

5. Social and Environmental Impacts

Table 22: Environment Issues and Mitigation Measures

Issue (Potential Impact)	Assessment	Mitigation Measure	Schedule/ Duration of the Mitigation Measures	Instrument of Implementation	Responsible Unit
1. Temporary increase in sedimentation during construction	Cut materials will consist mainly of hard rocks and are unlikely to generate significant sediments	<ul style="list-style-type: none"> • Proper disposal and compaction of spoils 	From the start of the construction until the project finish	DED/POW; Contract	PLGU; Contractor
2. Potential contamination of surface and groundwater with oil/grease	Waste oil and grease from equipment could contaminate surface and groundwater	<ul style="list-style-type: none"> • Proper handling and disposal of waste oil and grease 	From the start up to end project	Contract	PLGU; Contractor
3. Potential contamination with human waste	Construction workers would be temporarily housed in a base camp	<ul style="list-style-type: none"> • Set up adequate latrine/toilet facility at the base camp 	Before project starts	Contract	PLGU; Contractor
4. Potential disruption of traffic flow	The construction will not affect the daily movement of the residents and farmers	<ul style="list-style-type: none"> • Keep the road open to traffic flow and minimize disruptions along the access road and/or construction area; Provide adequate warning signs and traffic personnel when necessary 	One week before start until the end of the construction	Contract	PLGU; Contractor
5. Potential dust/mud nuisance during construction	Roads could become powdery during dry days and muddy during rainy days of the construction period <ul style="list-style-type: none"> • Access road and/or construction/rehabilitation does not pass through any populated area 	<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, especially within residential areas 	From the start until the end of construction	Contract	PLGU; Contractor
6. Landslide / erosion of exposed road sides resulting in sedimentation of waterways	The rehabilitation work does not involve additional road cuts and the slope is 0 – 3% only	<ul style="list-style-type: none"> • Placement of adequate drains outlets and turn outs 	Installation of two cross drains	DED/POW Contract	PLGU; Contractor
7. Inadequate drainage resulting in flooding or ponding.	The road will block runoff, resulting in flooding on one side of the road during rainy days.	<ul style="list-style-type: none"> • Installation of cross drain system at station Sta. 1 + 440 Sta. 3 + 240 	Refer to schedule of construction	DED	PLGU & contractor

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8. Potential increase use of pesticides due to intensification of cash crop production in the area.	The municipality conducted (IPM) Kasalikasan in 1997 and last 2009 in coordination with DA ATI and PhilRice	<ul style="list-style-type: none"> • DA to continue support IPM Program 	Conducted the season training on June – Oct 1997 & June – Oct 2009 (16 weeks per FFS-IPM)	Capacity Building Plan O&M Plan; Capacity Building Plan	PLGU N. Ecija
9. Potential acceleration of denudation of the upland/hilly areas due to intensification of crop production	The road connects only lowland farms to the market	<ul style="list-style-type: none"> • DA to coordinate with LGU for the introduction of sustainable upland farming systems in the area 		O&M Plan; Capacity Building Plan	PLGU N. Ecija
10. Potential increase in encroachments of human activities into the nearby public forest	The proposed road will improve human access to the nearby public forest, resulting in increased slash and burn cultivation, illegal logging and poaching	<ul style="list-style-type: none"> • Coordinate with DENR for the enactment of ordinance deputizing the local community to enforce forestry laws 	before the completion of the project and onwards	O & M Plan Capacity Building Plan	PLGU N. Ecija
11. Local employment	The construction will provide local hire employment opportunities	<ul style="list-style-type: none"> • Hiring priority shall be given to local residents the workers should be provided with a standard salary wage based on Regional Tripartite Wage Productivity Board (RTWPB) approved wage rates 	From start of implementation until completion of project	Contract	PLGU; Contractor
12. Potential to accidents to workers	Workers are exposed to work related hazards such as tripping, slippage that may result to injuries and even loss of life	<ul style="list-style-type: none"> • Sealing of construction site. • Placement of warning signboards • Use of proper construction uniform 	1 wk before start until the end of the construction	Contract	PLGU; Contractor
13. Potential disturbance of noise	Noise generation maybe at its peak during certain phases	<ul style="list-style-type: none"> • Avoid use of heavy equipment during night time. 	From start (March, 2015) of construction until completion	Contract	PLGU; Contractor
14. Potential disturbance to wildlife	Closure of migratory routes, disturbance of habitats and noise related problems.	<ul style="list-style-type: none"> • Intermittent use of heavy equipment • Distance from thickly vegetated areas. 	Minimize the use of heavy equipment	Contract	PLGU; Contractor
15. Potential to siltation	Stack file of soil and rocks could be eroded during heavy rains and	<ul style="list-style-type: none"> • Enclose hazardous area with fence and barriers. 	During construction period (March	Contract	PLGU; Contractor

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	silt up creeks and streams		1 to June 22, 2015)		
16. Potential on vegetation control	Avoid cutting of trees as necessarily	<ul style="list-style-type: none"> • Replanting of plants and trees to allow it to regenerate and also to protect embankment. • Adherence to the guidelines stipulated in the permit to cut trees given by the DENR 	<p>ENRO will replace all the cut trees will be replace by seedlings Before start planting within construction period and onwards and</p>	O & M Plan Contract	PLGU; Contractor
17. Potential on domestic solid waste	Lack of garbage disposal of construction waste materials and workers garbage	<ul style="list-style-type: none"> • Coordinate with LGU in enforcement of solid waste laws • Efficient housekeeping services • Proper collection and disposal of construction waste 	Before projects starts and onwards	Contract	PLGU; Contractor
18. Potential issue on right-of-way acquisition	Affected land owners will voluntarily donate or waive their rights on the affected portion for the road widening	<ul style="list-style-type: none"> • Conduct of consultation meeting with the affected land owners • Establish Grievance and Redress Mechanism in accordance with the IESSF accessible to the beneficiaries/ affected households for their feedbacks. 	<p>October 21, 29, Nov. 4, 2014</p> <p>Whole duration of the project</p>	<p>notarized Deed of Donations and Waiver of Quit claims.</p> <p>O & M Plan Contract</p>	PLGU; Contractor
19. Potential issue on compensation for the demolition and restoration of affected structures	The affected structures for the road widening are temporary structures such as fences and makeshift sari-sari store.	<ul style="list-style-type: none"> • Proper dissemination of information during the consultation meetings. • The demolition of the affected structures will be done by the contractor under the supervision of the Provincial Engineer's Office 	<p>Consultation meeting – before the implementation stage starts (October 21, 29, Nov. 4, 2014)</p> <p>Demolition of structures – Clearing and Grubbing</p>	DED/POW Contract	PLGU; Contractor Municipality of Talavera

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		<ul style="list-style-type: none"> The reconstruction of the affected temporary structures will be provided by the municipal government in coordination with the concerned households, and the barangay. 	<p>Phase (March, 2015)</p> <p>Reconstruction of structures – After the clearing and grubbing phase (June, 2015)</p>		
21. Potential discovery of artifacts, bones, or other objects of interests during the implementation stage	The project has no significant effect in the physical cultural resources that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance.	<ul style="list-style-type: none"> The adoption of the Chance Archaeological/Paleontological Finds Procedure will be observed. 	Start of construction schedule (March to June, 2015) until the end of the project	Contract	PLGU; Contractor
22. Potential negative feedbacks from the affected households	Implementing Agency (LGU) is open for feedbacks and concerns arising from the project performance in all phases.	<ul style="list-style-type: none"> Grievance and Redress Mechanism will be established in accordance with the IESSF accessible to the beneficiaries/ affected households for their feedbacks. 	Whole duration of the project	O & M	PLGU
23. Potential impacts of heavy construction equipment and hauling on existing roads	The existing road is accessible to any type of vehicles and can serve as an ingress and egress of the transportation system in the area connecting to the national and provincial road thereby providing better access for construction and hauling equipments.	<ul style="list-style-type: none"> Monitoring of relative weights of the construction equipment and hauling during construction. The DPWH has also assessed the capacity of the existing bridges particularly on load limits and life span to guarantee safety and stability. Hauling of construction materials will adhere to the specified limits. 	Whole duration of the project	O & M	PLGU
24. Potential issue on quarry source and operation	Access to quarry site and materials will not be a problem in the implementation of the	ENRO had certified on the identified quarry source in Talavera River	Before and after implementation of the project	O & M Plan Contract	PLGU; Contractor

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	project because of the existing quarry site in locality.	almost 5 -6 km away from the project site and it will effect on the environment even there is continuous hauling of materials and DPWH has issued certification on the quality aggregate materials and accessible for the project.			
25. Batching Plant Requirements and potential environmental and social impacts and measures	The project proposed a ready concrete based on the program of works	Monitor the capacity of the ready mixed transit mixer to minimized the damage cause in the delivery of transit mixer going the project site	Whole duration of the concreting of the proposed project	O & M plan contract	PLGU & Contractor

Source: Environmental and Social Management Plan/PRDP

Impacts During Construction

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

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