

ANNEX E-1

Department of Agriculture Philippine Rural Development Program

FARM-TO-MARKET ROADS

Environmental and Social Management Plan (ESMP)

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| Name of Road: | National Road Junction (NRJ) –Gamis- Calaocan Road |
| Location: | Dumabel and Cabugao, Aglipay; Gamis, Saguday; Banuar, Eden, Burgos, Cabarroguis, Quirino |
| Implementing LGU: | Quirino Provincial Local Government Unit (QPLGU) |
| Estimated number of beneficiaries: | 2,189 Households; 9,957 (Male-5,159; Female-4,798) |
| New or Rehab: | Rehabilitation |
| Estimated Total Cost: | Php155,031,975.52 |

A. Site and Design Consideration

Site:

1. The Road does not encroach into or traverse any declared protected area of natural habitat although some portions of Barangays Eden and Cabugao are within the buffer zones of the Quirino Protected Landscape (QPL).
2. The subproject will not displace, disfigure or render inoperable/inaccessible any monument or physical structure of known cultural and historical significance.
3. The proposed subproject is located in the central portion of Quirino Province.
4. There are 9,957 direct farmer-beneficiaries who are growers of coffee, corn, rice, cassava, vegetables and fruit trees.
5. The Upland Development Program (UDP) of the Provincial Government of Quirino (PGQ) funded by the Department of Environment and Natural Resources (DENR) targeted to plant a total of 1,900 hectares 2015 and 880 ha per year for 2016 up to 2018.
6. The existing road traverses the existing coffee production areas of the province and potential area for coffee production.
7. Other agricultural activities like, livestock raising, rice, corn, fruit trees and vegetable production will be enhanced with the rehabilitation of the said road.
8. The proposed road improvement is listed as one of the Priority Projects in the Provincial Development and Physical Framework Plan (PDPFP) and the Provincial Development Investment Plan (PDIP).
9. The Gamis-Calaocan FMR is a mix existing all-weather Farm to Market (FMR) and earth road.

Design:

1. Technical considerations in the design of the FMR were made according to the terrain, prevailing weather, vehicle types and most importantly the anticipated volume of traffic that shall utilize the road.
2. Minimal earth moving will be done and excess excavations will be dumped to designated dumping site. There will be compaction of spoils and cut hard rocks will be utilized in the riprapping and/or slope protection of critical areas.
3. Particular attention was given to the existing drainage condition and the slope stability in the design of the road.
4. Since the existing road for rehabilitation cuts across mountainsides, slope protection, riprap, vegetative terracing and installation of cross drainage at strategic and vulnerable sections/location along the stretch of the road were considered during the POW preparation.

B. Environmental Issues and Mitigation Measures

The following are issues which are projected to exist before, during and after the construction of the Gamis-Calaocan FMR construction. The issues include alleged/perceived impacts, potential impacts, health and safety and environmental risks. Entries in the “Assessment” column described and/or provided the qualifications regarding the significance of the issues. Issues that are deemed critical or significant had corresponding entries in the “Mitigation” column. Entries in the “Instrument” column indicated how and where in the measures will be implemented in the Subproject. Entries in the “Responsible Unit” indicated who will be responsible for the implementation of the Mitigation Measures.

| Issues (Potential Impacts) | Assessment | Mitigation Measures | Schedule/Duration of the Mitigation Measures | Instrument of Implementation | Responsible Unit |
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| 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 | Upon the start of the project implementation | DED/POW; Contract | PEO, Contractor |
| 2. Potential contamination of surface and groundwater with | Minimal or insignificant amount of waste oil/grease | Proper handling and disposal of waste oil and grease | During construction/rehabilitation | Contract, O and M | PEO, Contractor |

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| oil/grease | | | | | |
| 3. Potential contamination with human waste | <ul style="list-style-type: none"> Workers would be mostly locals and are expected to go home to their respective houses after works Construction workers would be temporary housed in a based camp | Set up adequate latrine/toilet facility at the base camp to be used during working hours | Upon start of construction/rehabilitation | Contract, O and M | PEO, Contractor |
| 4. Potential disruption of traffic flow | The construction will not affect daily movement of residents and farmers | <ul style="list-style-type: none"> Keep the road open to traffic flow and minimize disruptions along the access road and/or construction area; Provide adequate warning signs and traffic personnel when necessary; Undertake regular maintenance measures on the passable portions of the roads | <p>Upon start of construction/rehabilitation</p> <p>Duration of the construction/rehabilitation period</p> | Contract, DED, O and M | PEO, Contractor |
| 5. Potential dust/mud nuisance during construction | <p>Roads could become powdery during dry days and muddy during rainy days of the construction period</p> <p>- Access road and/or the construction/rehabilitation works passes</p> | <ul style="list-style-type: none"> Undertake sprinkling of road (including access roads) during dry days, and filling up of potholes during rainy days, especially in residential areas; Set up speed limits for vehicles, | Upon start of the construction/rehabilitation period up to its completion | Contract, O and M | PEO, Contractor |

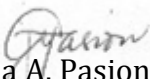
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| | through a minimal populated area | especially within residential areas | | | |
| 6. Landslide/erosion of exposed road sides resulting in sedimentation of waterways | The road passes through a relatively benign terrain, cuts will be minimal | <ul style="list-style-type: none"> • Placement of adequate drains outlets and turn outs; • Seeding and planting on erodible surfaces | Upon start of the construction/rehabilitation period up to its completion | DED/POW Or (if budget does not permit) LGU Commitment Letter | PEO, Contractor |
| 7. Inadequate drainage resulting in flooding or ponding | Drainage issues unlikely | Installation of cross drain system | Start of project implementation | DED | QPLGU |
| 8. Potential increase use of pesticides due to intensification of cash crop production in the area | There is an ongoing IPM program of DA in the service area | DA to continue to support IPM program | Continuing activity | Capacity Building Plan O&M Plan; Capacity Building Plan | QPLGU, Office of the Provincial Agriculturist (OPAg) |
| 9. Potential acceleration of denudation of the upland/hilly areas due to intensification of crop production | The road connects only lowland farms to the market | DA to coordinate with LGU for the introduction of sustainable upland farming systems in the area | Continuing activity | O&M Plan; Capacity Building Plan | PNREO, PEO |
| 10. Potential increased 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 | PEO |
| 11. Local employment | Construction will provide local employment opportunities | Hiring priority shall be given to qualified local residents; Implement RI Manual on local hiring | Before the start of the construction/rehabilitation | Contract | PEO, PPMIU |

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| 12. Potential to accidents to workers | Workers are exposed to work related hazards such as tripping, slippage that may result to injuries and even loss of life | <ul style="list-style-type: none"> • Sealing of construction site • Placement of warning signboards • Use of proper construction uniform | From the start of the project up to the end of its implementation | Contract | PEO, Contractor |
| 13. Potential disturbance of noise | Noise generation maybe at its peak during certain phases | Avoid use of heavy equipment during night time | From the start of the project up to the end of its implementation | Contract | PEO, Contractor |
| 14. Potential disturbance to wildlife | Closure of migratory routes, disturbance of habitats and noise related problems | <ul style="list-style-type: none"> • Intermittent use of heavy equipment • Distance from thickly vegetated areas | From the start of the project up to the end of its implementation | Contract | PEO, Contractor |
| 15. Potential to siltation | Stack file of soil and rocks could be eroded during heavy rains and silt up creeks and streams | Enclose hazardous areas with fence and barriers | From the start of the project up to the end of its implementation | Contract | PEO, Contractor |
| 16. Potential landscape damages | Scarred from road cuts and induce landslides | <ul style="list-style-type: none"> • Maintenance and restoration of roadside vegetation • Construction spoils and other waste materials are properly disposed | From the start of the project up to the end of its implementation | Contract | PEO, Contractor |
| 17. Potential on Vegetation Control | Avoid cutting of trees as necessarily | <ul style="list-style-type: none"> • Replanting of trees to allow regeneration and for embankment protection; • Adherence to DENR guidelines on tree cutting permit | From the start of the project up to the end of its implementation | Contract | PEO, Contractor |
| 18. Potential on domestic | Lack of garbage disposal of | • Enforcement of SWM; | From the start of the project | Contract | PEO, Contractor |

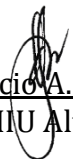
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| solid waste | construction waste materials and workers garbage | <ul style="list-style-type: none"> • Efficient housekeeping services; • Proper collection and disposal of construction waste | up to the end of its implementation | | |
| 19. Potential issue on road right of way | Affected landowners will voluntarily donate or waive their rights on the affected portion for the road widening | <ul style="list-style-type: none"> • Conduct consultation meeting with the affected landowners; • Establish Grievance and Redress Mechanism based on IESSF and accessible to the beneficiaries/affected households for their feedback | From the start of the project up to the end of its implementation | Contract | PEO, Contractor |
| 20. Potential issue on compensation for the demolition and restoration of affected structures | The affected structures for the road widening are temporary structures such as fences and makeshift sari-sari stores | <ul style="list-style-type: none"> • Proper dissemination of information during consultation meetings; • The demolition of the affected structures will be done by the contractor under the supervision of the PEO; • The reconstruction of the affected temporary structures will be provided by the municipal government in coordination with the concerned households and the barangay | <ul style="list-style-type: none"> • Consultation meetings before the implementation • Demolition of structures—Clearing and Grubbing Phase • Reconstruction of structures—after the clearing and grubbing phase | DED, POW, Contract | PEO, Contractor |

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| | <ul style="list-style-type: none"> • Temporary disturbance to fresh water organisms | <ul style="list-style-type: none"> • Maximize operation during summer time; • Avoid/minimize washing of equipment within the waterline | | | |
| 24. Potential damage to existing road due to hauling of quarry materials | <p>Source of quarry materials is about 30 kilometers from project site</p> <p>Transportation of quarry materials from source to the project site will cause damage to existing FMR</p> | <p>Regular monitoring of existing roads and strict enforcement of load limits</p> | | Certification of DPWH | Contractor |
| 25. Conversion of land use /natural habitat due to quarry | <p>Quarry site is existing and is a proven source of good quality materials</p> <p>Quarry materials will be procured from the accredited quarry site of DPWH</p> | | | Certification of DPWH and PENRO | PLGU; Contractor |

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| 26. Batching Plant | Batching Plant is mobile and will not operate more than a year | Secure EMB requirements for Batching plant | Before the project start | Contract | Contractor |
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