services		✓			✓	
	Affect pedestrian/vehicular traffic flow		✓			✓	
	Create increased demand for aggregates			✓		✓	
	Create job opportunities/local hired labor			+		✓	
Post-Construction & Operation Stage	Increase demand for water and power services			✓			✓
	Increase demand for waste disposal			✓			✓
	Increase demand for drainage/sewerage			✓			✓
	Increase demand for traffic protection/control			✓			✓
	Increase health and safety hazards			✓			✓
	Create income and livelihood opportunities				+		✓
	Improve delivery of goods and services				+		✓
	Contribute to effective land use & development				+		✓
	Promote/ support in peace development				+		✓

**Note:** + means potential beneficial impact



## **5.0 ENVIRONMENTAL MANAGEMENT PLAN (Recommended Mitigation, Monitoring and Evaluation Measures)**

The Environmental Management Plan (EMP) shown in **Table 5** is prepared to guide implementation of recommended impact mitigation and monitoring measures by the responsible persons or agency to assure satisfactory compliance.

**Table 5: Impacts Management Plan**

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Magnitude (Slight, Moderate, Severe)	Time Frame (Short, Medium, Long)	Affected Road Section	Affected Area Outside of the Road Section	Prevention / Mitigation or Enhancement Measures	Recommendations
<b>Pre-construction</b>								
Land	Mobilization of contracted physical works; Road works preparation	Clearing and grubbing of trees and other vegetation.	Slight	Short	Bunkhouse	None	Surveyors must preserve and protect all existing vegetation in the area. Site clearing, if necessary, must be regulated and minimized. Proper protocols of surveying must be observed. Re-vegetation required.	-Identify area for clearing - Tree Inventory
		Disturbances and damages to public and private lands and associated properties.	Slight	Short	Portion of the road section	None		-Coordinate with the affected land owner.
		Vehicular traffic disturbances.	Slight	Short	Entire road section	None	Allocate funds for damages	-Enter into agreement and settlement
		Uncovered or	Slight	Short	Selected section	None	Assign flagman	-Installing of signage and traffic route. -Re-routing of traffic or using one lane.
		Holes and borings						

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Magnitude (Slight, Moderate, Severe)	Time Frame (Short, Medium, Long)	Affected Road Section	Affected Area Outside of the Road Section	Prevention / Mitigation or Enhancement Measures	Recommendations
		unrelated Auger borings and test pits.					must be properly replaced;	-Replace materials on test pits after boring
Air		Depletion of air quality	Slight	Short	Entire road section	None	Deployment of good-conditioned vehicles and equipment. Regular check up of vehicles and equipment' conditions.	- Conduct community awareness - Provision of PPE ex. mask
		Increase of noise in the area.	Slight	Short	Entire road section	None	Limit loud and vibratory activities only during the daytime. Use mufflers and sound insulators. Deployment of well maintained vehicles and equipment.	-Conduct community awareness
Water		Increase usage and competition of domestic water resources.	Slight	Short	Entire road section	None	Controlled use of local water.	- Conduct community awareness

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Magnitude (Slight, Moderate, Severe)	Time Frame (Short, Medium, Long)	Affected Road Section	Affected Area Outside of the Road Section	Prevention / Mitigation or Enhancement Measures	Recommendations
		Generation of domestic wastes that reduce water quality, potential for bacterial diseases.	Slight	Short	Entire road section	None	Right management of liquid and solid wastes in work camps. Proper implementation of waste segregation and immediate disposal of putrescible and domestic wastes	-Identify dumping area for waste disposal and segregation - IEC
<b>Construction</b>								
Land	Clearing and grubbing	Disturbance of flora and fauna	Moderate	Medium	Entire road section	None	Limit activity only within road right of way.  Re-vegetation, replacement or replanting of trees.	-Replacement of trees cut on designated area. -Identify dumping area of uprooted vegetation. -Cut trees should be at the disposal of the owner.
		Generation of construction wastes	Moderate	Medium	Entire road section	None	Solid waste management plan to include waste segregation, recycling	- Construct waste disposal facility

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Magnitude (Slight, Moderate, Severe)	Time Frame (Short, Medium, Long)	Affected Road Section	Affected Area Outside of the Road Section	Prevention / Mitigation or Enhancement Measures	Recommendations
							and reuse of generated wastes.  Proper coordination with LGU on the proper disposal of generated construction wastes	- Identify site with LGU on disposal
		Generation of spoils	Moderate	Medium	Entire road section	None	All excess soil generated by the project will be reused or disposed at designated disposal sites.	-Identify excess soil disposal site
	Quarry/borrow pit for road aggregates.	Insufficient quarry/borrow pits to provide aggregate	Moderate	Medium	Identified site	None	Selection of suitable intermediate borrow pit nearer to works if possible.	- Identify excess soil disposal site
	Earthworks and gravel road construction	Soil quality degradation	Slight	Short	Selected section	None	Scrapped productive top soil be returned to sustain soil fertility/productivity	
		Terrestrial ecosystem	Slight	Short	Selected section	None	Replacement or re-planting of tree and	-Tree planting on identified site

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Magnitude (Slight, Moderate, Severe)	Time Frame (Short, Medium, Long)	Affected Road Section	Affected Area Outside of the Road Section	Prevention / Mitigation or Enhancement Measures	Recommendations
		temporary disruption					other vegetation	
		Potential for elevated erosion, landslides, or inducement of other natural hazards.	Slight	Short	Selected section	None	<p>Strictly follow sound design requirements and specifications like stabilization of slopes.</p> <p>Minimize ground disturbance and always consider local climate and inclement weather.</p> <p>Soil compaction in excavated areas (i.e. culverts, drainages)</p> <p>Provision of biological soil erosion control measures</p>	<p>- Install slope protection</p> <p>-Install drainage and pipe culverts</p> <p>- Construct line canal</p> <p>-Planting of vetiver plant</p>
		Unmanaged road spills of hydrocarbons from diesel generators, fuel storage tanks,	Moderate	Medium	Entire road section	None	Appropriate management of petroleum (e.g. fuels, oil and lubricants) products handling and	-Preventive maintenance of equipment

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Magnitude (Slight, Moderate, Severe)	Time Frame (Short, Medium, Long)	Affected Road Section	Affected Area Outside of the Road Section	Prevention / Mitigation or Enhancement Measures	Recommendations
		and from maintenance of vehicles and equipment.					vehicles maintenance.	
Air	Loading, transport and unloading of construction materials and aggregates; Construction of facilities	Increase in total suspended particles (TSP)	Moderate	Medium	Entire road section	None	Use of tarpaulin covers for delivery trucks.	- Community information
	Earthworks and gravel road construction	Increased emission of TSP, SOx and NOx.	Moderate	Medium	Entire road section	None	Regular water spraying on aggregate piles and exposed areas.  Regular watering of construction site when needed. Proper operation and regular engine maintenance.	- Community information
		Increase of noise in	Moderate	Medium	Entire road	None	Limit loud and	- Community

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Magnitude (Slight, Moderate, Severe)	Time Frame (Short, Medium, Long)	Affected Road Section	Affected Area Outside of the Road Section	Prevention / Mitigation or Enhancement Measures	Recommendations
		the area.			section		vibratory activities only during the daytime. Use mufflers and sound insulators.  Proper operation and regular engine maintenance.	information
Water	Loading, transport and unloading of construction materials and aggregates; Construction of facilities and work camps.	Siltation of drainage line and water body due to washed aggregate resulting from inclement weather	Slight	Short	Entire road section	None	Proper stockpiling of aggregates. Build perimeter fence to shield the construction area from the outside.	-Install signage
	Earthworks and gravel road construction	Unmanaged road spills of hydrocarbons from diesel generators, fuel storage tanks, and from maintenance of	Slight	Short	Entire road section	None	Appropriate management of petroleum (e.g. fuels, oil and lubricants) products handling and vehicles maintenance.	-Contractor to formulate Operational Control Procedure on Vehicle Maintenance



Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Magnitude (Slight, Moderate, Severe)	Time Frame (Short, Medium, Long)	Affected Road Section	Affected Area Outside of the Road Section	Prevention / Mitigation or Enhancement Measures	Recommendations
		vehicles and equipment.						
		Potential soil and water contamination with impacts on ecosystem and people	Slight	Short	Entire road section	None	Identify low laying areas	-Conduct IEC to the Community
		Potential for water blockage or drainage issues; potential for erosion; surface water impacts from sediment	Slight	Short	Portion of the section	Near Elem School	Follow appropriate construction guidelines and install culverts/drains as required to cater for surface water flows.	-Install signage
		River siltation and adverse surface water impacts from sediments.	Slight	Short	Portion of the section	Near a creek	Provision of silt traps structures. Regular monitoring of silt contamination in rivers and creeks	
		Failure to use and apply material correctly could	Slight	Short	Entire road section	None	Construct pavement using sub-base course, base course, and	-Identify erosion problem areas along the road section and

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Magnitude (Slight, Moderate, Severe)	Time Frame (Short, Medium, Long)	Affected Road Section	Affected Area Outside of the Road Section	Prevention / Mitigation or Enhancement Measures	Recommendations
		potentially cause erosion and surface water impacts from sediments.					wearing course placed in layers, shaped to profiles and compacted using selected materials in accordance with the engineering design standards and specifications.	mark appropriately
		Failure to construct suitable roadside drainage ditches can result in erosion in a steeply sloping region, as well as impacts on drinking water quality and riverine ecosystems	Slight	Short	Portion of the section	None	Form roadside drains comprising earth ditches with drains comprising earth ditches with selected sections lined as appropriate to prevent erosion, in accordance with the engineering design standards and specifications.	-Identify erosion problem areas along the road section and mark appropriately
People	Mobilization of contracted physical works; Road works preparation;	In-migration of construction workers, personnel and other migrants.	Slight	Short	Entire road section	None	Provide opportunities for employment or livelihood. Observe peace and order. Maintain good	-Hire local workers as much as possible

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Magnitude (Slight, Moderate, Severe)	Time Frame (Short, Medium, Long)	Affected Road Section	Affected Area Outside of the Road Section	Prevention / Mitigation or Enhancement Measures	Recommendations
	and Construction of facilities.	Probable disorder.					working relation between workers and local residents.	
		Sanitation - Generation of domestic wastes and reduced water quality, potential for bacterial diseases	Slight	Short	Entire road section	None	Right management of liquid and solid wastes in work camps. Proper implementation of waste segregation and immediate disposal of putrescible and domestic wastes.	-Contactor to establish proper disposal of liquid and solid waste at work camps. Construct latrines for stay in workers.
	Hiring of local fit-to-work construction workers	Increase of local employment and improve local economy.	Moderate	Medium	Entire road section	None	Local employment is recommended to maximize benefits to the community. Priority of hiring to be given to qualified residents of the hosts and nearby barangays.	-Post appropriate manpower hiring notice on time
	Use of heavy equipment and vehicles during hauling	Possible incidences of respiratory illnesses.	Slight	Short	Entire road section	None	Ensure protection of workers and residents from dusts coming from the operation of	-Provide PPEs and orient workers on the health risk involved

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Magnitude (Slight, Moderate, Severe)	Time Frame (Short, Medium, Long)	Affected Road Section	Affected Area Outside of the Road Section	Prevention / Mitigation or Enhancement Measures	Recommendations
	and construction.						vehicles and equipment (e.g. use of personal protective equipment)	
	Earthworks and gravel road construction	Safety of workers	Slight	Short	Entire road section	None	Adopt appropriate safety measures; provide first-aid services; and make workers aware of risks and how to avoid them.	-Workers provided with PPEs. -Conduct Work Safety Orientation
		Disruption of road traffic	Slight	Short	Entire road section	None	Rerouting traffic and installation of road traffic signages	-Emergency vehicle on stand by -Emergency Numbers posted at the work camps
<b>Operation</b>								

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Magnitude (Slight, Moderate, Severe)	Time Frame (Short, Medium, Long)	Affected Road Section	Affected Area Outside of the Road Section	Prevention / Mitigation or Enhancement Measures	Recommendations
Land	Roadside drains, cross drains, and ditch maintenance in such an erosion-prone area	Potential for silt and debris from roadside drains and cross drains to be inappropriately disposed of, causing erosion and sedimentation to watercourses.	Slight	Short	Entire road section	None	Clean silt and debris from roadside drains and cross drains, and stabilize/ revegetate silt and debris mounds.	-Plant erosion protection grass/weeds along the roadside
	Controlling vegetation along roadside verges, including cutting and trimming grass, shrubs and trees and removing and disposing of cuttings;	Soil quality degradation	Slight	Short	Entire road section	None	Scrapped productive top soil be returned to sustain soil fertility/productivity	
		Terrestrial ecosystem temporary disturbance of flora and fauna	Slight	Short	Entire road section	None	Replacement or re-planting trees and vegetations	
Air	Regular maintenance including	Increased emission of TSP, SOx and NOx.	Slight	Short	Entire road section	None	Regular watering of construction site when needed.	

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Magnitude (Slight, Moderate, Severe)	Time Frame (Short, Medium, Long)	Affected Road Section	Affected Area Outside of the Road Section	Prevention / Mitigation or Enhancement Measures	Recommendations
	control of vegetation, cleaning silt and debris, and repairs						Ensure that all vehicles and heavy equipment will satisfy compliance of regulatory requirements. Proper operation and regular engine maintenance.	
Water	Roadside drains, cross drains, and ditch maintenance in erosion-prone areas.	Potential for silt and debris from roadside drains and cross drains to be inappropriately disposed of, causing erosion and sedimentation to watercourses.	Slight	Short	Portion of the road section	None	Clean silt and debris from roadside drains and cross drains, and stabilize/ revegetate silt and debris mounds.	
		River siltation and adverse surface water impacts from sediments.	Slight	Short	Portion of the section	Nearby creek	Provision of silt traps structures.	

<b>Project Phase / Environmental Aspect</b>	<b>Source of Impact</b>	<b>Potential Impact</b>	<b>Magnitude (Slight, Moderate, Severe)</b>	<b>Time Frame (Short, Medium, Long)</b>	<b>Affected Road Section</b>	<b>Affected Area Outside of the Road Section</b>	<b>Prevention / Mitigation or Enhancement Measures</b>	<b>Recommendations</b>
People	Road access improvement and greater traffic flows following rehabilitation and maintenance	Increased noise and vibration through increased traffic flow causing nuisance and health hazard for local community. Injury to people, wildlife and domestic animals etc.	Slight	Short	Entire road section	None	Installation of adequate signages.	-Road safety information billboard at the beginning and at the end of the rehabilitated road section
	Road maintenance such as vegetation control, cleaning of silt and debris, and repair of gravel road	Safety of workers	Slight	Short	Entire road section	None	Adopt appropriate safety measures; provide first-aid services; educate workers of risks and prevention.	-Provide danger signs at the appropriate area
							Coordinate with nearest hospital and concerned government agency for emergency medical response and rescue operations	-Emergency Numbers posted at the work camps

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Magnitude (Slight, Moderate, Severe)	Time Frame (Short, Medium, Long)	Affected Road Section	Affected Area Outside of the Road Section	Prevention / Mitigation or Enhancement Measures	Recommendations
		Disruption of road traffic	Slight	Short	Entire road section	None	Rerouting traffic and installation of road traffic signages	-Install permanent road traffic signage
<b>Abandonment</b>								
Land, Air, Water and People	General clean up of the work staging areas, freeing these from temporary structures, unserviceable equipment, formworks, used oils and lubricants, and sanitation facilities.	Failure to rehabilitate work-site, including borrow areas and work camps, causing erosion; increase in bacterial insect-borne disease from wastes etc.	Moderate	Medium	Entire road section	None	Works Specification and Conditions of Contract. Ensure work camp is removed/rehabilitated in accordance with DPWH guidelines.	-Conduct final inspection of the work camp.
	Continued monitoring, auditing and appropriate resourcing	Failure to continue with established practices, ongoing monitoring, auditing and appropriate	Moderate	Long	Entire road section	None	Deemed to be manageable via DILG showing ongoing commitment to PRMF beyond the initial five year tenure. Budget	-Conduct regular EMP Monitoring as scheduled. -Levelling and compilation of lessons learned.



Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Magnitude (Slight, Moderate, Severe)	Time Frame (Short, Medium, Long)	Affected Road Section	Affected Area Outside of the Road Section	Prevention / Mitigation or Enhancement Measures	Recommendations
		resourcing. Decline in road quality and resultant impacts across the range of issues listed above.					set aside for monitoring and EMoP in place.	-Establish the Adopt a Road Program.

**Table 6: Environmental Monitoring Form**

**Environmental Monitoring Form**

Responsible Entity:

Name of SEO of the Contractor:

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Prevention / Mitigation or Enhancement Measures	Parameters to be Monitored	Road Section	Recommendations
<b>Pre-construction</b>						
Land	Mobilization of contracted physical works; Road works preparation	Clearing and grubbing of trees and other vegetation. Disturbances and damages to public and private lands and associated properties. Vehicular traffic disturbances. Uncovered Auger borings and test pits.	Surveyors must preserve and protect all existing vegetation in the area. Site clearing, if necessary, must be regulated and minimized. Proper protocols of surveying must be observed. Holes and borings must be properly replaced; Re-vegetation.	Design specifications; Integrity of existing vegetations in the proposed project	Whole section of the road	Replanting of affected/cleared trees  Inform PAMB
Air		Depletion of air quality	Deployment of good-conditioned vehicles and equipment. Regular check up of vehicles and equipment' conditions.	Air quality; Condition of vehicle		Get emission test results of heavy equipment

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Prevention / Mitigation or Enhancement Measures	Parameters to be Monitored	Road Section	Recommendations
		Increase of noise in the area.	Limit loud and vibratory activities only during the daytime. Use mufflers and sound insulators. Deployment of well maintained vehicles and equipment.	Noise level; Vibration		<b>Daytime operation only and using of mufflers and other sound insulators</b>
Water		Increase usage and competition of domestic water resources.	Controlled use of local water.	Water supply usage		
		Generation of domestic wastes that reduce water quality, potential for bacterial diseases.	Right management of liquid and solid wastes in work camps.  Proper implementation of waste segregation and immediate disposal of putrescible and domestic wastes	Solid and liquid waste management		
People		Involuntary resettlement issues for Project Affected Persons	The proponent shall establish in their final survey the PAPs that will be affected by the project. Corresponding mechanism for payment shall be done based on Philippine	Presence of PAPs along road right of way		

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Prevention / Mitigation or Enhancement Measures	Parameters to be Monitored	Road Section	Recommendations
			laws.			
<b>Construction</b>						
Land	Clearing and grubbing	Disturbance of flora and fauna	Limit activity only within road right of way.	Magnitude of affected area	Indicate road section that will be affected	Consider redesign alignment of road section to minimize impacts of clearing and grubbing
			Re-vegetation, replacement or replanting of trees.	Magnitude of affected area	Indicate road section that will be affected	Replacement planting of affected trees 1 tree cut:10 trees replanted using indigenous tree species  Identification of planting sites and number of trees to be planted
	Generation of construction wastes	Solid waste management plan to include waste segregation, recycling and reuse of generated wastes.	Presence of solid wastes		Implement requirements of RA 9003  Cut trees will be at the disposal of the owner	

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Prevention / Mitigation or Enhancement Measures	Parameters to be Monitored	Road Section	Recommendations
			Proper coordination with LGU on the proper disposal of generated construction wastes.	Presence of solid wastes		Refer to ESWM Plan of the LGU
		Generation of spoils	All excess soil generated by the project will be reused or disposed at designated disposal sites.	Presence of spoils	Road section	Excess soil will be used as embankment material
	Quarry/borrow pit for road aggregates.	Insufficient quarry/borrow pits to provide aggregate	Selection of suitable intermediate borrow pit nearer to works if possible.	Properly managed borrow pit	Road section	Must have signage and early warning device
		Unlicensed quarry site.	Identify, secure, and comply with all permitting requirements.	Quarry permit either from PLGU (equal or less than 5 hectares) or Mines and Geosciences Bureau (more than 5 hectares)		Check with BEMO on the permitted quarry sites near the project area
	Earthworks and gravel road construction	Soil quality degradation	Scrapped productive top soil be returned to sustain soil fertility/productivity	Magnitude of affected area		
		Terrestrial ecosystem temporary disruption	Replacement or re-planting of tree and other vegetation	Magnitude of affected area		Replacement planting 1 tree cut: 10 trees

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Prevention / Mitigation or Enhancement Measures	Parameters to be Monitored	Road Section	Recommendations
						replaced and planted in a designated area
		Potential for elevated erosion, landslides, or inducement of other natural hazards.	Strictly follow sound design requirements and specifications like stabilization of slopes.	Presence of erosion, landslides or inducement of other natural hazards		Implement slope protection/stabilization
			Minimize ground disturbance and always consider local climate and inclement weather.			
			Soil compaction in excavated areas (i.e. culverts, drainages).			Use appropriate culvert size
			Provision of biological soil erosion control measures			Planting of soil stabilization grasses like vetiver grass
		Unmanaged road spills of hydrocarbons from diesel generators, fuel storage tanks, and from maintenance of vehicles and equipment.	Appropriate management of petroleum (e.g. fuels, oil and lubricants) products handling and vehicles maintenance.	Presence of road spills from vehicles		Implement safety standards to avoid oil and fuel spillages
Air	Loading, transport and unloading of construction	Increase in total suspended particles (TSP)	Use of tarpaulin covers for delivery trucks.	TSP level		Delivery trucks must at all times be covered when hauling materials

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Prevention / Mitigation or Enhancement Measures	Parameters to be Monitored	Road Section	Recommendations
	materials and aggregates; Construction of facilities					
	Earthworks and gravel road construction	Increased emission of TSP, SOx and NOx.	Regular water spraying on aggregate piles and exposed areas.	Exhaust level from vehicles	Entire road project length/section	Regular water spraying if necessary
			Regular watering of construction site when needed. Proper operation and regular engine maintenance.	TSP level		Regular water spraying of the affected area
		Increase of noise in the area.	Limit loud and vibratory activities only during the daytime. Use mufflers and sound insulators.	Noise level; Vibration		use of mufflers and sound insulators
			Proper operation and regular engine maintenance.			operate during the day only
			Proper engine maintenance			
Water	Loading, transport and unloading of construction materials and aggregates;	Siltation of drainage line and water body due to washed aggregate resulting from inclement weather	Proper stockpiling of aggregates. Build perimeter fence to shield the construction area from the outside.	Stockpile in designated area		Build perimeter fence around the stockyard

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Prevention / Mitigation or Enhancement Measures	Parameters to be Monitored	Road Section	Recommendations
	Construction of facilities and work camps.					
	Earthworks and gravel road construction	Unmanaged road spills of hydrocarbons from diesel generators, fuel storage tanks, and from maintenance of vehicles and equipment. Potential soil and water contamination with impacts on ecosystem and people	Appropriate management of petroleum (e.g. fuels, oil and lubricants) products handling and vehicles maintenance.	Presence of road spills from vehicles		Implement proper fuel and oil management to avoid spillage
		Potential for water blockage or drainage issues; potential for erosion; surface water impacts from sediment	Follow appropriate construction guidelines and install culverts/drains as required to cater for surface water flows.	Presence of sediments in waterways	Indicate section	Installation of appropriate size of culvert
		River siltation and adverse surface water impacts from sediments.	Provision of silt traps structures. Regular monitoring of silt contamination in rivers and creeks	Presence of sediments in waterways		Implement silt control/silt traps



<b>Project Phase / Environmental Aspect</b>	<b>Source of Impact</b>	<b>Potential Impact</b>	<b>Prevention / Mitigation or Enhancement Measures</b>	<b>Parameters to be Monitored</b>	<b>Road Section</b>	<b>Recommendations</b>
		Failure to use and apply material correctly could potentially cause erosion and surface water impacts from sediments.	Construct pavement using sub-base course, base course, and wearing course placed in layers, shaped to profiles and compacted using selected materials in accordance with the engineering design standards and specifications.	Presence of sediments in waterways		Implement sound engineering practices, like construction of pavement using sub-base course, base course, etc.
		Failure to construct suitable roadside drainage ditches can result in erosion in a steeply sloping region, as well as impacts on drinking water quality and riverine ecosystems	Form roadside drains comprising earth ditches with drains comprising earth ditches with selected sections lined as appropriate to prevent erosion, in accordance with the engineering design standards and specifications.	Presence of sediments in waterways		Construct suitable road side drainage in accordance with the engineering design
People	Mobilization of contracted physical works; Road works preparation; and	In-migration of construction workers, personnel and other migrants. Probable disorder.	Provide opportunities for employment or livelihood. Observe peace and order. Maintain good working relation between workers and local residents.	Number of local residents employed in the project		Employ local labourers to include women

<b>Project Phase / Environmental Aspect</b>	<b>Source of Impact</b>	<b>Potential Impact</b>	<b>Prevention / Mitigation or Enhancement Measures</b>	<b>Parameters to be Monitored</b>	<b>Road Section</b>	<b>Recommendations</b>
	Construction of facilities.	Sanitation - Generation of domestic wastes and reduced water quality, potential for bacterial diseases	Right management of liquid and solid wastes in work camps. Proper implementation of waste segregation and immediate disposal of putrescible and domestic wastes.	Presence of solid and liquid wastes		Proper solid and liquid waste management: RA 9003 and RA 6969 requirements
	Hiring of local fit-to-work construction workers	Increase of local employment and improve local economy.	Local employment is recommended to maximize benefits to the community. Priority of hiring to be given to qualified residents of the hosts and nearby barangays.	Number of local residents employed in the project		
	Use of heavy equipment and vehicles during hauling and construction.	Possible incidences of respiratory illnesses.	Ensure protection of workers and residents from dusts coming from the operation of vehicles and equipment (e.g. use of personal protective equipment)	Number of local residents who contracted respiratory diseases		Implementation of health and safety standards: wearing of mask
	Earthworks and gravel road construction	Safety of workers	Adopt appropriate safety measures; provide first-aid services; and make workers aware of risks and how to avoid them.	Compliance to Construction, Safety and Health Program of the		Provision of first aid kits with first aid materials and equipment in the bunkhouse

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Prevention / Mitigation or Enhancement Measures	Parameters to be Monitored	Road Section	Recommendations
				Contractor		
			Coordinate with nearest hospital and concerned government agency for emergency medical response and rescue operations	Compliance to Construction, Safety and Health Program of the Contractor		Proper orientation of workers on first aid
		Disruption of road traffic	Rerouting traffic and installation of road traffic signages	Compliance to Construction, Safety and Health Program of the Contractor		Installation of appropriate signages consistent with the safety standards
<b>Operation</b>						
Land	Roadside drains, cross drains, and ditch maintenance in such an erosion-prone area	Potential for silt and debris from roadside drains and cross drains to be inappropriately disposed of, causing erosion and sedimentation to watercourses.	Clean silt and debris from roadside drains and cross drains, and stabilize/ revegetate silt and debris mounds.	Presence of silt and debris from drains		Proper disposal of solid waste and materials
	Controlling vegetation along roadside	Soil quality degradation	Scrapped productive top soil be returned to sustain soil fertility/productivity	Magnitude of affected area		Reusing of extracted soils in the embankments

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Prevention / Mitigation or Enhancement Measures	Parameters to be Monitored	Road Section	Recommendations
	verges, including cutting and trimming grass, shrubs and trees and removing and disposing of cuttings;	Terrestrial ecosystem temporary disturbance of flora and fauna	Replacement or re-planting trees and vegetations	Magnitude of affected area		Replacement planting using indigenous tree species
Air	Regular maintenance including control of vegetation, cleaning silt and debris, and repairs	Increased emission of TSP, SOx and NOx.	Regular watering of construction site when needed.	TSP level		Regular water spraying
			Ensure that all vehicles and heavy equipment will satisfy compliance of regulatory requirements. Proper operation and regular engine maintenance.	Exhaust level from vehicles		Observe regular engine maintenance
Water	Roadside drains, cross drains, and ditch maintenance in erosion-prone areas.	Potential for silt and debris from roadside drains and cross drains to be inappropriately disposed of, causing erosion and sedimentation to	Clean silt and debris from roadside drains and cross drains, and stabilize/ revegetate silt and debris mounds.	Presence of silt and debris from drains		Proper solid waste management and disposal

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Prevention / Mitigation or Enhancement Measures	Parameters to be Monitored	Road Section	Recommendations
		watercourses.				
		River siltation and adverse surface water impacts from sediments.	Provision of silt traps structures.	Presence of silt and debris from drains		Provision of silt traps structures
People	Road access improvement and greater traffic flows following rehabilitation and maintenance	Increased noise and vibration through increased traffic flow causing nuisance and health hazard for local community. Injury to people, wildlife and domestic animals etc.	Installation of adequate signages.	Compliance to Construction, Safety and Health Program of the Contractor		Installation of adequate signages
	Road maintenance such as vegetation control, cleaning of silt and debris, and repair of gravel road	Safety of workers	Adopt appropriate safety measures; provide first-aid services; educate workers of risks and prevention.	Compliance to Construction, Safety and Health Program of the Contractor		Provide first aid kits
			Coordinate with nearest hospital and concerned government agency for emergency medical response and rescue operations	Compliance to Construction, Safety and Health Program of the Contractor		Proper orientation on first aid of workers

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Prevention / Mitigation or Enhancement Measures	Parameters to be Monitored	Road Section	Recommendations
		Disruption of road traffic	Rerouting traffic and installation of road traffic signages	Compliance to Construction, Safety and Health Program of the Contractor		Installation of road re-routing signages
<b>Abandonment/ Demobilization</b>						
Land, Air, Water and People	General clean up of the work staging areas, freeing these from temporary structures, unserviceable equipment, formworks, used oils and lubricants, and sanitation facilities.	Failure to rehabilitate work-site, including borrow areas and work camps, causing erosion; increase in bacterial insect-borne disease from wastes etc.	Works Specification and Conditions of Contract. Ensure work camp is removed/rehabilitated in accordance with DPWH guidelines.	Compliance to Construction, Safety and Health Program of the Contractor		Implementation of proper solid waste management
	Continued monitoring, auditing and	Failure to continue with established practices, ongoing monitoring, auditing and appropriate	Deemed to be manageable via DILG showing ongoing commitment to PRMF beyond the initial five year tenure.	Compliance to Environmental Management System		Provision of budgetary allocation for institutionalizing EMoP including the

Project Phase / Environmental Aspect	Source of Impact	Potential Impact	Prevention / Mitigation or Enhancement Measures	Parameters to be Monitored	Road Section	Recommendations
	appropriate resourcing	resourcing. Decline in road quality and resultant impacts across the range of issues listed above.	Budget set aside for monitoring and EMoP in place.			community

**Table 7: Social Development Plan**

**Social Development Plan**

Proponent: Provincial Local Government Unit of Bohol

Note: List all the applicable social concerns during the community mapping. Responsible community / beneficiary will depend on the outcome of the consultation.

<b>Concern</b>	<b>Responsible Community / Beneficiary</b>	<b>Government Agency / Non-government Agency and Services</b>	<b>Indicative Timeline</b>
1. Employment: giving priority to the locals	Barangay Captain / Qualified Persons in the Barangay or Municipality	Provincial Government	Pre-construction; Construction
2. Health and Safety	Barangay Kagawad for Health / Affected residents	Municipal Health Office; Municipal Disaster Risk Reduction Management Council Provincial Engineer's Office/Health and Safety Officer; Contractor (for monitoring)	Construction; Post Construction
3. Peace and Order	Barangay Captains / Affected residents	Barangay Tanod; Philippine National Police; Philippine Army	Pre-construction; Construction
4. Gender	Provincial/Municipal/Barangay Governments; Barangay Kagawad for Women; NGO/CSO for women & residents	All agencies involved	Pre-construction; Construction and Post Construction
5. Affected Structures / Crops	Affected residents	Provincial Government, Prov'l Assessor, Provincial Agriculturist, Provincial Engineer's Office; DENR; Philippine Coconut Authority; MLGU, Mun. Agri Officer, Mun. Assessor	Pre-Construction; Construction



**Table 8: Information, Education and Communication Plan**

**Information, Education and Communication (IEC) Plan**

<b>Target Sector</b>	<b>Major Topics of Concern Related to the Project</b>	<b>IEC Scheme / Strategy</b>	<b>Information Medium</b>	<b>Indicative Timeline</b>	<b>Indicative Cost</b>
1. Department of Interior and Local Government	Role of the agency in the implementation of the Environmental Management System	Meeting with DILG National; Regional and Provincial Offices	PRMF EMS; Consultation with Environmental Specialist	Pre-construction	
2. Provincial Local Government Units	Formulation of Environmental Management Plan; Implementation of Environment Management System	Training; Individual coaching per province	PRMF EMS; Actual demonstration of baseline data gathering, formulation of EMP and monitoring	Pre-construction	
3. Affected residents	Mechanisms for resettlement; Environment Management System	Meeting at the Barangay	Orientation on their role in the monitoring of EMS	Pre-construction / Construction	