Initial Environmental Examination

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VIE: Basic Infrastructure for Inclusive Growth in the Northeastern Provinces Sector Project-Upgrading and Improvement of Provincial Road 184, Dong Tam Commune, Bac Quang District to Ngoc Linh Commune, Vi Xuyen District, Ha Giang Province

Prepared by Planning and Investment Department of Ha Giang province for the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 27 April 2017)

Currency unit	–	Viet Nam Dong (D)
D1.00	=	$0.000044
$1.00	=	Đ 22,730

ABBREVIATIONS

ADB	–	Asian Development Bank
CPC	–	Commune People's Committee
CSC	–	Construction Supervision Consultant
DARD	–	Department of Agriculture and Rural Development
DONRE	–	Department of Natural Resources and Environment
DOT	–	Department of Transportation
DPC	–	District People's Committee
DPI	–	Department of Planning and Investment
ECT		Emergency Control Team
EIAR	–	Environmental Impact Assessment Report
EMP	–	Environmental Management Plan
EPP	–	Environmental Protection Plan
ESO	–	Environmental Safeguards Staff
ESS	–	Environmental Safeguard Specialist
IEE	–	Initial Environmental Examination
IPM	–	Integrated Pest Management
LEP	–	Law on Environmental Protection
MASL		Meters above sea level
MPI	–	Ministry of Planning and Investment
MPN	–	Most Probable Number of viable cells of a pathogen - a measure of water quality
PPC	–	Provincial People's Committee
PPE	–	Personal Protective Equipment
PPMU	–	Provincial Project Management Unit
PPTA	–	Project Preparatory Technical Assistant
ROW	–	Right of Way
SPS	–	Safeguard Policy Statement
PPTA	–	The Project Preparatory Technical Assistant Consultants

Project	–	Basic Infrastructure for Inclusive Growth Project in Northeast Provinces
Subproject	–	Upgrading and Improvement of the Road 184 from Dong Tam Commune, Bac Quang District to Ngoc Linh Commune, Vi Xuyen District, Ha Giang Province
UXO	–	Unexploded ordnance

WEIGHTS AND MEASURES

Km^2 (square kilometer)	–	unit of length
m^3 (cubic meter)	–	A measure of volume

Note:

(i) In this report, "$" refers to US dollars.

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I. EXECUTIVE SUMMARY

1. The proposed Basic Infrastructure for Inclusive Growth in the Northeastern Provinces Sector Project (BIIG 1) will invest in the recently completed Four Northeastern Provinces (FNEP) Overall Development Plan (2015). The development plan responds to the Government of Vietnam's strategy of targeting the investment into poorer provinces and regions. The use of a sub-regional approach seeks to build the interrelationship between provinces as one of the foundations for accelerating growth in the more remote regions. As such the plan targets investment into outputs that build areas of comparative advantage in a manner that increases the competitiveness of economic activity in the sub-region. The expected impact is to improve socio-economic wellbeing of local communities through the improved financial returns and through lower costs of accessing public health services, education, water supply and markets.

2. The project has four outputs being (i) FNEP road network connectivity improved, (ii) rural water supply improved, (iii) ARVCs in Lang Son improved, and (iv) decentralized public asset management processes implemented.

A. Subproject Summary

3. The subproject is entitled "Upgrading and Improvement of Provincial Road 184 (PR184) from Dong Tam Commune, Bac Quang to Ngoc Linh Commune, Vi Xuyen, Ha Giang Province" and is a representative subproject for Output 1 of BIIG 1: Improved Road Network Connectivity. The route travels through Bac Quang and Vi Xuyen district, Ha Giang province with the total length of 25.1 km and divided into two sections:

- Section 1: From Dong Tam T-junction, Bac Quang district to the junction with the earth road in Ngoc Ha village, Ngoc Linh commune, Vi Xuyen district with total length of 20.4 km. The main road alignment follows the existing route (upgrading provincial road No.184)
- Section 2: From the end point of Section 1, end of paved road and begin of earth road in Ngoc Ha village, Ngoc Linh commune to the junction with paved road to Binh Vang Industrial Zone and National Road No.2 in Ngoc Linh commune, Vi Xuyen district with the total length of 4.7 km, mainly follows the existing road alignment.

4. The works will bring the road to the standard of Category IV Mountain road as classified in Vietnamese national standards TCVN (Tiêu chuẩn Việt Nam) 4054:2005. This may require realignment in some sections to meet technical specifications. The main specifications are:

- Road base width: 7.5m;
- Road surface width: 5.5m;
- Road shoulder: 2 x 1.0m;
- Reinforced shoulder: 2 x 0.5m;
- Road surface structure: Bitumen

5. Civil works will include 14 bridges to replace existing bridges with weight limits below the requirement specified for Category IV Mountain Roads. The bridges construction standards are listed in the table below.

Table 1 – Current status of bridges along the subproject road

No.	**Bridge Name _ Chainage**	**Beam / L bridge (m)**	**Width (m)**	**Notes**
1	Beam bridge Km0+607	2I24 / 60.55	9.0 (8 + 2x0.5)	Design the new bridge to replace the old bridge, the new bridge location is 30 meters from the old one.
2	Slab bridge Km1+680	6 / 7.0	8.0 (7 + 2x0.5)	Design the new bridge to replace the old bridge, the new bridge location is in the same location of the old one.
3	Beam bridge Km4+153	I12 / 20.1	8.0 (7.5 + 2x0.25)	Design the new bridge to replace the old bridge, the new bridge location is in the same location of the old one.
4	Beam bridge Km4+513	I12 / 20.1	8.0 (7.5 + 2x0.25)	Design the new bridge to replace the old bridge, the new bridge location is in the same location of the old one.
5	Beam bridge Km6+980	I12 / 20.1	8.0 (7.5 + 2x0.25)	Design the new bridge to replace the old bridge, the new bridge location is in the same location of the old one.
6	Slab bridge K7+317	6 / 7.0	8.0 (7 + 2x0.5)	Design the new bridge to replace the old bridge, the new bridge location is in the same location of the old one.
7	Beam bridge Km7+907	I12 / 20.1	8.0 (7.5 + 2x0.25)	Design the new bridge to replace the old bridge, the new bridge location is in the same location of the old one.
8	Beam bridge Km9+201	I12 / 20.1	8.0 (7.5 + 2x0.25)	Design the new bridge to replace the old bridge, the new bridge location is in the same location of the old one.
9	Slab bridge K11+810	6 / 7.0	8.0 (7 + 2x0.5)	Design the new bridge to replace the old bridge, the new bridge location is in the same location of the old one.
10	Beam bridge Km12+650	I15 / 23.1	8.0 (7.5 + 2x0.25)	Design the new bridge to replace the old bridge, the new bridge location is in the same location of the old one.
11	Beam bridge Km14+847	I12 / 20.1	8.0 (7.5 + 2x0.25)	Design the new bridge to replace the old bridge, the new bridge location is in the same location of the old one.
12	Slab bridge Km17+621	6 / 7.0	8.0 (7 + 2x0.5)	Design the new bridge to replace the old bridge, the new bridge location is in the same location of the old one.

No.	Bridge Name – Chainage	Beam / L bridge (m)	Width (m)	Notes
13	Beam bridge Km21+960	I33 / 46.0	9.0 (8 + 2x0.5)	Design the new bridge design to replace the residential suspension bridge, which is seriously damaged, the position of the new bridge is near the residential suspension bridge.
14	Beam bridge Km24+920	I33 / 46.0	9.0 (8 + 2x0.5)	Design the new bridge design to replace the residential suspension bridge, which is seriously damaged, the position of the new bridge is near the residential suspension bridge.

B. Environment impacts and mitigation

6. The subproject is categorized as B on environmental issues during the Project Concept note, which identified few significant adverse impacts, of which none are considered irreversible.

7. This IEE has been prepared to screen and assess impacts and formulate mitigation measures in an Environmental Management Plan (EMP) covering the three phases of subproject implementation including the design, pre-construction; construction and operation phases and to set out institutional arrangements to ensure that the subproject EMP will be implemented.

8. The most significant concern are the potential negative impacts to rivers and streams at the 14 bridge-construction locations, especially Nam Dau stream at Km24+920 in Nam Dau village, Ngoc Linh commune, Vi Xuyen district and Na Tang small reservoir at Km0+607 in Na Tang village, Dong Tam commune, Bac Quang district. To minimize the impact, the contractor will use cofferdams, silt fences, sediment barriers or other devices as appropriate based on the design to prevent migration of silt during excavation and boring operations within streams.

9. In the design and preconstruction phases, the potential issues that have been identified are (i) land acquisition and resettlement, including (ii) relocation of the public facilities especially Section 2 where the subproject with extend the current road width to a 5.5m road surface from the existing earth road with house and assets of local people for a distance of 4.7km, and (iii) the disturbance of UXO. To minimize the impact on income and disturbance of local people's lives, the PMU will check and review the land acquisition and resettlement process before construction starts to ensure that all affected households have received compensation adequately in accordance with the current provincial market and that ADB's Safeguard Policy has been implemented. The PMU will also sign a contract with an authorized UXO clearance company to ensure no mine and bomb left in the subproject area.

10. The potential negative impacts in the construction phase have been identified as (i) Impact on flora and fauna along the proposed route; (ii) impact on local public utilities (iii) Silt release from excavation works and material extraction; (iv) The impact of temporary material stockpiles along the road; (v) impact of generated surplus soil; (vi) The impact of generated

construction waste and domestic waste from workers; (vii) Impact from bitumen heating and road compaction activities; (viii) Dust, noise and vibration from construction machinery; (ix) irisk of landslide, soil erosion and runoff; (x) impact on crossing streams or bridge construction locations; (xi) social issues associated with the presence of temporary non-local workers; (xii) safety risks to workers and also to local public; (xiii) impact on local traffic, and (xiv) Potential cumulative impacts arising from construction activities on the Dong Tam - Dong Tien Inter-commune road.

11. The proposed mitigation measures for these impacts in the construction phase are: (i) prohibit cutting of trees for firewood and for use in the subproject and also construction camps, concrete mixing plants, material storage sites from being located in the forest area; (ii) contact all relevant local authorities for facilities and local people to plan any re-provisioning of power, water supply, and telecommunication systems; (iii) store construction material stockpiles on impervious ground with covers or roof at least 50m away from water bodies; install sediment ditches, silt fences at the area with high potential of runoff, erosion and sedimentation; procure materials only from Ha Giang DONRE authorized quarries and borrow sites and update the list of quarries and borrow pits monthly and report to PMU; (iv) stockpile topsoil for later use and fence and re-contour borrow pits after use; temporary stockpiles shall not be located in productive land and forested areas; (v) surplus material to be distributed to local people for use in landscaping/forming building platforms and shall only be disposed to areas approved by local authorities; (vi) areas suitable for disposal to be agreed with CPCs and Ha Giang DONRE checked and recorded by the CSC, ESS/PMU and monitored; (vii) locate mixing plant, bitumen heating off road and (whenever practicable) at least 500 m from nearest sensitive receivers (residential areas, schools, clinics, etc.) and streams and install and maintain dust suppression equipment; (viii) restrict works to daylight hours within 500 m of residential settlements and local clinics, powered mechanical equipment and vehicle emissions to meet national TCVN/QCVN standards; (ix) establish vegetation and erosion protection immediately after completion of works in each stretch/ sector, check weather forecasts and minimize work in wet weather; (x) cofferdams, silt fences, sediment barriers or other devices will be used as appropriate based on the design to prevent migration of silt during excavation and boring operations within streams; (xi) hire and train as many local workers as practicable; provide adequate housing for all workers at the construction camps and establish clean canteen/eating and cooking areas; (xii) workers shall be provided with appropriate personal protective equipment (PPE), and receive regular scheduled briefings on health and safety issues related to their activities as well as on proper use of PPE and fencing on all hazardous sites such as excavation sites, borrow pits and sides of temporary bridges; (xiii) communicate to the public through local officials regarding the scope and schedule of construction, as well as certain construction activities causing disruptions or access restrictions; (xiv) work with Dong Tam CPC, Bac Quang DPC and contractor of Dong Tam - Dong Tien Inter-commune road project to find out the suitable worker and machine mobilization schedules of the two projects, avoid concentration of machines and workers at the same time. The contractor will inform construction schedule and scope to local authorities in advance as well as investigate the capacity of mines, quarries and temporary dumping sites to see whether they are suitable for both projects.

12. In the operation phase, the potential negative impacts include dust, noise and vibration impacts arising form increasing of traffic density and higher risk of traffic accidents as a result of better driving conditions combined with expected traffic increases. To minimize the negative impacts, Ha Giang Department of Transportation (DOT), the responsible agency for subproject management in the operation phase, will maintain the road periodically and collaborate with

traffic police to enforce speed limits, and vehicle loading. A road safety and awareness campaign is required for people working and living along the road.

13. The PPTA Consultant identified key stakeholders and conducted public consultations from provincial to commune level. The main concerns identified were (i) increasing ore exploitation activities as the consequence of improved driving condition. (ii) cumulative impact of the subproject implementation and the construction of Dong Tam - Dong Tien inter-commune road in Dong Tam commune, Bac Quang district. (iii) road safety issues at the sections go through high residential areas. (iv) traffic jams at the section passes through Dong Tam market. All of these concerns are addressed in the EMP (See Table 12 – 13 for more details).

14. An EMP has been prepared under this IEE to detail responsibilities of relevant stakeholders on mitigation measures to be implemented during construction and operation phases of the subproject.

C. Institutional arrangements

15. Ha Giang DPI has established an Official Development Assistance (ODA) Project Management Unit (PMU) and assigned relevant staff to support the preparation of the subproject in the PPTA period. One member of the PMU has been assigned as the Environmental Safeguards Officer (ESO). Three staff, including the ESO, have been participating in a training course on "Fundamental Safeguard and Gender Safeguard Policy Statement (SPS) of ADB" under TA8902-Vie Capacity Building for Project Management Unit Professionalization - organized by ADB in August 2016. Environmental specialist (ESS) for subproject implementation will organize a formal training course and on-the-job training for relevant PMU staff, CSC, communities, contractors; and support for establishment and operation of the subproject environment management system in construction phase. ESS will also support PMU's capacity building by reviewing and evaluating the capacity for environmental protection of the PMU and Ha Giang Department of Transportation (DOT) – subproject management organization in the operation phase.

16. To ensure that environmental protection and mitigation measures are included in the civil works contracts, the EMP will be included in the bidding documents and civil works contracts. Any omission of environmental management costs will create high risks for implementing mitigation measures during the construction phase due to lack of resources and capacity, thus the environmental protection cost and responsibilities need to be involved from the beginning. Bid documents will also specify that contractors shall engage capable and trained staff to take responsibility for the environmental management and safety issues at the working level and to monitor the effectiveness and review mitigation measures as the subproject proceeds.

D. Conclusion

17. The IEE concludes that the feasibility study of the subproject combined with available information is sufficient to identify the scope of potential environmental impacts and formulate mitigation measures for the subproject. Providing that significant changes to the subproject description do not occur at the detailed design phase, and that new sensitive environmental, or cultural resources are not encountered, further detailed environmental impact assessment (EIA) is not required. In case of any change in the subproject design, the ESS will update EMP before detailed design finalization.

II. BACKGROUND

A. Objectives of the Project

1. The Basic Infrastructure for Inclusive Growth in the Northeastern Provinces Sector Project

18. The subproject objectives will be achieved through investment in construction and improvement of basic infrastructure, including improve and expand the north –south transport corridors to become the economic corridors, increase infrastructure linkage including the subproject - upgrading provincial road 184 (Bac Quang - Vi Xuyen) Km 0+00 - Km 25.1 to IV class road for mountainous area.

19. The subproject is initially categorized as 'B' for environmental safeguards, and this IEE is required according to the ADB Safeguards Policy Statement (SPS) of 2009. The objectives and scope of this IEE are to (i) assess the existing environmental conditions in the vicinity of the subproject road; (ii) identify potential environmental impacts from the proposed road improvement works; (iii) evaluate and determine the significance of the impacts; (iv) develop an environmental management plan (EMP) detailing mitigation measures, monitoring activities, reporting requirements, institutional responsibilities and cost estimates to address adverse environmental impacts; and (v) carry out public consultations to document any issues/ concerns that stakeholders may have on the subproject and to ensure that such concerns are addressed in the subproject design and mitigation measures.

III. POLICY AND LEGAL FRAMEWORK

20. The subproject shall comply with requirements of ADB SPS 2009 and the GOV's Guidelines on Implementation of the Law on Environmental Protection 2014. Decree No. 18/2015/ND-CP has detailed information on strategic environmental assessment, environmental impact assessment and environmental protection plans. However certain activities commonly associated with infrastructure subprojects such as quarry operations, extraction of gravel, etc., will also require permission from the relevant provincial level authorities. The construction of bridges and spillways that will be constructed or upgraded by the subproject are all in small scale and will not be required for separate environmental impact assessment (less than 500m in length).

A. ADB SPS Requirements

21. The ADB safeguard policy statement (SPS) 2009 imposes safeguard requirements for all its funded projects. The SPS 2009 clarifies the rationale, scope and contents of environmental assessment. It emphasizes environmental and social sustainability in progress of economic growth and poverty reduction in Asia and the Pacific, with the following aims:

- Avoid adverse impacts of projects on the environment and affected people, where possible;
- Minimize/mitigate and/or compensate for adverse impacts on environment and affected people when avoidance is not possible; and
- Help borrowers/clients to strengthen their safeguard systems and develop the capacity to manage environmental and social risks

22. For environmental safeguards, the Subproject is initially categorized as 'B'. A subproject that is classified as category A on environmental safeguards would be inegible as a BIIG I subproject.

B. Legal and Administrative Framework for Environmental Protection in Vietnam

23. The subproject has to comply with the environmental legal framework of Vietnam, which is outlined in this section. The main components of the framework, if not, the more applicable ones are shown here.

1. Laws

- Law No. 55/2014/QH13 of 23 June 2014 by the National Assembly on environment protection
- Law No. 17/2012/QH13 of 21 June 2012 by the National Assembly on water resources
- Law No. 20/2008/QH12 of 13 November 2008 by the National Assembly on Biodiversity Conservation
- Law No. 68/2006/QH11 of 29 June 2006 by the National Assembly on standards and technical regulations
- Law No. 29/2004/QH11 of 03 December 2004 by the National Assembly on forest protection and development

2. Decrees and Regulations

- Decree No. 18/2015/ND-CP dated February 14, 2015 on environmental protection planning, strategic environmental assessment, environmental impact assessment and environmental protection plans.
- Circular No. 27/2015/TT-BTNMT dated May 29, 2015 on strategic environmental assessment, environmental impact assessment and environmental protection plans.
- Circular No. 36/2015/TT-BTNMT of 30 June 2015 by the Ministry of Natural Resources and Environment stipulating hazardous waste management
- Decision 07/2012/QD-TTg dated February 08, 2012 of the Prime Minister promulgating some regulations on intensified enforcement of forest protection
- Decision 186/2006/QD-TTg dated August 14, 2006 of the Prime Minister promulgating the Regulation on forest management
- Decree 09/2006/ND-CP dated 16th January, 2006 of the Government on forest fire prevention and control
- National Technical Regulations on air and noise quality
    - QCVN 05: 2013/BTNMT on ambient air quality
    - QCVN 26: 2010/BTNMT on noise
    - QCVN 27: 2010/BTNMT on vibration
- National Technical Regulations on water quality
    - QCVN 01: 2009/BYT on drinking water quality
    - QCVN 02: 2009/BYT on domestic water quality
    - QCVN 08-MT:2015/BTNMT on surface water quality
    - QCVN 09-MT:2015/BTNMT on underground water quality
    - QCVN 14: 2008/BTNMT on domestic wastewater

3. Other legislation applicable to the subproject are the following:

- Law No. 27/2001/QH10 of 29 June 2001 by the National Assembly on fire prevention and fighting
- Law No. 40/2013/QH13 of 22 November 2013 by the National Assembly on amending and adding a number of articles of the Law No. 27/2001/QH10 of 29 June 2001 on fire prevention and fighting
- Decision No. 3733/2002/QD-BYT of 10 October 2002 by the Ministry of Health promulgating 21 labor hygiene standards, 5 principles and 7 labor hygiene measurements
- Law No. 50/2014/QH13 of 18 June 2014 by the National Assembly on construction
- Circular No. 22/2010/TT-BXD of 03 December 2010 by the Ministry of Construction on labor safety in work construction
- Law No. 10/2012/QH13 of 18 June 2012 by the National Assembly on labor code.

IV. DESCRIPTION OF THE SUBPROJECT

A. Subproject Location

24. The proposed subproject upgrades Road 184 from Dong Tam commune, Bac Quang district to Ngoc Linh commune, Vi Xuyen district creating a shorter connection between PR279 (to/from Tuyen Quang) and the Binh Vang Industrial Estate that runs parallel to NH2. BIIG1 investment is also sought for the section from Ha Giang City to Binh Vang Industrial Estate as an additional subproject that will complete the parallel route within the proposed north south transport corridor.

25. The road subproject contributes the next stage of development of the parallel network where NH2 to the west of the Lo River will carry passengers and freight mostly from China and from Vietnam south of Ha Giang while Road 184 will provide an alternate route for truck traffic which is forecast to grow rapidly due to expansion of the Binh Vang industrial zone. The reduced transport costs will support the ongoing development and promotion of the industrial zone with expected increased investment linked to growth in local employment opportunities. Furthermore, the resultant improved road will provide better accessibility for people living in the vicinity of the road.

26. Currently NH2 is approaching full capacity due to the increase in truck movements to and from China (in 2016, 1 truck is processed every 4 to 5 minutes at the border from 7am to 7pm compared to more than 15 minutes in 2014.) In addition, NH 2 provides a major entry point for rapidly growing tourism arrivals linked to the UNESCO Dong Van Geological Park. During 2015 an estimated 700,000 visitor arrivals into Ha Giang saw approximately 500,000 enter and depart Ha Giang using NH2 – most of these visitors are in smaller passenger vehicles due to the limitation of larger buses within the road network of Dong Vang.

27. The road runs through Dong Tam commune, Bac Quang district, to Ngoc Linh and Trung Thanh communes, Vi Xuyen district, Ha Giang. The road is a section of Provincial Road 184 (PR184) from Dong Tam commune, Bac Quang district to Ngoc Linh commune, Vi Xuyen district. PR 184 runs from Kim Ngọc in the south to Ha Giang city in the north and is a priority within the Transport Master Plan of Ha Giang province to 2020 and orientation to 2030.

28. To the south PR 184 connects into NH 279 (currently being upgraded), to NH2 at Vi Xuyen small town[1] and to the north into the Binh Vang industrial park. The road connects the production zones and the raw materials produced to the processing sector located in the Binh Vang Industrial estate. These production areas are significant and include production forest of over 450,000 ha, tea - over 20,000 ha, orange over 2,000 ha, passion fruit, etc. and serve the processing sector in Binh Vang industrial park. The park has an area of 300ha and currently includes medium density fiberboard processing (MDF) with production capacity of 150,000m^3/year, mineral (iron, lead, zinc, etc.) factories, tea, fruit processing factories.

29. The subproject represents the next stage (following the upgrading of PR279) of establishing the parallel route with NH2 as part of the North South transport corridor designed to

[1] This subproject road will offer a shorter connection between PR279 (to/from Tuyen Quang) and NH2 (to/from Ha Giang City). As such it will also provide an alternative to NH2, reducing traffic pressure on Ha Giang's primary traffic artery. Furthermore, it will provide direct access to Binh Vang Industrial Zone.

support both the international trade and passenger services via NH2 and the provincial industrial output centered on the Binh Vang Industrial Estate via PR184.

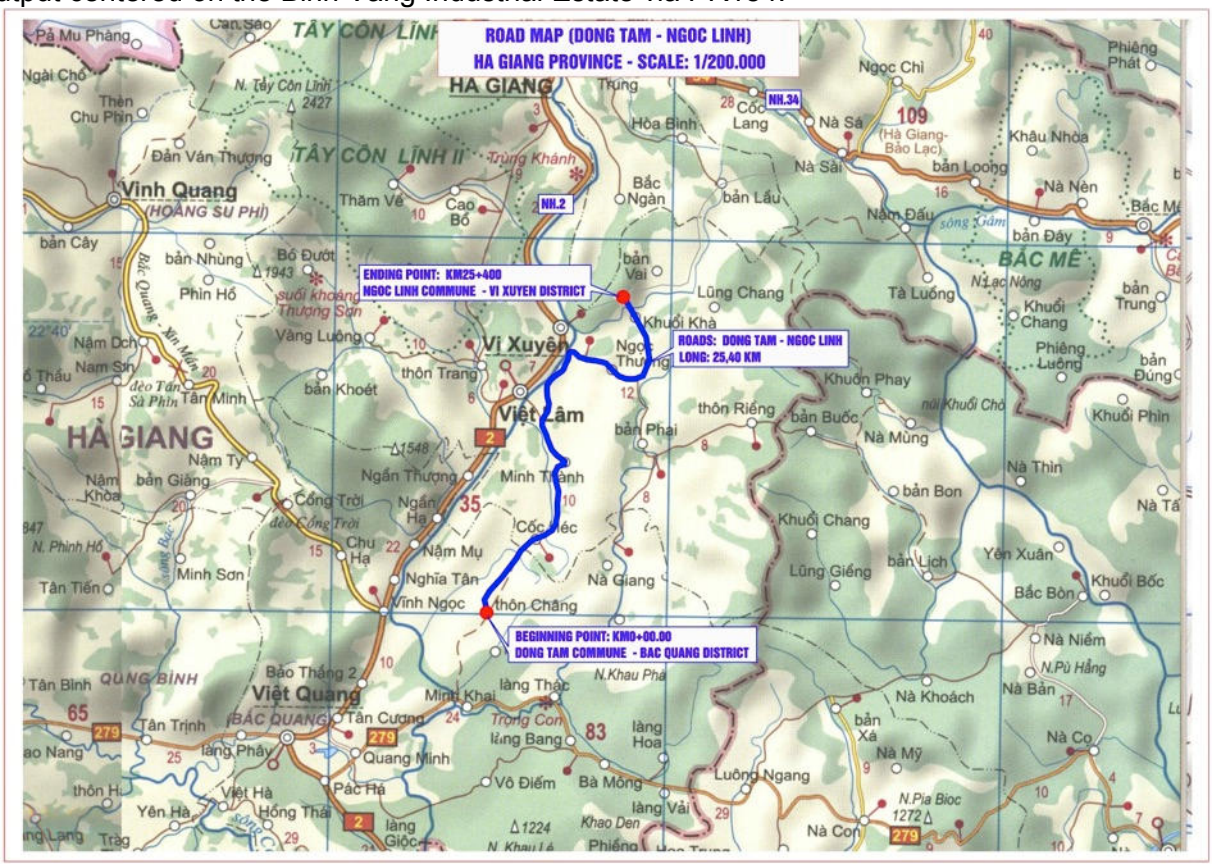


Figure 1: Map of the subproject road 184

30. In summary, industrial development, trade and tourism development are priorities in the future economic development of Ha Giang and are seen as the main contributors to poverty alleviation in Ha Giang Province. The subproject provides support to these in the development of the eastern branch of the planned north – south corridor, with the eastern branch providing services for mostly truck based freight in and out of the Province.

31. The route from Dong Tam Commune, Bac Quang to Ngoc Linh commune, Vi Xuyen district, Ha Giang province under the provincial road 184 (Kim Ngoc -Ha Giang city) includes Ha Giang's 2020-2030 Transport Development Masterplan. Supporting the transport link between Tuyen Quang and Ha Giang province (through NH279), to reduce the traffic load on Highway 2 as well as connecting Bac Quang district with Vi Xuyen district.

Table 2: Road Subproject Summary

Name Representative	Upgrading and Improvement of the Road 184 from Dong Tam commune, Bac Quang District to Ngoc Linh Commune, Vi Xuyen District, Ha Giang province
Length Representative (km)	25.1
District – Representative	Bac Quang and Vi Xuyen
Total Number Districts	2
Total Number Communes	3
Beneficiaries	12,850
Investment Representative $mill	**13,697,627**
Investment per km (USD/km)	545,722

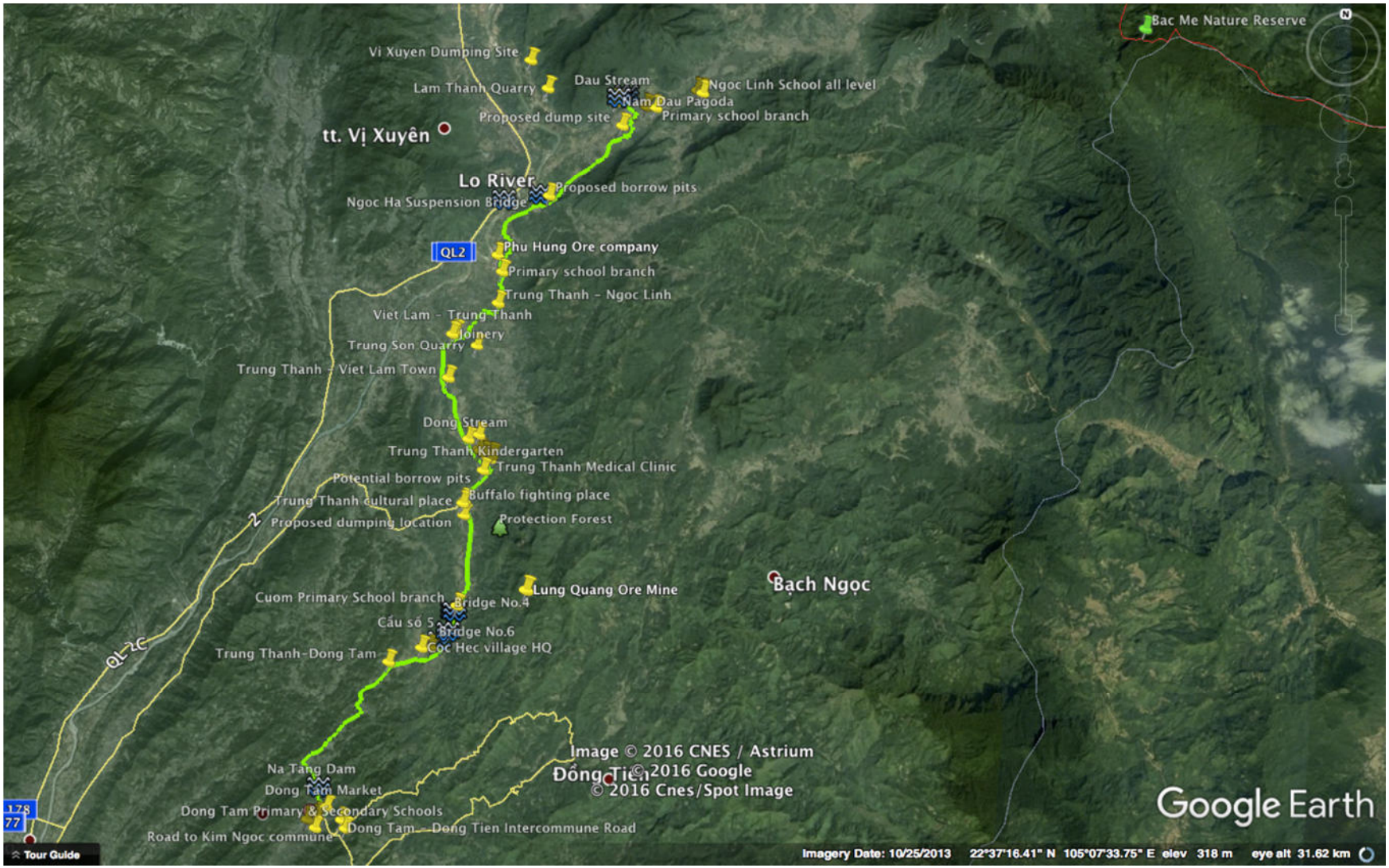


Figure 2 – General Map of Ha Giang and Subproject Area

B. Subproject Scope

32. The upgrading and improvement of PR184 from Dong Tam commune, Bac Quang district to Ngoc Linh commune, Vi Xuyen district, and Ha Giang province. The total length of the road section is 25.1 km that uses the existing centerline. Some sections need centerline adjustments to adhere to the design specifications for upgrading the road to of a Category IV mountain road.

33. The subproject comprises 2 sections as follows:

(i) Section 1: From Dong Tam T-junction, Bac Quang district to the ending point of the bituminous road crossing with the earth road in Ngoc Ha village, Ngoc Linh commune, Vi Xuyen district, with the total length of 20.4km, the alignment basically follows the existing PR184.

(ii) Section 2: from the ending point of the bituminous road and the starting point of the earth road in Ngoc Ha village, Ngoc Linh commune to the intersection with the bituminous road in Ngoc Linh commune (road to Binh Vang industrial zone and NH2), with the total length of 4.7km, the alignment basically follows the existing road.

34. The technical specifications apply the standard TCVN4054 - 05 as follows:

(i) Width of subgrade: 7.5m
(ii) Width of pavement: 5.5m
(iii) Width of road shoulder: 2 x 1.0 m
(iv) Width of lined road shoulders: 2 x 0.5 m

35. The current status of the road is asphalted with grade VI mountain roads. The road from Dong Tam crossroad, Bac Quang district to Ngoc Linh commune, Vi Xuyen district can be divided into two sections with features and status as follows:

(i) Section 1: from Dong Tam crossroad, Bac Quang district to Ngoc Ha village, Ngoc Linh commune, Vi Xuyen district with total of 20.4km length. Currently, this section is a Grade 4 asphalt road constructed in the period of 2007-2009. The quality of the road is on average assessed as moderately good, some parts have good quality. The road section runs through three communes including Ngoc Linh and Trung Thanh, Vi Xuyen district and Dong Tam commune, Bac Quang district. There are 11 bridges on this road section in which 10 bridges are reinforced concrete with the 6m width, the quality is currently good, 01 bridge is two-span (L=2x9m), reinforced concrete type with 3.5m width, the bridge is downgraded and unable to meet travel demand due to small width.

(ii) Section 2: this section runs from the end point of the asphalt road and start point of earth road in Ngoc Ha village, Ngoc Linh commune, continue to the crossing point with the asphalt road in Ngoc Linh commune (the way to Binh Vang industrial area and km00 to QL2) with the length of 4.7km. It is currently an earth road with bad quality and is impassable in places. This road section is in the territory of Ngoc Linh commune; this section includes two suspension bridges, Ngoc Linh and Ngoc Ha which are downgraded and bad in quality. These two bridges only support non-motorized vehicle.

36. According to survey results the first section with a total length of 20.45km has a bituminous surface with an average width of 3.5m and is in good condition. The remaining

section of 4.7km is an earth road, with a width of 2-4m and its conditions makes it difficult for travelling.

37. The first bituminous road section passes through mountainous areas with changes in slope, small to medium slope, some local sections with quite high slope of 10-11%. The earth road section has some points with the slope of 15%, remaining sections have the medium slope. A summary of slopes on the existing road is found in the field survey report.

38. Slopes of the PR184 from section Km0+00- Km20+400 are from 0m-5m high and these slopes are relatively stable and fully covered by green grass, no signs of landslides. The general geological character of the section is brown-yellow clay with gravel in semi-hard to hard state, weathered semi-hard state of shale. The rest section from Km20+400- km25+176 has brown-yellow clay shale slope in medium hard state with stable slopes.

1. Construction Material Sources

39. The proposed material quarries include 3 rock quarries, 2 soil quarries that meet the required capacity for the construction subproject and acceptable transport distance. These quarries are under the list of authorized quarries and sand mines provided by Ha Giang MONRE. The estimated volume required for construction is 68,978m^3, of which 27,397m^3 is for base course and 41,581m^3 for sub-base course.[2]

1. Rock quarry:

   (i) The rock quarry is located in Pha Village, Dong Tam Commune, Bac Quang District, at Km Km2+100, 4,5km away from the road with capacity of 300.000 m^3, area of 1,5 ha. Entrance road to the quarry is asphalt concrete road which is in quite good condition.
   (ii) Trung Son Village rock quarry in Trung Thanh Commune, Vi Xuyen District at Km 17+00, 1km away from the road with capacity of 733.968 m^3, area: 3.5 ha, aggregate entrance road
   (iii) Lung Loet limestone quarry in Nong Village 2, Phu Linh Commune, Vi Xuyen district with quarry area of 2.83 ha, capacity of 1.815.308 m^3, exploitation capacity of 50.000 m^3/ year. The quarry is located at the end of the road, near bituminous treatment surface pavement section, Lam Thanh Cooperative granted the business certificate for the quarry on Oct 20th, 2015 by Ha Giang Provincial Peoples' Committee.

2. Soil borrow pit:

   (i) Borrow pit in Dong Tam Commune, Bac Quang district, 2 hills at the beginning point of the road at the Dong Tam junction with capacity of 900.000 m^3. This borrow pit is right beside the road which is very convenient for material transport. Observation at the borrow pit shows that the soil composition here is brown yellow- clay with gravel in the semi-hard state. Quality of soil of the borrow pit is qualified for roadbed filling.
   (ii) Borrow pit in Minh Thanh Village, Trung Thanh Commune, Vi Xuyen district, at Km 12+00, located right beside of the road, with capacity of 500.000 m^3.

[2] Geological survey report for the subproject road by the PPTA

Observation at the borrow pit shows that the soil composition here is brown yellow- clay with gravel in the semi-hard state. Quality of soil of the borrow pit is qualified for roadbed filling.

40. The estimated volume of filling soil (for embankment) is 166,967m^3 while the estimated volume of excavation soil is 200,651m^3 of which 18,889m^3 is unsuitable for re-use as back fill.

41. Mine investigation: Working with the local authorities and people (district, commune) the survey team collected information on potential sites and then conduct an investigation of these sites near the project road and nearby areas which meet requirements in terms of transport distance, dumping site capacity for the construction project and get confirmation from the local authorities.

C. Land Acquisition

42. According to Resettlement and Ethnic Minority Development Plan there are 472 households will be affected by the implementation of the subproject of which 6 households must be relocated and number of households with affected assets are 238. In these 472 affected households, there are 21 seriously affected households (households that lost more than 10% of the total area of cultivated land and residential part and relocate or rebuilt houses on the remaining land). The total affected area is 90,918 m^2 of which 169,200 m^2 is production forest.

43. In the plan, the subproject will be constructed in 24 months with the estimated budget in Table 5 below:

Table 3 – Estimated budget of the subproject[3]

No	Cost Items	Unit	before tax costs	VAT	After tax costs (VND)	After tax costs (USD)[4]
I	**Civil Works Cost**		**187,756,162,727**	**18,775,616,273**	**206,531,779,000**	**9,240,795**
2	**Project Management Cost**	1.30%	**2,432,944,357**	**243,294,436**	**2,676,238,793**	**119,742**
3	**Construction Investment Consultancy Cost**		**11,846,536,315**	**1,184,653,632**	**13,031,189,947**	**583,051**
-	*Project Investment Survey Cost*	*Temporarily estimated*	*2,727,272,727*	*272,727,273*	*3,000,000,000*	*134,228*
-	*Design Survey Cost*	*Temporarily estimated*	*4,545,454,545*	*454,545,455*	*5,000,000,000*	*223,714*
-	*Project Investment Cost*	*0.20%*	*383,961,353*	*38,396,135*	*422,357,488*	*18,897*
-	*Environmental Impact Assessment Cost*	*Temporarily estimated*	*181,818,182*	*18,181,818*	*200,000,000*	*8,949*
-	*Shop Drawings Design Cost*	*0.80%*	*1,496,041,105*	*149,604,111*	*1,645,645,216*	*73,631*
-	*Shop Drawings Design Verification Cost*	*0.06%*	*104,767,939*	*10,476,794*	*115,244,733*	*5,156*
-	*Construction Works Cost Estimates Verification Cost*	*0.05%*	*99,510,766*	*9,951,077*	*109,461,843*	*4,898*
-	*Bidding Documents Preparation Cost*		*50,000,000*	*5,000,000*	*55,000,000*	*2,461*
-	*Bidding Documents Evaluation Cost*		*50,000,000*	*5,000,000*	*55,000,000*	*2,461*
-	*Expression of Interest & Prequalification Bidding Documents Evaluation Costs*		*30,000,000*	*3,000,000*	*33,000,000*	*1,477*
-	*Bidding Document & Request for Proposal Evaluation Costs*		*50,000,000*	*5,000,000*	*55,000,000*	*2,461*
-	*Contractor Selection Results Evaluation Cost*		*50,000,000*	*5,000,000*	*55,000,000*	*2,461*
-	*Cost of the consultant Committee to resolve Contractors' Requests*		*37,551,233*	*3,755,123*	*41,306,356*	*1,848*
-	*Construction Supervision Cost*	*1.09%*	*2,040,158,464*	*204,015,846*	*2,244,174,310*	*100,410*
4	**Other Costs**		**11,865,013,434**	**1,186,501,343**	**13,051,514,777**	**583,960**
-	*General Costs*		*7,510,246,509*	*751,024,651*	*8,261,271,160*	*369,632*
-	*Design Verification Cost*	*0.03%*	*49,276,373*	*4,927,637*	*54,204,010*	*2,425*
-	*Construction Investment project appraisal cost*	*0.03%*	*92,885,125*	*9,288,513*	*102,173,638*	*4,572*
-	*Construction Works Evaluation & Approval Cost*	*0.30%*	*447,929,714*	*44,792,971*	*492,722,685*	*22,046*
-	*Independent audit cost*	*0.45%*	*1,344,198,365*	*134,419,837*	*1,478,618,202*	*66,157*

[3] Data provided by the Design Consultant of the PPTA team
[4] US$ 1 = VND 22,350

No	Cost Items	Unit	before tax costs	VAT	After tax costs	After tax costs
-	*Construction insurance cost*	*1.03%*	*1,933,888,476*	*193,388,848*	*2,127,277,324*	*95,180*
-	*Project Investment supervision and evaluation Cost*	*20.00%*	*486,588,871*	*48,658,887*	*535,247,758*	*23,948*
5	**Land Acquisition and Resettlement Costs**	Temporarily estimated	**26,098,991,823**	**2,609,899,182**	**28,708,891,005**	**1,284,514**
6	**Contingency**	16.00%	**38,311,231,177**	**3,831,123,118**	**42,142,354,295**	**1,885,564**
Total (1+2+3+4+5+6)					**306,141,967,816**	**13,697,627**

V. DESCRIPTION OF THE ENVIRONMENT

A. Physica Environment

1. Topography, Geology, and Soils

44. Ha Giang has a complex topography with large altitude variation. The average elevation of Ha Giang is 800m - 1200m above sea level (asl) with 5 mountains with the height varied from 2,000m to 2,500m. The subproject topography is described as part of the low mountains covering the administrative areas of Bac Me, Vi Xuyen, Bac Quang districts and Ha Giang city. The mother rock is mainly metamorphic rock with feralit topsoil, from red to light yellow, grey yellow with a soil thickness ranging from 0.8m to 2m. The dominant topography of the area is low slope mountain; create large cultivation area above 50ha. This are is also has some dense forest strip in the flat and narrow valley along rivers and streams.[5]

2. Weather, natural disaster and climate change

45. Ha Giang usually received deflect cold movement from the plain area and the Northeast mountainous area so there is no extreme cold condition period like in the Northeast mountainous area. Only in some high area, near the peak of the mountain like in Pho Bang area - 1,400m MASL, where the lowest temperature could fall down to 5.6^0C.

46. The topographical conditions of Viet Bac Mountainous area and Hoang Lien Son Range where Ha Giang is lying on has support the Province a high humidity conditions. The average humidity ranges from 80 to 87%.

47. The annual rainfall differs across the various topographic regions from 1,031mm in Meo Vac district to 4,721mm in the subproject district of Bac Quang and 4,846 in Quang Ngan commune, Vi Xuyen district. In the subproject area of Bac Quang and Vi Xuyen districts, the rainy season lasts 6 - 7 months from April to October during which time 83-91% of the total annual rainfall. December and January are the driest months of the year with 50 - 70mm of rainfall. The maximum daily rain record is 427mm in Bac Quang district with a total of 210 rain days per year.

48. The climate in Ha Giang is diversified not only based on the elevation but also the direction of mountain range. Ha Giang does not usually experience tropical depressions but does have frequent thunderstorm (90 - 100 days per year), hail and hoar fog[6].

3. Hydrology

49. Ha Giang is situated within the upper basins of the Lo, Gam and Chay rivers. The , Lo River is the biggest river in Ha Giang province with the source being in Yunnan province in China, flowing south through Vi Xuyen and Bac Quang district into Tuyen Quang province. The

[5] Status of Environment report (SOE) of Ha Giang province 2015 prepared by Environment Analysing and Technique Joint Stock Company under the Assignment of Ha Giang DONRE 07/2015

[6] Status of Environment report (SOE) of Ha Giang province 2015 prepared by Environment Analysing and Technique Joint Stock Company under the Assignment of Ha Giang DONRE 07/2015. SOE has analyzed hydrological data of 35-50 years from 5 hydrological stations and 32 rainfall stations in Ha Giang.

total length of Lo River in Ha Giang is 97 km and the river basin in Ha Giang is about 2,104 km^2 [7].

50. There are several small streams originated from the mountain range, eastward of the subproject road, flow cross the road then discharge into Lo River.

4. Surface and ground water

Surface water resources

51. Surface water is relatively abundant. Ha Giang DONRE, surface water quality tests indicate little if any pollution. A monitoring program for surface water quality from 2011 to 2015 with 16 sampling location in Lo River and its tributes. The monitoring frequency is two times per year in May and September however these effectively exclude the dry season. There are six monitoring locations in the subproject area including:

i. Sampling point at Sao stream, Bach Ngoc commune, Vi Xuyen district - about 8km from the end point of the subproject road;
ii. 2 sampling points in Sao streams, Ngoc Minh commune, Vi Xuyen district (downstream of Tan Binh Manganese Ore Mine and downstream of wastewater discharged of Ban Sam 2 Manganese Ore Mine) - about 9km from the subproject road;
iii. Sampling point at a small stream in Linh Ho commune, Vi Xuyen district - about 10 km from the subproject road;
iv. Sampling point at the stream in Ngoc Linh commune, Vi Xuyen district, near the Nam Nhung Manganese Ore Mine of Ban Mai Co. Ltd;
v. Sampling point at the stream in Dong Tam commune, Bac Quang district, near Lung Quang Manganese Ore Mine of Pha Lai Co. Ltd.[8]

Groundwater resources

52. Several studies have been conducted on groundwater quality and reserves in Ha Giang province. Underground water reserve in Ha Giang province is assessed to be abundant and could be used as the water sources for domestic water supply as well as industrial water supply.

53. Ha Giang DONRE has implemented a monitoring program to evaluate the underground water quality in 2014 with some parameters like Lead, Arsenic, Mercury, Cadmium, Iron, Ammonia, Coliform... at several locations in Ha Giang city, Bac Quang, Bac Me and Vi Xuyen district. The result has showed up all the parameters are still in the allowed level of QCVN 09:2015/BTNMT[9], except the Coliform parameter. The coliform concentration of the two samples in Bac Quang and Vi Xuyen districts are 16 and 12 MPN respectively while the allowed level under QCVN 09:2015 is only 3 MPN/100ml[10].

[7] Status of Environment report (SOE) of Ha Giang province 2015
[8] Status of Environment report (SOE) of Ha Giang province 2015
[9] QCVN 09:2015-MT/BTNMT National Technical Regulation on Ground Water Quality - replace QCVN 09:2008/BTNMT.
[10] Status of Environment report (SOE) of Ha Giang province 2015

5. Air quality and noise

54. Compare to the QCVN[11], all the parameters of air quality and noise at 45 monitoring locations in Ha Giang province are far under the allowed level. The monitoring period is 5 years from 2011 to 2015. The nearest location to the subproject is near the center market of Vi Xuyen district - about 7 km from the subproject road.

B. Biological Environment

1. Forestry

55. The total forestry area of Ha Giang in 2013 is 437,227.7 ha and the forestry coverage ratio is 54.3%. However, the forest quality has reduced recently. The separated forest and forest encroachment create a risk to the biodiversity condition of the province. Ha Giang have 6 nature reserves and special forests. The nearest nature reserve to the subproject road is Bac Me Nature Reserve in Bac Me district, Ha Giang province, about 13 km from the end point of the subproject road. The forest cover status of the subproject area is show in Table 6 below.

Table 4 – Forest cover status of the subproject area in 2015 (ha)[12]

No.	Subproject commune/ district	Total area	Forest area	Natural forest area
1.	Ngoc Linh - Vi Xuyen	4847	2656	2117.2
2.	Viet Lam town - Vi Xuyen	1289	636.9	355.8
3.	Trung Thanh - Vi Xuyen	6303	3381.3	2297.4
4.	Dong Tam - Bac Quang	6783	4504.6	3250.6

Source: Forest Ranger Division Ha Giang DARD

56. The main construction work of the subproject is upgrading the road based on the existing foundation. With forest coverage of more than 50% of the natural area, there is no fauna or flora species listed in Vietnam Red Book in the subproject area in the recent years[13].

2. Agriculture

57. Agricultural land accounts for 86% of total land area, however the agricultural land area available for plantation of annual crops and perennial plants is accounts for only 16% to 25% in Vi Xuyen and Bac Quang respectively. The remaining land classified as agricultural land is used for plantation forestry.

Table 5 - Land use in project district, 2015

Type of land		Bac Quang District	Vi Xuyen District
Total land area	ha	110,564	147,841
Agricultural Land	ha	94,940	26,506
Agricultural production land	ha	23,793	23,024

[11] QCVN 05: 2013/BTNMT National Technical Regulation on Ambient Air Quality and QCVN 26:2010/BTNMT National Technical Regulation on Noise

[12] Figures provided by Forestry Division of Ha Giang DARD

[13] Information provided by staff of Ha Giang Environmental Protection Agency and via public consultation meeting in Bac Quang, Ngoc Linh and Dong Tam commune/towns.

land for annual crops	ha	11,183	17,061
Paddy land	ha	5,105	6,571
Land for other crops	ha	5,741	10,489
Land for perennial plant	ha	12,610	5,963
Forestry land	ha	70,368	102,900
Aquaculture land	ha	778	517
Other agricultural land	ha	n/a	65
Non- agricultural land	ha	5,893	7,228

C. Socio-Economic Condition and Infrustructure

1. Population and Ethnic

58. The total population in the three target communes is 15,854 people of 3,591 households but the main beneficiaries of the subproject will be 6,122 people in 14 villages out of 37 villages. The estimated number of households likely to benefit is 1,428, this presents 40% of the population of the three target communes. There are at least 150 households (10%) with female headed directly benefited from the proposed Project. Almost beneficiaries are ethnic minorities with 80%. Table 8 below present population and ethnicity composition of target communes.

Table 6 – Population and Ethnicity in target area

	Whole commune			Beneficiary area			
	Ngoc Linh	Trung Thanh	Dong Tam	Ngoc Linh	Trung Thanh	Dong Tam	Total
Number of Villages	16	12	9	6	5	3	14
Population (person)	4821	6121	4881	1559	2555	2008	6122
Gender							
Women	2288	2435	2436	779	1431	1003	3213
Men	2533	2603	2455	780	1124	1005	2909
Number of Households	1130	1405	1056	417	579	432	1428
Female headed households	149	125	40	75	66	na	na
By ethnic group							
Kinh	300	282	124	166	124	22	312
Tay	223	483	208	69	191	93	353
Nung	96	474	210	16	237	104	357
Dao	236	18	390	44	8	173	225
Hoa (Chinese)	121	94	14	68	5	0	73
Hmong	130	32	109	42	9	40	91
Others	24	22	3	12	2	0	14

2. Living Standards and housing

59. Table 9 presents the poverty incidence in the target communes. The average poverty rate of Dong Tam commune is 28.4%, with the rate for the 3 benefitting villages ranging from 10 to 27 percent. For Ngoc Linh and Trung Thanh communes 20% and 14.2% of inhabitants fall below the poverty line.

Table 7 – Number of poor households in the subproject area

Commune	Village	Number of HH	Poor household	
			No of HH	% HH
Dong Tam commune		1056	300	28
	Tuoc	107	7	7
	Ban Buot	81	16	19.8
	Chang	133	23	17
	Kthuoi	43	25	58
	Nha	114	50	44
	Lam	241	65	27
	Pha	146	80	55
	Chaang	107	11	10
	Thuong	84	23	27
Ngoc Linh commune		1130	225	20
	Lung Loet	62	5	8
	Tan Lap	64	7	11
	Nam Thanh	46	0	0
	Nam Dau	57	4	7
	Khuoi Vai	107	13	12
	Na Qua	92	17	18
	Tan Phong	62	14	23
	Khuoi Kha	59	23	39
	Nam Dam	109	24	22
	Lang Mu	30	12	40
	Coc Tho	63	11	17
	Ngoc Thuong	92	21	23
	Ngoc Quang	39	16	41
	Nam Nhung	60	26	43
	Ngoc Ha	79	13	17
	Village No 5	109	19	17
Trung Thanh commune		1405	200	14
	Trung Son	160	8	5
	Ban Tan	166	17	10
	Dong	117	17	15
	Trang	159	9	6

	Minh Thanh	99	8	8
	Cuom	96	15	16
	Tang	69	12	17
	Coc Hec	121	38	31
	Thuy Lam	104	12	12
	Khuoi Lac	107	30	28
	Hai Luong	155	29	19
	Khuoi Khai	52	5	10

3. Employment and income

60. Agriculture production is the dominant income source in the three communes. Agricultural contributes 80% of the commune's GRDP. The main crops are paddy, maize, soybean and groundnut with oranges and tea. Livestock is a major source of income in these communes.

Table 8 – Main agricultural products in target communes, 2015

Indicators		Dong Tam commune	Ngoc Linh commune	Trung Thanh commune
Total production of cereals	Ton	3323	2950	na
Income per capita	VNDmil./year	18	13	19.1
Main agricultural products				
Paddy				
+ Planted Areas	ha	452	275	334
+ Production	Ton	2570	1520	1937
Maize				
+ Planted Areas	ha	179	325	247
+ Production	Ton	680	1430	1000
Soy bean				
+ Planted Areas	ha	51	13	24
+ Production	Ton	71.5	12	26.4
Groundnut				
+ Planted Areas	ha	117	40	280
+ Production	Ton	304	70	585
Perennial plants				
Tea	ha			
+ Planted Areas	ha	75	98	190
+ Production	ton	247	441	na
Oranges	ha	236		110
Passion fruit	ha			3.75
Livestock				
Buffaloes	head	1639	2235	2358

Cow	head	16	36	41
Goat	head	625	457	680
Pig	head	4259	3685	7029
Poultry	head	24500	21275	40685

Source: Annual report of Dong Tam, Ngoc Linh and Trung Thanh People's Committee, 2016

4. Education and Public Health

61. In Bac Quang district there is one hospital, two regional general clinics and 21 health care stations – one in each commune. Vi Xuyen district has one hospital, one regional policlinic and 23 commune health care stations. During 2015 the rate of malnourished children under 5 years old in whole province was 22% however the situation for the two subproject districts is better than the Provincial level at 19% and 12% for Vi Xuyen and Bac Quang district respectively[14].

62. According to Ha Giang Statistic Year Book 2015, 100% commune health care stations in both Bac Quang and Vi Xuyen Districts have midwives, but the rate of commune health care station which has doctor is 65% in Bac Quang compared to 25% in Vi Xuyen. in 2015 the rate of malnourished children under 5 years old is 15.5% in Dong Tam commune, 20% in Ngoc Linh commune and Trung Thanh commune is with rate of 18% (commune annual reports).

63. Primary school and secondary school facilities are available at commune level but high school is only located in district centers or in inter-commune locations where students from adjacent communes gain access. For the subproject area a total of 6 and 2 high schools in Bac Quang and Vi Xuyen district respectively. Enrolment rates for school age children in all three communes exceed 96%.

5. HIV and human trafficking

64. Overall, 56% of respondents (PPTA Social survey) had heard about HIV/AIDS with more men, 61.9%, as compared to only 50% of women. For those that had some knowledge of HIV/AIDS, the main sources of information were television (57.14%) and health workers (29.76%). People had also received information from relatives or friends (19.35%) and 10% from community posters. Human trafficking has also not been recorded in the subproject area.

6. Infrastructure

65. All communes have asphalt roads district commune center roads. The rate of concreted road in Bac Quang (43%) and Vi Xuyen district (34%). However, 17% and 21% of roads still have travel restrictions during the rainy / flooding season in Bac Quang and Vi Xuyen district respectively (See Table 11). All the communes have telephone lines to commune people's committee offices. Broadcasting and television have been fully covered all communes. All the communes have post offices.

Table 9 – Current situation of the road in subproject districts (km)

	Bac Quang	Vi Xuyen
Total length of road	1,277	1014

[14] Ha Giang Statistic Year Book, 2015

Urban road	36	345
Rural road	965	669
Type of road		
Asphalt/ concrete road	550	354
Bituminous macadam/gravel road	14	120
Soil/ earthern surface road	713	540
Traveling level		
Traveling around year	564	473
Very difficult traveling in rainy/ flooding season	499	324
Cannot traveling in rainy/flooding season	214	216

66. The subproject communes are all connected to the national grid although the more remote villages some households do not have access because of the distance from the grid. Overall the percentage of households with grid connections ranges from 92 to 98%.

67. In summary the target beneficiaries have better than average social and economic infrastructure reflecting the nature of the subproject road as being a strategic road for the movement of industrial freight and raw materials. The improved road is expected to support investment into Binh Vang industrial Estate, which in turn will create additional employment opportunities.

7. Unexploded Ordinance

68. In the farthest region of Northern Viet Nam, ordnance used by combatants during conflict that took place between 1962 and 1976, and also from border conflict with China, which went on into the 1980s. Unexploded ordnance (UXO) includes bombs dropped from aircraft, booby traps and land mines, all of which are indiscriminate and all of which result in concealment of the ordinance, defying the assessment of risks to a reliable level. Information on the extent and location of UXO is sparse at any level.

69. UXO devices are encountered when ploughing fields, searching for scrap metal and even by children playing. Within the SRIDP area, relatively higher risks occur at land close to the border, particularly with China. In recent years, UXO related accidents have occurred in areas near the Chinese border Information on the level of risk in any subproject area includes that available from local officials and residents, and records of incidents in the area, which are maintained by the Government agency, the Technology Centre for Bomb and Mine Disposal, under the Ministry of Defense. Risk assessment may also be based on the existing use of land to be used under the subproject, and the level of disturbance necessary in implementing the subproject: if land is already subject to foot and vehicle traffic, and disturbance such as plowing and excavations, is likely to be relatively safe. However UXO risks are always present to some degree when excavation is to take place.

D. Archaeological, Historical and Cultural Treasures

70. There are several archaeological sites that have been discovered in Ha Giang province, especially artifacts from Stone Age such as working tools in Pac Ta cave, Lung Thieng village, Minh Tan commune, Vi Xuyen district - about 30km from the subproject road and Quang Tien village, Vinh Quang town, Hoang Su Phi district have been discovered in the beginning of 2015[15]. Nam Dau Pagoda, located 500m far from the end point of the subproject road, has been certified as National Historical Site by the Decision No. 4197 QD/BVHTTDL dated 16 November 2009. The Pagoda has remained architecture from Tran Dynasty at the end of XIII Century and beginning of XIV Century[16]. In case excavations lead to the discovery of artifacts, procedures for addressing chance finds of antiques and artifacts will be set up for the construction phase.

E. Key Environmental Features

71. ***Physical environmental features:*** The subproject road is located in the narrow valleys, along Lo River with large cultivation area of rice and corn. There are 14 stream/streamlet crossing position along the subproject road. There is also small Na Tang Reservoir at the beginning section of the subproject road in Dong Tam commune, Bac Quang district.

72. ***Social environmental features:*** The road goes through several crowded residential areas of Dong Tam commune, Bac Quang district and Trung Thanh, Ngoc Linh commune, Vi Xuyen district, especially 1.4 km goes through Viet Lam town, Vi Xuyen district. There are schools, kindergartens, cultural places and medical clinics along the road. Trung Thanh and Dong Tam markets are also located roadside.

[15] http://www.baohagiang.vn/van-hoa/201502/phat-hien-nhieu-di-chi-khao-co-hoc-tai-huyen-vi-xuyen-va-hoang-su-phi-569243/

[16] http://ditichlichsuvanhoa.com/dttc/DI-TICH-KHAO-CO-CHUA-NAM-DAU-a636.html

VI. ANTICIPATED ENVIRONMENTAL IMPACT AND MITIGATION MEASURES

73. This section discusses the potential environmental impacts of the subproject and identifies mitigation measures to minimize the impacts in all design, construction and operation phases of the subproject.

74. Activities during the construction phase will be mainly confined to the existing road footprint. The main physical issues relate to impacts such as vegetation clearance, earthworks, erosion control, obtaining rock based construction materials, spoil disposal, and disposal of other waste. The effects of these activities are examined.

75. Subproject implementation will impact on the lives of local people, especially those who live along the subproject road. There are several crowded residential areas along the subproject road, namely Viet Lam town, Dong Tam and Trung Thanh commune centers.

76. The potential environmental impacts as well as the mitigation measures associated with the pre-construction, construction and operational phases are assessed below. The criteria for assessment are in line with ADB's Safeguard Policy Statement 2009 and the Government of Viet Nam standards based on the Environmental Protection Law (2014). Where government standards or guidelines have some kind of conflict with the ADB SPS, the ADB SPS will be applied as the policy for the subproject implementation. The EMP is presented below including mitigation measures and monitoring plan for the implementation of the subproject road.

A. Potetioal Impact and Mittigation Measures in Pre-construction Phase

1. Land acquisition and resettlement

77. **Impacts:** The impact is on several residential areas along the road including: Viet Lam town; Nam Dau village, Ngoc Linh commune; Trung Thanh commune center; Dong Tam commune center. Among 472 affected households, there are 21 seriously affected households (households that lost more than 10% of their total area of cultivated land or whose homes will be demolished or moved). In total there will be 90,918m^2 of affected lands, 2,590 m^2 is the public land and only 7,058 m^2 is the private residential land. The area of land use for annual crop is 54,571 m^2 and for trees land is 39,047 m^2.

78. **Mitigation measures:** During the feasibility study phase, resettlement and land acquisition impacts have been identified and a Resettlement and Ethnic Minority Development Plan has been prepared. As there are 21 households adversely affected by constructio of the subproject, the REMDP will be updated and validated, and will provide for compensation and support of affected households, especially the 21 seriously affected households, as appropriate. PMU will also inform Ngoc Linh, Trung Thanh, Dong Tam, Viet Lam CPCs and local people of the four communes all information related to the road construction in advance Arrangements will be made for regular monitoring and to record and redress grievances.

2. Relocation of Services

79. **Impacts:** The road will be mainly constructed on the same road alignment and the main construction activity will be upgrading the road surface with some small realignments. Relocation of some low-voltage electricity poles, water supply pipes, wastewater pipes or signage maybe necessary and some type of signboards along the current route. In accordance to the compensation and resettlement data, there are 44 0.4kv electric poles and telephone line poles must be relocated with 2,480m electric line will be replaced. There is also one transformer and 286 m^2 of concrete culvert will be replaced

80. **Mitigation measures:** Provision will be made in the contract for relocation as required, and to co-ordinate the relocation of services with Ha Giang Electric Power Company, Bac Quang and Vi Xuyen Branches. Before construction starts, the PMU will work with these branches and the 4 CPCs to develop and implement plans to relocate the utilities and other affected structures and avoids or minimizes service interruptions. The relocation plan shall specify roles and responsibilities for relocation, the timing and relocation location sites.

3. Disturbance of unexploded mine and bomb (UXO)

81. **Impacts:** Along the subproject road, there is some possibility that UXO remains from previous conflict. The risk should be verified by consultations with local residents to find out if there is knowledge of fighting in the area in recent decades.

82. **Mitigation measures**: The PMU will conduct consultations with roadside residents to determine any history of conflict in the area that may have resulted in items UXO being left in the area. The PMU will also verify with the Ha Giang Provincial Military Commanders to check whether the area along the subproject route has been checked for in the past. If a risk is identified following consultation, an authorized UXO clearing contractor will be engaged to undertake UXO detection and clearing along the subproject road. The PMU must ensure that the

construction contractors shall only commence site works after the UXO clearing contractor has certified that the subproject areas as safe.

B. Potential Impacts and Mittigation Measures in the Construction Phase

1. Impact on flora and fauna along the road

83. **Impacts:** Construction work will involve some removal of trees along the route, mainly fruit trees and other small trees cultivated by people who live along the road, especially in Section 2. The construction activities will create noise, vibration that may disturb wild animals living in the forest area next to the road. Workers could hunt wild animals and cut down trees in the forest for fuel wood. This is a minor impact and will take place over 24 months of construction time. The number of trees will be cut down will be small and the nearest protection forest is about 1 km away around Km20 of the subproject road, so the impact is not large.

84. **Mitigation measures:** Trees cultivated by local residents that will be removed, will be compensated under the provisions of the REMDP. To reduce the impact on further trees and vegetation, Forest Ranger and DARD offices of Vi Xuyen and Bac Quang districts will be informed about the construction time and schedule, scope of works as well as location of worker camps and material storage sites. No construction camps, bitumen heating facilities, depots or material storage sites will to be located in or near forested areas. The contractors will not use or permit the use of fuel wood for construction activities or for cooking and water heating in worker's camps. The contractors should not buy or use wood from illegal sources. The PMU assisted by the ESS and CSC will strictly supervise and monitor the protection of trees and other vegetation.

2. Impact on Utilities

85. **Impacts:** Construction activities could impact electrical power supplies and drainage systems and other utilities along the subproject road. The potential impact is minor as it is only likely to occur at sites where minor realignment is to be done. Impacts will be brief, and will occur only over the 24-month construction period.

86. **Mitigation measures:** To minimize the impact, the contractors will provide advance information of the construction schedule to the relevant utility operators such as Ha Giang Electric Power Company, Bac Quang and Vi Xuyen Branches and co-ordinate with them to ensure prompt relocation and reconnection. If any facilities are accidentally damaged during construction period, they should be reported to CSC and PMU as well as the owner to the facilities before repair at the contractor’s expense.

3. Impacts of materials excavation and extraction

87. **Impacts:** One limestone quarry (the Keo Put quarry) and six soil pits have been identified to meet the materials needs for the project, over and above excavated cut material that can be used as fill. The Keo Put quarry is operated by Nam Hai ltd, which is licensed to do so by the Bac Kan Provincial People's Committee. Three quarries and two soil pits have been identified to meet the materials needs for the project, over and above excavated cut material that can be used as fill. Both excavation works and the extraction of materials at the quarries and borrow pits may result in the release of soil and silt, which may also be released from materials stockpiles along the road, blocking nearby streams and potentially affecting cultivated areas. Areas at risk include quarries; borrow pits and materials stockpiles along the subproject road.

The impact is minor as the main work is upgrading the road surface will be confined to the existing right of way, but some earthworks and excavations will be necessary. Estimated soil volume for back filling during the subproject road construction is nearly 167,000m^3 while estimated volume of excavated class 3 soil (semi-solid soil that could be use for embankment) is nearly 182,000m^3

88. **Mitigation measures:** To prevent the release of silt into waterways, the contractors will use silt fences around excavation sites and stockpiles. On completion of extraction work, quarries and borrow pits will be closed, rendered safe and improved as agreed with landowners. Such improvement works may include landscaping and planting works as appropriate.

4. Impacts of the temporary material stockpiles

89. **Impacts:** About 7 main temporary material stockpiles will be located along 25.1 km road construction site. Fine material like sand and soil could generate dust in dry conditions; and the material could be discharged into surrounding water bodies in wet conditions. Stockpiles placed at the roadside could make impede movement along the road and cause danger by constricting the road width and reducing visibility.

90. **Mitigation measures:** To minimize the impact, the contractor will work with local authorities in advance to identify acceptable locations for the temporary stockpiles. The proposed locations are around the proposed area for surplus soil dumping at Km1+400; Km3+400; and Km11+000. Stockpiles of material prone to dust generation (fine material like sand) should not be located within 50m of schools, medical clinics or other public infrastructures such as pumps and wells and should be covered with tarpaulin when not in use and at the end of the working day to enclose dust. In the case of large stockpiles (more than 25 m^3) of crushed materials, they should be enclosed with side barriers and also cover with tarpaulin when not in use. Especially, temporary storage areas must not be located at the distance of less than 50m to Na Tang Reservoir.

5. Generation of surplus soil

91. **Impacts:** Soil from excavation activities, which could not be reused as filling soil (about 18,900m^3), could have significant impacts and environmental degradation such as soil erosion when placed on slopes, near the water bodies, as well as release of silt.

92. **Mitigation measures:** Where surplus material is acceptable for use as fill, it will be graded and placed in fill sites for construction. Other surplus material will be made available to local people for uses such as the construction of level areas for recreation or building platforms. The CPCs will organize the distribution of surplus soil. Any remaining surplus material could be deposited at locations agreed with CPCs of the 4 commune/town. 4 CPCs will organize the distribution of surplus soil for local people who wish to use it.

93. For any remaining surplus material not used as fill or distributed to local people, the following list of potential disposal sites is presented to guide Contractors. The contractors should work with local authorities to identify satisfactory dumping and disposal sites before construction starts. Construction waste dumping sites: having interviewed the local authority, some suitable waste dumping sites are proposed.

(i) Dumpsite at swampy site in Thuong village, Dong Tam Commune, Bac Quang district at Km1+400, located 50m away from the road with capacity of 120,000 m^3

(ii) Dumpsite at the abandoned area in Lam village, Dong Tam Commune, Bac Quang District at Km3+400, located right beside the road with capacity of 40,000 m^3.

(iii) Dumpsite at the abandoned area in Minh Thanh village, Trung Thanh Commune, Vi Xuyen district at Km11+000, located 200m away from the road with capacity of 180,000 m^3.[17]

6. Generation of construction waste and domestic waste from workers

94. **Impacts:** Solid waste that will be generated from construction mainly includes waste from workers' camps, debris, and packaging of materials and equipment including bitumen drums, oil containers, crates and cardboard. Some may be contaminated with hazardous or semi hazardous substances. Domestic waste from workers camps may include organic waste, as well as plastic and other packaging and semi toxic items such as used batteries. Other waste will be generated at workshops, storage sites, refueling sites and depots. This is an average impact, as the construction sites, workshops and depots will be at various locations along the 25.1 km length of the subproject road including residential areas, especially Viet Lam town. Uncontrolled waste disposal could further reduce the water, ambient air and soil quality and heavily impacts on local people in the subproject area.

95. **Mitigation measures:** Contractors will be required to (i) reuse construction waste such as cement bag cover, metal tools where possible and (ii) install rubbish bins at work sites and in worker's camps to allow efficient collection of waste and transport the solid waste to a disposal site approved by the CSC.

7. Impact from bitumen heating and road compaction activities

96. ***Description:*** The operation of road compaction machines will generate noise and dust and bitumen heating will generate gas and odor. Although the emissions from powered mechanical equipment will be rapidly dispersed in the open terrain they will need to be sited carefully to avoid complaints. The impact will happen at the construction sites along the subproject road and affect on local people living in the surrounding areas. However, the affected level is insignificant because the small construction activities and the surface of the road are only 5.5m. On the other hand, bitumen heating could create a risk of fire, if fuel wood in open fires is used for bitumen heating.

97. **Mitigation measures:** To minimize the negative impact, the contractors should ensures that activities with loud noise and vibration or bitumen heating machine take place at least 50 m away from sensitive areas such as Viet Lam town; Trung Thanh and Dong Tam commune centers; Nam Dau village, Ngoc Linh commune, Vi Xuyen district. PMU and CSC will responsible to monitor this mitigation measure during 24-month of construction phase.

8. Impact from noise, dust and vibration generated by the construction activities

98. **Impacts:** Earthworks and rock crushing activities will be the main sources of dust. Construction machines and vehicles will generate gaseous emissions (NOx SOx, CO, CO_2, etc.) when they are in operation. These gaseous emissions and dust could cause health problems for residents who live near the construction site and along the transportation route, especially at

[17] This list has been discussed and initially agreed with the CPCs of Dong Tam, Ngoc Linh andTrung Thanh CPCs. Details are showed in Geological survey report for the subproject road by the PPTA

sensitive points such as schools, kindergartens, markets, commune centers and medical clinics. The impact is considered as average as the subproject road goes through several residential areas of three communes in 2 districts, especially Viet Lam town.

99. **Mitigation measures:** Similar to the mitigation measure for impact from bitumen heating and compaction activities, the contractors should not located any noisy machines or large material storage site near or within protection forest and residential areas of Viet Lam town; Ngoc Linh, Trung Thanh and Dong Tam communes. The contractors will work with 3 CPCs of Ngoc Linh, Trung Thanh and Dong Tam, with the representative of ESS and PMU, to identify areas for depots will also include a materials transportation plan in the Contractors Environmental Management Plan. PMU and CSC will responsible to monitor these mitigation measures.

9. Landslide, soil erosion and runoff

100. **Impacts:** Roadside erosion and runoff could happen during rain, especially at the roadside and at borrow areas. Erosion and runoff could impact on the cultivation areas and contaminate waterways. Landslides could happen in sections with high slopes adjoining the road, especially when the vegetation cover is cleared. Landslide will damage the road and block movement and release silt into waterways.

101. **Mitigation measures:** There is no sign of landslide and soil erosion along the subproject road as all the slopes are stable and covered with vegetation covers. However, to minimize the possible impact of soil erosion and runoff at the stream crossing points, the contractors should limit to store material near streams and Na Tang Reservoirs, install silt fences around excavated areas (including borrow areas) and around piled material. Where slope cutting takes place, slopes should be left with clear and even profile. The contractors will also follow weather forecasts and avoid operations such as excavation and slope trimming on heavy rain days.

10. Impact on crossing streams or bridge construction locations

102. **Impacts:** Careless construction and poor handling of materials at bridge sites can cause blockages and release of silt to streams/ streamlets. Runoff water during its rain could bring waste and soil into streams at 14 crossing positions then to Lo River. That could lead to siltation and reduce the water quality and affect stream water user, as stream is the main domestic water supply source of local people in the subproject area.

103. **Mitigation measures:** To minimize the negative impact, the contractors should transport excavated material to use as fill, distribute to local users or take to approved disposal sites immediately. Silt fences and sediment barriers or other devices will be used as appropriate at bridge construction sites. The contractors should limit the main construction activities of the 14 bridges to the dry season.

11. Impact by the large influx of construction worker

104. ***Impacts:*** About 100 workers will be mobilized discontinuously in 24-month construction phase. The influx of construction worker can cause (i) a burden on local public services like electric and water supply; (ii) risk of transmission of diseases to the subproject area; (iii) conditions for great spread of diseases such as sore eyes, cholera, flu and respiratory problems; (iv) risk of social problems such as gambling, drug addiction, prostitution, violence. The impacts would be on both workers and on the communities near the construction sites in residential.

105. ***Mitigation measures: :*** (i) Careful siting of workers' camps and facilities as agreed by local communities and approved by the PMU that the camps should be located in areas with sufficient drainage to avoid water logging and formation of breeding sites for mosquitoes and flies (ii) Registration of workers with local police while resident in the subproject area (iii) workers' camps and other depots should be cleaned to ensure that site drainage continues to be effective (iv) workers should have health checks before start work in the subproject and should be trained for living and working behavior before joining the sites (v) engaging local people including for unskilled or semi skilled tasks to the extent that they are able and willing to undertake them. Local people in the residential area of the 3 subproject communes and Viet Lam town will benefit from the subproject construction.

12. Safety risks to local people and construction workers

106. **Impacts:** Works and the public are at risk of accidents associated with construction, particularly excavations, and operations involving heavy machinery. Material transport and construction activities on the existing road may create the risk of traffic safety and affect houses and other structures on roadsides, particularly on the sensitive receivers such as two branches of Ngoc Linh primary school, Trung Thanh kindergarten, Trung Thanh primary and secondary school, Trung Thanh market, Trung Thanh medical clinic, Cuom and Coc Hec branches of Trung Thanh primary school, Dong Tam market, Dong Tam kindergarten and primary school.

107. **Mitigation measures:** The contractors will (i) conduct training for workers on safety, including roles and responsibilities, safe site practices and environmental hygiene (ii) institute site and camp rules such as wearing proper safety apparel such as safety boots, helmets, protective clothes, gloves and ear protection, (iii) ensure vehicle and plant operators are trained and licensed (iv) ensure all excavation sites are fenced with sign boards and perimeter markers and (v) allocate responsibility to supervisor staff to ensure that all safety rules are followed by all staff at all times. The project will take note of opinions and complaints from local people and authorities on safety.

13. Impact on the local traffic

108. **Impacts:** Construction activities on the Subproject road are likely to cause hindrance in traffic flow if not mitigated properly especially when there is no other option for travelling. There are several schools and kindergartens and their branches located along the road. Children and pupils will have difficulty getting to schools. Trung Thanh and Dong Tam markets are also located roadside. It will make difficulties for people to reach these markets during the construction phase, especially during the market session every Saturday morning. The road runs along the narrow valleys and there is only one-way road. Local people and people from other areas who travel on the subproject road will be affected during 24 months construction period.

109. **Mitigation measures:** To minimize the disturbance to local people, the contractor will include in the CEMP, submitted to the CSC, a construction traffic plan indicating the timing of vehicle journeys to avoid peak traffic hours, when people get to work, pupil goes to school and back home or peak tourist season. The contractor will also coordinate with traffic police of Bac Quang and Vi Xuyen districts to implement appropriate traffic diversion schemes to avoid inconvenience due to subproject operations to road users and schedule transport of material to avoid congestion, setup clear traffic signal boards and traffic advisory signs at the start and end points of the road, at the junction to Viet Lam town and Tan Quang T-junction and at the sensitive locations likes schools, kindergartens, medical clinics and markets. The contractor will

also install bold diversion signs that would be clearly visible even at night and provide flag persons to warn of dangerous conditions. A traffic officer will be designated for each construction site. Material transportation will be minimized in Saturday morning during the market session.

14. Cumulative impacts from the subproject and Dong Tam - Dong Tien Inter-commune road

110. ***Impacts:*** The start point of Dong Tam - Dong Tien Inter-commune road is about 500m from Km0+500 of the subproject road. This project upgrading 9 km road connects to Dong Tien commune center. The construction activities of the two projects at the same time will create a heavy burden to the local infrastructures and services like water supply, electricity, road network, and waste treatment system. The impact will mainly take place in Dong Tam commune and impact directly to commune's infrastructure and service and local people. However, the impact is not large as Dong Tam - Dong Tien Inter-commune project is nearly complete at the moment and it will be put in operation in 2017.

111. ***Mitigation measures***: PMU and EPS will work with Dong Tam CPC and the contractor of Dong Tam - Dong Tien Inter-commune road to find out a suitable construction schedule, machine and worker mobilization plan avoid concentrate construction works at the same time. The contractor will inform Dong Tam CPC the construction schedule and scope in advance. The selection of material mines, borrow pit and dumping site for the subproject will also consider the demands from Dong Tam - Dong Tien Inter-commune road project.

C. Potential Imacts and Mittigation Measures in the Operation Phase

1. Driving conditions, community safety and impact from, noise, vibration arising from increasing traffic density

112. The upgrading and construction of the road is likely to increase the vehicle speeds on the road. Projected future traffic flows indicate moderate flows which are unlikely to significantly worsen community safety issues. Increases in traffic flow will possiblly create traffic jam conditions, especially at the market area in Dong Tam commune at the market session every Saturday morning. On the other hand, the condition of the road facilities will be enhanced and driving conditions should improve. The beneficiaries of the subproject are local people in Bac Quang and Vi Xuyen districts and people who travel on the subproject road. This is an average impact as the subproject road will be upgraded to Grade IV - Moutain road and creates favorable travel condition for people of the two districts. However the increasing traffic density could also increase, noise and vibration and have negative impacts to the hearing and respiratory system of local people living along the subproject road.

113. **Mitigation measures:** Ha Giang DOT will install speed limit board and traffic calming measures such as speed humps at residential areas and some other sensitive points. Hazard warning signboards will be installed at junctions with National Road No.2 (Viet Lam and Tan Quang T-junctions) and the start and end point of the two sections. The Ha Giang DOT will cooperate with local traffic police to navigate the transportation at the section pass through Dong Tam market, especially on Saturday Morning - the market session day.

2. Favorable conditions for transportation of goods and people movement

114. **Impacts:** The paved road will reduce journey times and vehicle operating costs. The completion of section 2 will connect the network, reduce the croweded situation of NH 2. The

road will support stable transportation from Binh Vang Industrial Zone to the border area around the year. It will also support transportation of goods, especially agricultural product, save time and increase the profit for local people. The completion of the road will favor people in the 4 commune/ town of Vi Xuyen and Bac Quang districts and surrounding residential areas as well as people who doing business in these two districts.

VII. INFORMATION DISCLOSURE, CONSULTATION AND PARTICIPATION

115. The objectives of the stakeholder consultation process that took place during subproject preparation was to disseminate information on the subproject and its expected impact, long-term as well as short-term, among primary and secondary stakeholders, and to gather information on relevant issues so that the feedback received could be used to address these issues at early stages of subproject design. Another important objective was to determine the extent of the concerns amongst the community, to address these in the subproject implementation and to suggest appropriate mitigation measures.

A. Public Consultation Preparation

116. Stakeholders are people, groups, or institutions that may be affected by, can significantly influence, or are important to the achievement of the stated purpose of a proposed intervention. The stakeholders consulted for the construction of the subproject road included representatives from Ha Giang DPI, DONRE, and DARD. Consultation has also been implemented with representatives from Ngoc Linh, Trung Thanh and Dong Tam communes in Vi Xuyen and Bac Quang districts. Among 65 people have been consulted, 16 are women, make up 25%. Consultations took place in September 2016.

B. Informaton Dessimination During Public Consultation

117. Providing information through local authority offices will provide a conduit for the improvement of the subproject implementation to better serve the stakeholders. Public consultation can also assist in:

i) harnessing cooperation from informed people to help local authorities reconfirm the extent of local permits and licenses that will be required at a later stage;
ii) obtaining cooperation from informed residents and groups which to avoid cost and time in dealing with complaints;
iii) identifying local infrastructure subprojects or other local initiatives that will interface with the subproject roads with assistance from informed local authorities;
iv) the collection of relevant information on the current condition of the local environment including aspects of forest and wildlife and conservation.

118. The information disseminated during public consultation included: (i) background of the Project and subproject; (ii) basic information related to ADB and the Government requirement for environmental protection and management; (iii) potential impacts during subproject implementation and mitigation measures; and (iv) the grievance redress mechanism.

C. Use the Results of Public Consultation

119. The results of the public consultations are recorded in Table 12 and 13 below. In general, all the relevant stakeholders are support the implementation of the subproject. As the subproject located in the low population density and the main construction work will be upgrade road surface based on the existing road foundation, no house must be relocated and no major land acquisition will be taken, the local people is totally support the subproject implementation.

Table 10 – Main issues and information from local authorities

Main issues	Information from relevant authorities
Forest in the subproject area	Ha Giang DARD: There is no special forest in the subproject area and its vicinity. Protection forest is on the top of some mountains along the subproject road and at a distance of about 1 km. The forest is managed by The Management Board under Program 611 and will be changed after forest delivering program to local people complete.
Biodiversity in the subproject area	Ha Giang DONRE: There are 6 nature reserve/ conservation areas in Ha Giang but they are all far from the subproject area. There is no rare or endangered fauna and flora species in the subproject area

Table 11 – Main environmental concerns from public consultation

Concerns expressed	How concerns are addressed in IEE
Increasing ore exploitation activities as the consequence of improved driving condition	Ha Giang DOT will install speed limit board and road hump at the residential areas and some other sensitive points. Danger cross signboard will be installed at the cross points of road to National Road No.2 (Viet Lam and Tan Quang T-junctions) and the start and end point of the two sections.
Cumulative impact of the subproject implementation and the construction of Dong Tam - Dong Tien inter-commune road in Dong Tam commune, Bac Quang district	PMU and EPS will work with Dong Tam CPC and the contractor of Dong Tam - Dong Tien Inter-commune road to find out a suitable construction schedule, machine and worker mobilization plan avoid concentrate construction works at the same time. The contractor will inform Dong Tam CPC the construction schedule and scope in advance. The selection of material mines, borrow pit and dumping site for the subproject will also consider the demands from Dong Tam - Dong Tien Inter-commune road project.
Road safety issues at the sections go through high residential areas	Speed limit/ loading limit will be installed at the start and end points of both sections and the 2 junctions to Viet Lam town center and Tan Quang commune, National Road No.2. Road humps will be installed when the road goes through the sensitive areas such as residential areas of Viet Lam town; Dong Tam and Trung Thanh commune centers, Na Dam village, Ngoc Linh commune, Vi Xuyen district. Road hump and side board should also be installed at the areas of school at different level, kindergarten, market, commune center and medical clinic
Traffic jams at the section passes through Dong Tam market	Ha Giang DOT will cooperate with local traffic police to navigate the transportation at the section pass through Dong Tam market, especially on Saturday Morning - the market session day

120. The environmental assessment process under the SPS 2009 requires the disclosure of the IEE. The IEE, including the EMP will be displayed at the PPC Headquarters and on the ADB website. Ha Giang PMU will responsible for IEE translation to Vietnamese and disclose at Ngoc Linh, Trung Thanh, Dong Tam communes; Viet Lam town of Vi Xuyen and Bac Quang districts.

VIII. GRIEVANCE REDRESS MECHANISM

A. Purpose of the mechanism

121. During the preparation of the subproject, information is disseminated to local people on the scope of the subproject; environmental, social impacts and the grievance redress mechanism. Negative impacts of an environmental or social nature, or resettlement impacts, may occur during the construction and operational phases. Any comments/ suggestions of local people will be solved quickly, transparently in accordance with protected the law, particularly for people affected by the subproject. This grievance redress mechanism is classified by level and responsibilities of involved parties. The GRM will be disclosed with the IEE and other safeguard documents to ensure that potentially affected persons are aware of it and their entitlement to raise complaints. During construction, the Contractor will appoint a member of his staff to act as the focal point, who will liaise with the Community Supervision Board and, if appropriate, the complainant(s) to address and seek solutions to any grievance that relates to the Contractor's actions.

B. Grievance redress process

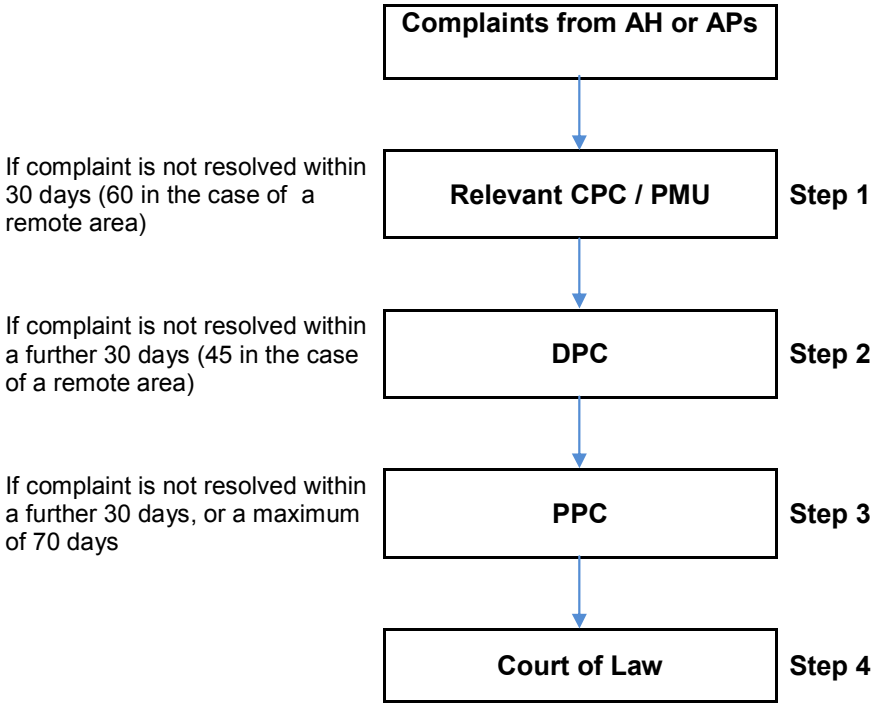
122. There are three steps to address complaints received from stakeholders:

***Stage 1*:** If a household or individual has any complaint he/she can submit a complaint in written or verbal form to the representative of the CPC-community monitoring board (usually the Deputy Chairman of the commune/town). The CPC will work with PMU to solve complaints and a representative PMU will respond in written form to the complainant. The CPC, as a whole body will meet personally with the aggrieved affected household and will have 30 days and a maximum of 60 days after the lodging of the complaint to resolve the complaint, however, depending upon whether it is a complicated case or case comes from a remote area. The CPC secretariat is responsible for documenting and keeping file of all complaints that it handles.

Stage 2: If after 30 days or 45 days (in remote areas) the aggrieved affected household does not hear from the CPC, or if the affected household is not satisfied with the decision taken on his/her complaint, the affected household may bring the case, either in writing, to any member of the DPC. The DPC in turn will have 30 days or a maximum of 70 days after the lodging of the complaint to resolve the case, however, depending on whether the case is complicated or in remote area. The DPC is responsible for documenting and keeping file of all complaints that it handles and will inform the District Resettlement Committee (DRC) of any decision made and the DRC is responsible for supporting DPC to resolve AH's complaint. The DPC must ensure that the complainant is notified of the decision made

Stage 3: If after 30 days or 45 days (in remote area) the aggrieved affected household does not hear from the DPC, or if the affected household is not satisfied with the decision made on his/her complaint, the affected household may bring the case, either in writing, to any member of the PPC. The PPC has 30 days or a maximum of 70 days to resolve the complaint to the satisfaction of all concerned. However, depending if the case is complicated or from a remote area The PPC is responsible for maintaining records of complaints received, action taken and outcomes.

Stage 4: If efforts to resolve disputes using the grievance procedures remain unresolved or unsatisfactory, after a period of thirty days, complainants have the right to bring the case to a Court of law for adjudication. The decision of the Court is binding on all parties.


Complaints from AH or APs
If complaint is not resolved within 30 days (60 in the case of a remote area)
Relevant CPC / PMU
Step 1
If complaint is not resolved within a further 30 days (45 in the case of a remote area)
DPC
Step 2
If complaint is not resolved within a further 30 days, or a maximum of 70 days
PPC
Step 3
Court of Law
Step 4

IX. ENVIRONMENTAL MANAGEMENT PLAN

A. Implementation Arrangements

123. Ha Giang PMU will recruit one Environment Safeguard Specialist (ESS) under the Loan Implementation Consultants (LIC) to support subproject implementation in Ha Giang. The ESS will support the PMU to update the EMP and as well as monitor the compliance of the contractors during construction phase. The ESS will also be responsible for training and capacity building on the implementation of the EMP.

124. The PMU will engage a Construction Supervision Consultant (CSC) for the monitoring and supervision of the subproject in general and for environmental monitoring as well. The CSC will ensure that the contractors implement the provisions of the subproject EMP.

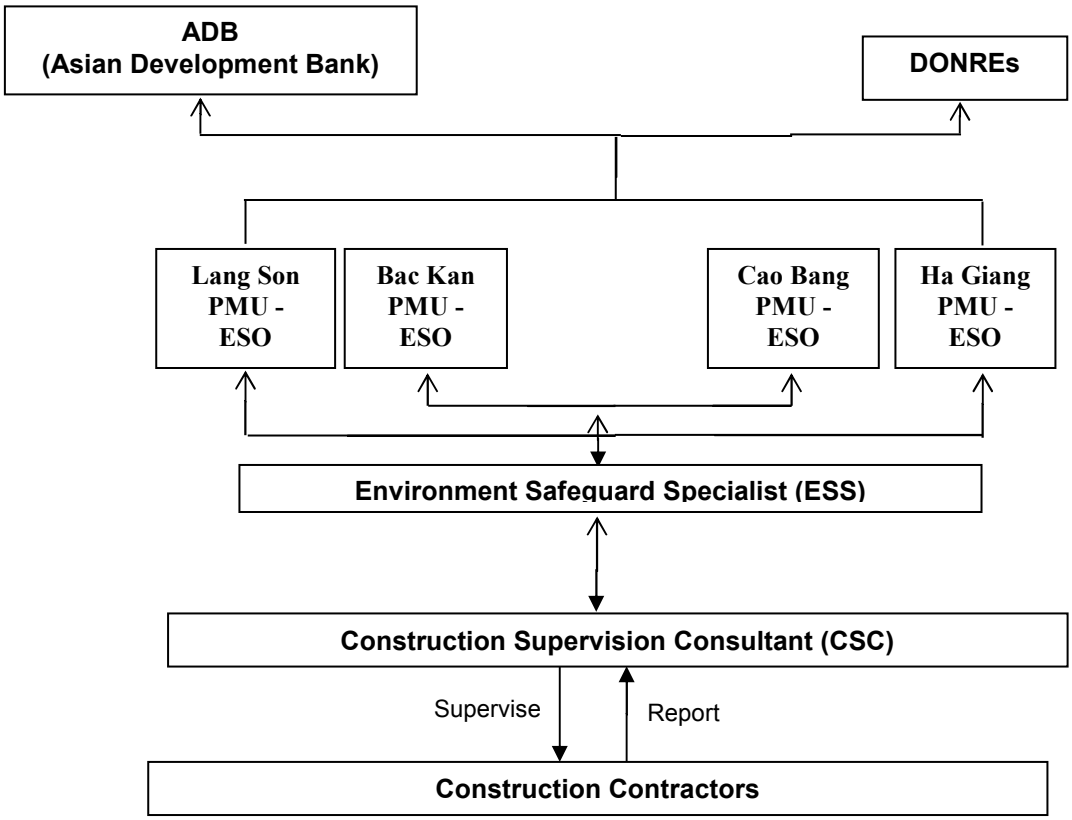
Table 12 – Responsibilities for EMP implementation

Agency	Responsibilities
Ha Giang Project Management Unit under DPI (PMU)	- Ensure that EMP provisions are strictly implemented during various subproject phases (design/pre-construction, construction and operation) to mitigate environmental impacts to acceptable levels. - Undertake monitoring of the implementation of the EMP (mitigation and monitoring measures) with assistance from CSC and ESS. - Ensure that Subproject implementation complies with ADB's environmental policy and safeguards policy statement (SPS 2009) principles and requirements - For subproject duration, commit and retain dedicated staff within PMU as environment and safeguards staff to oversee EMP implementation - Ensure that environmental protection and mitigation measures in the EMP are incorporated in the detailed design. - With the support from ESS, updated EMP to suitable with any changing in subproject scope or any unanticipated impact rise. - Obtain necessary environmental approval(s) from DONRE prior to award of civil works contracts - Include the Subproject updated EMP in the bid and contract documents for civil works - Establish an environmental grievance redress mechanism, as described in the IEE, to receive and facilitate resolution of affected peoples' concerns, complaints, and grievances about the Subproject's environmental performance - With assistance from ESS, prepare semi-annual environmental monitoring reports for submission to ADB - Based on the results of EMP monitoring, identify environmental corrective actions and prepare a corrective action plan, as necessary, for submission to ADB.
Environmental Safeguards Staff (ESO)	- PMU staff support for EMP implementation - Work closely with ESS to daily supervise of EMP implementation and preparation of EMP monitoring report
Environment Safeguard Specialist (ESS)	- Update EMP to make it suitable with the current condition or whenever subproject scope change or any unanticipated impact rise. - Ensure that the environmental protection and mitigation measures identified in the EMP for the design stage has been incorporated in the detail design; - Assist PMU to ensure that all environmental requirements and mitigation measures from the IEE and EMP are incorporated in the bidding documents and contracts. - During detailed design phase carry out baseline data collection on air quality, noise and surface water quality (as specified in the EMP) - During detailed design phase, prepare method statement (Waste Management

	and Spoils Disposal Plan) described in the IEE/EMP. - Implement all mitigation and monitoring measures for various subproject phases specified as ESS's tasks in the EMP - Work with PMU to execute any additional environmental assessment prior to subproject construction as required in the EMP (e.g., preparation of new or supplementary environmental assessment in case of change in alignment that will result to adverse environmental impacts that are not within the scope of the IEE prepared during loan processing, etc.) - Undertake environmental management capacity building activities for PMU as described in the IEE and EMP. - Engage international and national environment specialists to ensure proper implementation of EMP provisions. Through these specialists, the ESS shall: (i) ensure proper and timely implementation of ESS's tasks specified in the EMP, (ii) conduct environmental training as specified in the IEE/EMP for PMU, (iii) conduct workers' orientation on EMP provisions, (iv) undertake regular monitoring of the contractor's environmental performance, as scheduled in the EMP (v) conduct field measurements for surface/ground water quality, dust and noise as required in the EMP, and (v) prepare environmental baseline report and environmental semi-annual environmental monitoring reports , as specified in the EMP, for submission to ADB.
Construction Supervision Consultant (CSC)	- Provide the ESS relevant information as well as full access to the subproject site and all project-related facilities (such as construction yards, workers' camps, borrow and quarry areas, crushing plants, concrete mixing plants, etc.) to monitor contractors' implementation of the subproject EMP, assess environmental impacts resulting from on-going site works and operation related facilities, undertake environmental effects monitoring and orientation of workers on EMP implementation. - Undertake day-to-day subproject supervision to ensure that contractors properly implement the EMP. - Orient workers on EMP implementation, and health and safety procedures - Document and report to PMU on occupational accidents, diseases and incidents - As part of regular progress report submission to PMU, prepare reports on the status of the contractors' implementation of the EMP and health and safety issues - Engage an environmental staff to ensure proper implementation of the above tasks.
Contractors	- Recruit qualified environmental officer to ensure compliance with environmental statutory and contractual obligations and proper implementation of the Subproject EMP - Provide sufficient funding and human resources for proper and timely implementation of required mitigation measures in the EMP - Implement additional environmental mitigation measures, as necessary
Ha Giang Department of Transportation (DOT)	- Responsible for operation and maintenance of Subproject road - Implement EMP monitoring during operation
Ha Giang Department of Natural Resources and Environment (DONRE)	Review and approve environmental assessment reports required by the Government. - Undertake monitoring of the subproject's environmental performance based on their mandate

The organization structure of Environmental Management Plan is showed in the chart below:

Figure 3 – EMP Implementation Organization Chart



B. ENVIRONMENTAL MITIGATION

125. The anticipated environmental impacts and mitigation measures discussed in the previous section is presented in Table 15. The table also shows responsibilities and timeframe/schedule for implementation of mitigation measures and monitoring.

126. Table 15 shows that most mitigation activities during pre-construction are to be implemented by the ESS while during construction, measures shall be primarily implemented by the contractors. During the operation stage, DOT shall undertake environmental mitigation and monitoring requirements specified in the EMP. To ensure implementation of mitigation measures during construction, the EMP shall be included in the tender and contract documents for civil works. Contractors' conformity with environmental contract procedures and specifications shall be regularly monitored by PMU with assistance from CSC and results shall be reported semi-annually to ADB.

Table 13 - Detailed Environmental Mitigation Plan

		Impact Mitigation			
Environmental Concern	Objective	Proposed Mitigation Measures	Responsible to Implement	Timing	
Design and Pre-construction Phase					
1. Land acquisition and resettlement	Control the impact of land acquisition and resettlement	Monitor the compensation process to ensure it is suitable with the Land Acquisition and Resettlement Report	ESS	Before construction	N
2. Unexploded Ordnance	Avoid accidents due to any kind of UXO	1. Coordinate with appropriate agencies at the design stage to identify if UXO is a potential threat to works 2. Based on the findings, engage an authorized UXO clearing contractor, as necessary. 3. Ensure that the contractors shall only commence site works after the UXO clearing firm has certified that the subproject areas are already cleared.	ESS	Before bidding	N
Construction Phase					
1. Impacts on flora and fauna	Avoid and minimize impact to flora and fauna in the subproject area	1. Minimized vegetation covers clearances. 2. All replanting works to utilize locally available non-invasive species 3. The contractors will not use or permit the use of wood as a fuel for the execution of any part of the works, including but not limited to the heating of bitumen and bitumen mixtures, and to the extent practicable shall ensure that fuels other than wood are used for cooking, and water heating in all camps and living accommodations. 4. Contractors will not buy or use wood from the illegal sources (that come from the illegal logging) 5. No construction camps, concrete mixing plants, material storage sites are to be located in the forest area near Km20 of the subproject road. 6. Contractors will take all precautions necessary to ensure that damage to vegetation is avoided due to fires resulting from execution of the works. The Contractors will immediately suppress the fire, if it occurs, and shall undertake replanting to replace damaged vegetation.	CPCs; Contractors	Through out construction phase	A s r c
2. Local facilities	Prevent interruption of services such as electricity and water supply during relocation of the local facilities. Repair damaged access roads.	1. Reconfirm power, water supply, and telecommunications likely to be interrupted by the works. 2. Contact all relevant local authorities for facilities and local people to plan re-provisioning of power, water supply, and telecommunication systems. 3. Facilities shall be relocated and reconnected well ahead of commencement of construction works and contractors shall coordinate with facility company for relocation and reconnection well before works commence. 4. Affected communities shall be properly informed in advance. 5. Reconnection of facilities shall be done at the shortest practicable time before	Contractors	Before construction start and through out the construction phase	A s r

		construction commences. 6. Facilities damaged during construction shall be reported to the CSC, PMU and facility authority and repairs arranged immediately. 7. Access roads, agricultural land and other properties damaged during transport of construction materials and other project-related activities shall be reinstated upon completion of construction works at each section			
3. Materials exploitation and management of quarry, borrow pits and temporary storage area	Minimize impacts from materials extraction, transportation and storage.	1. Prioritize use of Pha Village, Trung Son Village, Lung Loet quarries; borrow pits at Dong Tam T-junction, borrow pits in Minh Thanh village and update the list of quarries and borrow pits monthly and report to PMU and minimize impacts on other local resources. 2. Reestablish vegetation cover and trim slopes to an even profile at any closed quarries and borrow pits. 3. Stockpile topsoil for later use and fence and re-contour borrow pits after use. Topsoil, overburden, and low-quality materials shall be properly removed, stockpiled near the site, and preserved for rehabilitation. 4. During quarry/borrow site operation, provide adequate drainage to avoid accumulation of stagnant water. 5. Ensure borrow pits are left in a tidy state with stable side slopes and proper drainage in order to avoid creation of water bodies favorable for mosquito breeding. 6. Upon completion of extraction activities, quarry and borrow pits shall be dewatered and fences shall be installed, as appropriate, to minimize health and safety risks. 7. To avoid drowning when pits become water filled, measures such as fencing, providing flotation devices such as a buoy tied to a rope, etc. shall be implemented.	Contractors	Though out construction phase	S s a a
4. Waste and spoil disposal	Control spoils and waste disposal, lubricant and hazardous wastes.	1. Areas suitable for disposal to be agreed with CPCs and Ha Giang DONRE checked and recorded by the CSC, ESS/PMU and monitored 2. Spoil and waste will not be disposed of in streams or other surrounding water bodies and will be disposed only to areas approved by local authorities as listed in Paragraph 108 of this IEE. 3. Surplus material to be distributed to local people for use in landscaping / forming building platforms. 4. Spoil disposals shall not cause sedimentation and obstruction of flow of watercourses, damage to agricultural land and densely vegetated areas. 5. Under no circumstances will spoils be dumped into watercourses (rivers, streams, drainage, irrigation canals, etc.) 6. The spoils disposal site shall be located away from watercourses and shall be	Contractors	Through out construction phase	T c s s m v m a

		protected from erosion by avoiding formation of steep slopes and grassing.			
5. Bitumen heating and compaction activities	Avoid air pollution, traffic obstacles and contamination	1. Locate, bitumen heating off road and (wherever practicable) far from sensitive receivers (residential areas, schools, clinics, etc.) and streams and install and maintain dust suppression equipment. 2. No open fuel wood burning for bitumen heating 3. Prevent soil contamination requiring contractors to instruct and train their workers on storage and handling of materials and chemicals that can potentially cause soil contamination. 4. Recycle debris generated by dismantling of existing pavement subject to the suitability of the material.	Contractors	Through out construction phase	T c s
6. Noise, dust and vibration	To minimize negative impacts from noise, dust and vibration during construction period	1. Restrict works to daylight hours within 500 m of residential settlements and local clinics. 2. Powered mechanical equipment and vehicle emissions to meet national TCVN/QCVN standards. All construction equipment and vehicles shall have valid certifications indicating compliance to vehicle emission and noise creation standards. 3. Monitor and investigate complaints follow the Grievance Redress Mechanism of the project. 4. Keep material storage site moist for the fine material like sand. 5. Tightly cover trucks transporting construction materials (sand, soil, cement, gravel, etc.) to avoid or minimize spills and dust emission. 6. On rainless days undertake watering, at least twice per day, on dusty and exposed areas at construction yards, materials storage sites, construction sites, access roads, quarry areas, borrow sites and other subproject areas where residential sites and other sensitive points such as schools, clinics… are located nearby. 7. Clean up road surfaces after work. 8. To protect buildings and structures from vibration, non-vibrating roller shall be used in construction sites near buildings and structures. 9. Structures, which are damaged due to vibration caused by the construction activities, shall be repaired immediately as directed by ESS/PMU. 10. Machinery shall be turned off when not in use. 11. Pile driving during to be schedule for daytime if construction site is near sensitive points or approved by DONRE, CPCs and ESS/PMU. 12. Impose speed limits on construction machines and vehicles to minimize dust emission along areas where sensitive pints are located (houses, schools, clinics, pagodas etc.). Speed limits	Contractors	Through out construction phase	T c s

		to be imposed by setting up warning signs, instructions to drivers, and monitoring of driver behaviour.			
7. Erosion control/ run off	Protect established facilities	1. Establish vegetation and erosion protection immediately after completion of works in each stretch / sector. 2. Stockpile topsoil for immediate replanting after cutting. 3. Minimize damage and excavation of surrounding vegetation during slope formation. 4. Protect the cut slope with planted vegetation, bioengineering or conventional civil engineering structures as soon as practicable after excavation. 5. Include and implement appropriate measures for slope protection, i.e. vegetation cover and stone pitching, as required in the detailed construction drawings. 6. Prevent erosion and protect the excavated slope with temporary or permanent drainage as soon as practicable after cutting. 7. If new erosion occurs accidentally, back fill immediately to restore original contours. 8. Low embankments will be protected from erosion by seeding and planting indigenous grasses that can flourish under local conditions.	Contractors	Through out construction phase	T c s ri a E
8. Streams/ Rivers protection and bridge/culvert construction	Protect Streams/ Rivers and maintain flows	In sections along and near streams and water bodies: 1. Rocks and stones will be disposed not to block streams. 2. Cofferdams, silt fences, sediment barriers or other devices will be used as appropriate based on the design to prevent migration of silt during excavation and boring operations within streams. If cofferdams are used, these will be dewatered and cleaned to prevent siltation by pumping from cofferdams to a settling basin or a containment unit. 3. Other erosion control measures above and covering open surfaces with grasses and creepers to reduce runoff will be implemented as early as possible in construction.	Contractors	Through out construction phase	1 c
9. Large influx of construction worker	Construction camps and worker camps not to cause any negative impact to surrounding environment (forest area, water bodies, wild animal); control of infectious diseases.	1. Construction and worker camp location and facilities located at least 500m from settlements and agreed with local communities and facilities approved by ESS and managed to minimize impacts. 2. Hire and train as many local workers as possible. 3. Provide adequate housing for all workers at the construction camps and establish clean canteen/eating and cooking areas. 4. Mobile toilets (or at least pit latrines in remote areas) shall be installed and open defecation shall be prohibited and prevented by cleaning lavatories daily and by keeping toilets clean at all times. 5. Provide separate hygienic sanitation facilities/toilets and bathing areas with sufficient water supply for male and female	Contractors	Through out construction phase	T c s w

		workers. 6. Borrow pits and natural depressions with pre-laid impervious liners will be used to dispose of scarified/scraped asphalt, and then covered with soil. This will check potential groundwater contamination. 7. As much as possible, food shall be provided from farms nearby and bush meat supplies will be banned to discourage poaching. 8. Camp site will be cleaned up to the satisfaction of and local community after use. 9. Solid and liquid waste will be managed in line with waste management plan. 10. All waste materials shall be removed and disposed to disposal sites approved by local authorities 11. Land used for campsites shall be restored to the original condition as far as practicable and the area shall be planted with appropriate trees / shrubs as soon as practicable after it is vacated and cleaned. 12. Register temporary stay for workers with police.			
10. Safety precautions for workers and public safety	Ensure worker safety	1. Provide fire extinguishers and first aid facilities at construction sites, and workers' camps and ensure these are readily accessible by workers. 2. Scheduling of regular (e.g., weekly tool box talks) to orient the workers on health and safety issues related to their activities as well as on proper use of personal protective equipment (PPE). 3. Fencing on all excavation, borrow pits and sides of temporary bridges. 4. Workers shall be provided with appropriate PPE such as safety boots, helmets, safety glasses, earplugs, gloves, etc. at no cost to the employee. 5. Where worker exposure to traffic cannot be completely eliminated, protective barriers shall be provided to shield workers from traffic vehicles. 6. Workers shall be provided with reliable supply of potable water. 7. Construction camps shall be provided with adequate drainage to avoid accumulation of stagnant water. 8. Construction camps shall be provided with toilets/sanitation facilities in accordance with local regulations to prevent any hazard to public health or contamination of land, surface or groundwater. These facilities shall be well maintained to allow effective operation. 9. Ensure reversing signals are installed on all construction vehicles. 10. Designate responsibility for maintaining safety measures to a senior member of the Contractor's staff	Contractors	Through out construction phase	T c s
11. Traffic Management	Minimize disturbance of	1. Communicate to the public through local officials regarding the scope and schedule of	Contractors	Through out construction	T c

	traffic	construction, as well as certain construction activities causing disruptions or access restrictions. 2. Coordinate with traffic police of Vi Xuyen and Bac Quang districts to implement appropriate traffic diversion schemes to avoid inconvenience due to subproject operations to road users, ensure smooth traffic flow and avoid or minimize accidents, traffic hold ups and congestion 3. Coordinate with traffic police of Vi Xuyen and Bac Quang districts to schedule transport of materials to avoid congestion, set up clear traffic signal boards and traffic advisory signs at the roads going in and out the road and bridge construction sites to minimize traffic build-up. 4. Provide safe vehicle and pedestrian access around construction areas. 5. Install bold diversion signs that would be clearly visible even at night and provide flag persons to warn of dangerous conditions. 6. Provide sufficient lighting at night within and in the vicinity of construction sites. 7. Designate traffic officers in construction sites. 8. Avoid material transportation on Saturday morning, during the market session.		phase	s a ir s J r N N L c T
12. Cumulative impact	Minimize the intensify impacts of two subproject construction at the same time	1. Inform construction schedule and scope to Dong Tam CPC in advance 2. Work with the contractor of Dong Tam - Dong Tien Inter-commune road Project to find out suitable construction, material transportation time. 3. Consider the capacity of material mines, borrow pits and disposal sites for both project.	Contractors	Through out construction phase	T c s
Operation Phase					
1. Generation of noise, vibration; road safety issues	To minimize noise, vibration and road accident	1. Undertake road safety awareness campaigns for local residents and other road users of provincial road No184. 2. Install and maintain road warning signs and markings. 3. Monitor road accidents and implement necessary preventive measures (awareness campaigns, provision of appropriate road furniture to enhance road safety and control traffic).	Ha Giang DOT	Through out operation phase	A pr

C. Environmental monitoring

Environment Compliance Monitoring

127. Table 16 below shows the program for monitoring the compliance on various provisions of the EMP during construction and operation phases. ESS needs to implement a number of measures during detailed design phase (e.g., incorporation of environmental design measures into the detailed design, update EMP, etc.) and this will be confirmed by PMU to ADB. During construction, most of the mitigation the contractors shall implement measures and CSC and

ESS shall monitor their environmental performance, in terms of implementation of such measures. The timing or frequency of monitoring is also specified in Table 16. During operation EMP implementation shall be the responsibility of Ha Giang DOT.

128. Prior to implementation of the subproject the IEE and EMP will be updated and amended, as necessary, by ESS after the detailed designs are complete and contracting arrangements are known. Such updating shall be based on reconfirmation and any additional information on the assumptions made at this feasibility stage on location scale and expected conditions of the subproject.

Environmental Effects Monitoring

129. ESS undertakes baseline environmental monitoring for air quality, noise and surface water quality. Sampling will be conducted prior to start of site works at the specified locations. During construction, ESS shall undertake quarterly monitoring of surface water quality and air quality and noise in the same locations sampled during pre-construction. Additional sampling occasions shall be carried out and additional parameters shall be analyzed (as necessary) to validate complaints and/or investigate pollution events caused by the subproject.

Table 14 - Environmental Compliance Monitoring

Performance and Impact Monitoring					
Environmental Concern	Parameter to monitor	Location	Frequency & Verification	Responsible to Monitor	Monitoring Cost
Design and Pre-construction Phase					
1. Land acquisition and resettlement	Compensation documents	N/A	Only one time before the construction commencement	Ha Giang DPI/ DONRE; PMU	Included in the operation budget of PMU
2. Unexploded Ordnance	Checking documents/ certificates	N/A	Once, before construction start	PMU	Included in the operation budget of PMU
Construction Phase					
1. Loss of trees and impacts to fauna	Check of implementation	Along the subproject road; worker camps area	Before construction commencement and through out construction phase. Part of daily construction supervision	ESS/ PMU CSC	Included in the operation budget of PMU/ ESS/ CSC
2. Local facilities	Check of implementation	Along the road, near the residential areas	Before construction commencement and through out construction phase. Part of daily construction supervision	ESS/ PMU CSC	Included in the operation budget of PMU/ ESS/ CSC
3. Materials exploitation and management of quarry and borrow pits	Check of implementation	Subproject site, quarries and borrow pit areas	Bi-weekly Part of daily construction supervision	ESS/ PMU CSC	Included in the operation budget of PMU/ ESS/ CSC
4. Waste and spoil disposal	Check of implementation	Through out construction site, material storage areas, machines and vehicles maintenance area	Bi-weekly Part of daily construction supervision	ESS/ PMU CSC	Included in the operation budget of PMU/ ESS/ CSC
5. Compaction activities and bitumen heating	Check of implementation	Through out construction site	Bi-weekly Part of daily construction supervision	ESS/ PMU CSC	Included in the operation budget of PMU/ ESS/ CSC
6. Noise, dust and vibration	Check of implementation	Through out construction site	Bi-weekly and spot checks Part of daily construction supervision	ESS/ PMU	Included in the operation budget of PMU/ ESS CSC
7. Land slide, erosion	Check of implementation	Through out	Bi-weekly	ESS/ PMU	Included in the

control/ run off		construction site and high risk slope as agreed with ESS/PMU (	Part of daily construction supervision	CSC	operation budget of PMU/ ESS/ CSC
8. Stream protection and bridge/culvert construction	Check of implementation	Through out construction sites, 14 stream cross the road, material storage sites, temporary waste disposal areas	Bi-weekly Part of daily construction supervision	ESS/ PMU CSC	Included in the operation budget of PMU/ ESS/ CSC
9. Large influx of workers. Construction and worker camps, sanitation and diseases	Check of implementation	Through out construction sites and worker camps	Before establishment of the facilities and through out the construction phase Part of daily construction supervision	ESS/ PMU CSC	Included in the operation budget of PMU/ ESS/ CSC
10. Safety precautions for workers and public safety	Check of implementation. Check compliance to Labor Code of Vietnam and other relevant Decision, Decree and Circular under Government requirements	Through out construction sites	Bi-weekly Part of daily construction supervision	ESS/ PMU CSC	Included in the operation budget of PMU/ ESS/ CSC
11. Traffic Management	Check of implementation	Through out construction sites; at start and end of the road; junctions with road to National Road No.2	Bi-weekly Part of daily construction supervision	ESS/ PMU CSC	Included in the operation budget of PMU/ ESS/ CSC
12. Collaborate with Dong Tam - Dong Tien Inter-commune road Project	Check of implementation, checking documents	Construction sites in Dong Tam commune; material transportation road, borrow pit, mines and dumping site	Bi-weekly Part of daily construction supervision	ESS/ PMU CSC	Included in the operation budget of PMU/ ESS/ CSC
Operation Phase					
1. Road safety	Check of implementation	Along the route	Semi-annual	Ha Giang DOT	Included in the operation budget of DOT

Table 15 - Environmental Effects Monitoring

Construction Phase					
1. Noise, dust and vibration	Ambient air quality (temperature, moisture, wind direction and speed, PM10, PM2.5, PB, NO_2, SO_2…); Noise level (average noise level, maximum noise level, vehicles frequency…)	9 monitoring points. 2 points at start and end point of the subproject; 4 points at residential areas of Ngoc Linh (Nam Dau village), Dong Tam, Trung Thanh communes and Viet Lam town. 1 point at Bac Quang T-junction in Trung Thanh commune; 1 point at Na Tang reservoir and 1 point at Dong Tam market	1 time before construction start and semi-annually during 2 years construction time (5 times in total	ESS	2700 USD[18]
2. Water quality	Surface water quality	14 sampling points at 20m downstream of the crossing streams. 01 sampling point in Na Tang Reservoir (15 in total)_	1 time before construction start and semi-annually during 2 years construction time (5 times in total)	ESS	37,500 USD
	Ground water quality	14 sampling points in 14 stream crossing points (from nearby drilled well)	1 time before construction start and annually during 2 years construction time (3 times in total)	ESS	16,800 USD[19]

[18] Figures have been estimated base on environmental monitoring cost norm of Ha Giang province.
[19] Figures have been estimated base on environmental monitoring cost norm of Ha Giang province.

D. Reporting

130. PMU will submit the following reports to ADB:

(i) *Monitoring report for baseline environment:* this report shows the result of baseline environment as implemented by ESS on ambient air quality, surface water quality... This report will be submitted to ADB before the construction start.

(ii) *Environmental monitoring reports:* Environmental monitoring reports will cover the status of EMP implementation in terms of required mitigation measures for different phases of the subproject, results of environmental effects monitoring (air quality, noise and surface water quality), necessary remedial actions to effectively address negative environmental impacts due to subproject implementation, status of environmental capacity building activities as well as documentation of complaints received and corresponding action/resolution. The environmental monitoring reports will be submitted to ADB semi-annually during the construction phase and annually for two years after completion of construction.

Table 16 – Reporting procedures

Project Phase	Type Of Report	Frequency	Responsibility	Submitted To Whom
Construction	**Environmental Performance Report** indicating compliance with EMP and monitoring results at the contractor site	Daily	Construction contractor	CSC
	Subproject EMP Compliance Report indicating compliance with subproject EMP and monitoring results	Quarterly	CSC	PMU
	EMP Compliance Report indicating compliance with subproject EMP and monitoring results	Semi-annually during construction phase	ESS/ PMU	ADB
Operation	**EMP Compliance Report: Operation** indicating compliance with subproject EMP commitments during operation	Annually in the first two years of operation. On-going frequency to be determined based on review after 2 years.	Ha Giang DOT	Ha Giang DONRE

Table 17 – Estimated cost for EMP Implementation (2-year construction/ 4-year in total)

Item	Estimated cost (US$)
1. Environment Safeguard Specialist (ESS)	***21,040***
1 National ESS - 06 man-months (intermittent in the first 2 years;) – 2,000 US$/month	12,000
Per diem for ESS: 48 US$ x 30 days x 6 months	8,640
Travelling cost for 2 round trips: 200 US$ x 2 trips	400
2. Environmental effects monitoring (implemented by ESS)	***57,000***
Ambient air quality: 9 monitoring locations x 5 times x 60 US$/sample[20]	2,700
Ground water quality: 14 monitoring locations x 3 times x 400 US$/sample[21]	16,800
Surface water quality: 15 monitoring locations x 5 times x 500 US$/sample[22]	37,500
3. Training/orientation, local transportation, supplies (by ESS)	***3,000***
a) Training/orientation: 1 formal training course for PMU, CSC, Contractors and DOT office of Bac Quang and Vi Xuyen districts and other "on the job" training	2,000
b) Local transportation and supplies	1,000
4. Printing Environmental monitoring report by ESS (4 reports)	***600***
Subtotal (1+2+3+4)	**81,640**
5. Contingency	**6,360**
Total (1+2+3+4+5)	**88,000**

E. Capacity Building

131. In Viet Nam, the environmental assessment process is established but environmental awareness and capability for implementation of EMP in infrastructure projects of both the executing agency and the implementation agency (PMU) are limited and in development. The safeguards staff of the PMU is usually responsible for many different task and do not have good background on safeguards issues. Usually, the engineer will be in charge of the environmental monitoring and his/ her capacity is not suitable to check the adequacy of the subproject EMP. The IEEs and EMP are referred to the environmental department in DONRE for approval. During the Project PPTA phase, PPU has been established under Ha Giang DPI with one staff has been assigned as ESO.

132. The most significant challenge is the lack of human and financial resources and necessary infrastructure. To address this constraint, Ha Giang DPI/PMU will designate a full time staff as environmental safeguards officer (ESO) to handle the environmental aspects of the subproject during implementation stage. The ESO and other relevant staff of PMU will be trained by the Environment Safeguard Specialist (ESS) during subproject implementation as "on the job" training or by formal training courses.

Table 18 – Detail capacity building program

[20] Figures have been estimated base on environmental monitoring cost norm of Ha Giang province.
[21] Figures have been estimated base on environmental monitoring cost norm of Ha Giang province.
[22] Figures have been estimated base on environmental monitoring cost norm of Ha Giang province.

Objective	1. Build capacity and procedures in undertaking systematic environmental assessments in accordance with Government regulations and ADB guidelines 2. Provide training on international best practice on environmental management, monitoring and reporting. 3. Provide guidance on how to effectively incorporate environmental measures into project design and how to incorporate EMP provisions into tender and contract documents.
Tasks/Scope of Work	1. Undertake training needs analyses and review prevailing government regulations and donor guidelines governing the assessment and management of environmental impacts for road development. 2. Review the skills of PMU and Ha Giang DOT staff to establish existing capacity on environmental assessments, environmental monitoring and implementation of mitigation measures for road development project. 3. Prepare the training plan and relevant training materials. 4. Deliver the training, which may be through a combination of hands-on assistance, on-the-job training, and training workshops. 5. Evaluate the effectiveness of the training measuring improvements in attitudes and skills achieved. 6. Modify the training documents/materials as necessary. 7. Hand-over the amended training documents/ material to the project manager for use in the delivery of the training. 8. Prepare report on result of training.
Time frame	Possible within 3 months after construction commencement
Target participant	Staff in PMU and Ha Giang DOT who responsible for environmental management
Staff resources	International and national environmental specialist with at least 15 years experience on environmental management of road projects and must possess relevant post-graduate degree in civil engineering, environmental management and other relevant courses. With working knowledge of safety issues and at least 3 years experience in conducting environmental management training.

X. CONCLUSIONS AND RECOMMENDATIONS

133. This IEE study was carried out in the Technical Assistant for Project Preparation (PPTA) phase. Primary and secondary data were used to assess potential environmental impacts in a comprehensive manner and public consultation and route reconnaissance were carried out in order complete the environmental assessments and recommend suitable mitigation measures. The IEE report provides a picture of potential environmental impacts associated with the upgrading of the subproject road and suitable mitigation measures have been recommended.

134. The implementation of the subproject "Upgrading and Improvement of PR184 from Dong Tam Commune, Bac Quang District to Ngoc Linh Commune, Vi Xuyen District, Ha Giang" will steadily improve the road quality; make it favorable for transportation, support goods transfer to and from Binh Vang Industrial Zone and reduce the traffic pressure for National Road No.2. Several actions are required during the detailed design stage to minimize impacts to acceptable levels. The negative environmental impacts from the upgrading works will mostly take place during the construction stage. All of the impacts during construction phase should be very predictable and manageable and with appropriate mitigation and few residual impacts are likely. Additional human and financial resources will be required to improve environmental capability and to progress and achieve necessary statutory compliance and environmental clearance certification for the subproject or associated activities that also require environmental permits under the environmental laws of Viet Nam – LEP 2014.

135. No further or additional impact assessment is considered necessary at this stage. At the implementation stage, PMU through ESS will develop detail EMP to monitor the schedules of mitigation measures and conduct of environmental effects monitoring activities. EMP must be updated to ensure effective environmental monitoring and should be develop follow-monitoring plan as specified in the EMP. With these measures in place, environmental impacts of the subproject should be manageable and will not result in any residual impacts, which are above accepted environmental standards.

XI. APPENDIX

A. Appendix 1: Photos of the subproject road and the vicinity

Starting point in Dong Tam commune, Bac Quang

End point in Ngoc Linh commune, Vi Xuyen

Road section in Dong Tam commune

Dong Tam Market

Existing trail - Section 2 in Ngoc Linh commune

Nam Dau Pagoda

Na Tang Reservoir

Current suspension bridge over Ngoc Ha stream

B. Appendix 2: Source of Reference Information

1. *Ha Giang Status of Environmental Report 2015*
2. *Ha Giang Climate Change Adaptation Plan (2011-2020)*
3. *Report on Pollution control under Environmental Protection Plan in 2015 Ha Giang Environmental Agency*
4. *The subproject Feasibility Report*
5. *Poverty and Social Assessment Report of the subproject*
6. *Inventory of losses report of the subproject*

C. Appendix 3: Environmental Mitigation Measures to Include into Bidding Documents

1. Impacts on flora and fauna	1. Minimized vegetation covers clearances. 2. All replanting works to utilize locally available non-invasive species 3. The contractors will not use or permit the use of wood as a fuel for the execution of any part of the works, including but not limited to the heating of bitumen and bitumen mixtures, and to the extent practicable shall ensure that fuels other than wood are used for cooking, and water heating in all camps and living accommodations. 4. Contractors will not buy or use wood from the illegal sources (that come from the illegal logging) 5. No construction camps, concrete mixing plants, material storage sites are to be located in the forest area near Km20 of the subproject road. 6. Contractors will take all precautions necessary to ensure that damage to vegetation is avoided due to fires resulting from execution of the works. The Contractors will immediately suppress the fire, if it occurs, and shall undertake replanting to replace damaged vegetation.
2. Local facilities	1. Reconfirm power, water supply, and telecommunications likely to be interrupted by the works. 2. Contact all relevant local authorities for facilities and local people to plan re-provisioning of power, water supply, and telecommunication systems. 3. Facilities shall be relocated and reconnected well ahead of commencement of construction works and contractors shall coordinate with facility company for relocation and reconnection well before works commence. 4. Affected communities shall be properly informed in advance. 5. Reconnection of facilities shall be done at the shortest practicable time before construction commences. 6. Facilities damaged during construction shall be reported to the CSC, PMU and facility authority and repairs arranged immediately. 7. Access roads, agricultural land and other properties damaged during transport of construction materials and other project-related activities shall be reinstated upon completion of construction works at each section
3. Materials exploitation and management of quarry, borrow pits and temporary storage area	1. Prioritize use of Pha Village, Trung Son Village, Lung Loet quarries; borrow pits at Dong Tam T-junction, borrow pits in Minh Thanh village and update the list of quarries and borrow pits monthly and report to PMU and minimize impacts on other local resources. 2. Reestablish vegetation cover and trim slopes to an even profile at any closed quarries and borrow pits. 3. Stockpile topsoil for later use and fence and re-contour borrow pits after use. Topsoil, overburden, and low-quality materials shall be properly removed, stockpiled near the site, and preserved for rehabilitation. 4. During quarry/borrow site operation, provide adequate drainage to avoid accumulation of stagnant water. 5. Ensure borrow pits are left in a tidy state with stable side slopes and proper drainage in order to avoid creation of water bodies favorable for mosquito breeding. 6. Upon completion of extraction activities, quarry and borrow pits shall be dewatered and fences shall be installed, as appropriate, to minimize health and safety risks. 7. To avoid drowning when pits become water filled, measures such as fencing, providing flotation devices such as a buoy tied to a rope, etc. shall be implemented.
4. Waste and spoil disposal	1. Areas suitable for disposal to be agreed with CPCs and Ha Giang DONRE checked and recorded by the CSC, ESS/PMU and monitored 2. Spoil and waste will not be disposed of in streams or other surrounding water bodies and will be disposed only to areas approved by local authorities as listed in Paragraph 108 of this IEE. 3. Surplus material to be distributed to local people for use in landscaping / forming building platforms. 4. Spoil disposals shall not cause sedimentation and obstruction of flow of watercourses, damage to agricultural land and densely vegetated areas. 5. Under no circumstances will spoils be dumped into watercourses (rivers, streams, drainage, irrigation canals, etc.) 6. The spoils disposal site shall be located away from watercourses and shall be protected from erosion by avoiding formation of steep slopes and grassing.
5. Bitumen heating and compaction	1. Locate, bitumen heating off road and (wherever practicable) far from sensitive receivers (residential areas, schools, clinics, etc.) and streams and install and maintain dust suppression

activities	equipment. 2. No open fuel wood burning for bitumen heating 3. Prevent soil contamination requiring contractors to instruct and train their workers on storage and handling of materials and chemicals that can potentially cause soil contamination. 4. Recycle debris generated by dismantling of existing pavement subject to the suitability of the material.
6. Noise, dust and vibration	1. Restrict works to daylight hours within 500 m of residential settlements and local clinics. 2. Powered mechanical equipment and vehicle emissions to meet national TCVN/QCVN standards. All construction equipment and vehicles shall have valid certifications indicating compliance to vehicle emission and noise creation standards. 3. Monitor and investigate complaints follow the Grievance Redress Mechanism of the subproject. 4. Keep material storage site moist for the fine material like sand. 5. Tightly cover trucks transporting construction materials (sand, soil, cement, gravel, etc.) to avoid or minimize spills and dust emission. 6. On rainless days undertake watering, at least twice per day, on dusty and exposed areas at construction yards, materials storage sites, construction sites, access roads, quarry areas, borrow sites and other subproject areas where residential sites and other sensitive points such as schools, clinics… are located nearby. 7. Clean up road surfaces after work. 8. To protect buildings and structures from vibration, non-vibrating roller shall be used in construction sites near buildings and structures. 9. Structures, which are damaged due to vibration caused by the construction activities, shall be repaired immediately as directed by ESS/PMU. 10. Machinery shall be turned off when not in use. 11. Pile driving during to be schedule for daytime if construction site is near sensitive points or approved by DONRE, CPCs and ESS/PMU. 12. Impose speed limits on construction machines and transportation vehicles to minimize dust emission along areas where sensitive pints are located (houses, schools, clinics, pagodas etc.).
7. Erosion control/ run off	1. Establish vegetation and erosion protection immediately after completion of works in each stretch / sector. 2. Stockpile topsoil for immediate replanting after cutting. 3. Minimize damage and excavation of surrounding vegetation during slope formation. 4. Protect the cut slope with planted vegetation, bioengineering or conventional civil engineering structures as soon as practicable after excavation. 5. Include and implement appropriate measures for slope protection, i.e. vegetation cover and stone pitching, as required in the detailed construction drawings. 6. Prevent erosion and protect the excavated slope with temporary or permanent drainage as soon as practicable after cutting. 7. If new erosion occurs accidentally, back fill immediately to restore original contours. 8. Low embankments will be protected from erosion by seeding and planting indigenous grasses that can flourish under local conditions.
8. Streams/ Rivers protection and bridge/culvert construction	In sections along and near streams and water bodies: 1. Rocks and stones will be disposed not to block streams. 2. Cofferdams, silt fences, sediment barriers or other devices will be used as appropriate based on the design to prevent migration of silt during excavation and boring operations within streams. If cofferdams are used, these will be dewatered and cleaned to prevent siltation by pumping from cofferdams to a settling basin or a containment unit. 3. Other erosion control measures above and covering open surfaces with grasses and creepers to reduce runoff will be implemented as early as possible in construction.
9. Large influx of construction worker	1. Construction and worker camp location and facilities located at least 500m from settlements and agreed with local communities and facilities approved by ESS and managed to minimize impacts. 2. Hire and train as many local workers as possible. 3. Provide adequate housing for all workers at the construction camps and establish clean canteen/eating and cooking areas. 4. Mobile toilets (or at least pit latrines in remote areas) shall be installed and open defecation shall be prohibited and prevented by cleaning lavatories daily and by keeping toilets clean at all times.

	5. Provide separate hygienic sanitation facilities/toilets and bathing areas with sufficient water supply for male and female workers. 6. Borrow pits and natural depressions with pre-laid impervious liners will be used to dispose of scarified/scraped asphalt, and then covered with soil. This will check potential groundwater contamination. 7. As much as possible, food shall be provided from farms nearby and bush meat supplies will be banned to discourage poaching. 8. Camp site will be cleaned up to the satisfaction of and local community after use. 9. Solid and liquid waste will be managed in line with waste management plan. 10. All waste materials shall be removed and disposed to disposal sites approved by local authorities 11. Land used for campsites shall be restored to the original condition as far as practicable and the area shall be planted with appropriate trees / shrubs as soon as practicable after it is vacated and cleaned. 12. Register temporary stay for workers with police.
10. Safety precautions for workers and public safety	1. Establish fire prevention tools at the construction site, worker camps and provide first aid facilities that are readily accessible by workers. 2. Scheduling of regular (e.g., weekly tool box talks) to orient the workers on health and safety issues related to their activities as well as on proper use of personal protective equipment (PPE). 3. Fencing on all excavation, borrow pits and sides of temporary bridges. 4. Workers shall be provided with appropriate PPE such as safety boots, helmets, safety glasses, earplugs, gloves, etc. at no cost to the employee. 5. Where worker exposure to traffic cannot be completely eliminated, protective barriers shall be provided to shield workers from traffic vehicles. 6. Workers shall be provided with reliable supply of potable water. 7. Construction camps shall be provided with adequate drainage to avoid accumulation of stagnant water. 8. Construction camps shall be provided with toilets/sanitation facilities in accordance with local regulations to prevent any hazard to public health or contamination of land, surface or groundwater. These facilities shall be well maintained to allow effective operation. 9. Ensure reversing signals are installed on all construction vehicles.
11. Traffic Management	1. Communicate to the public through local officials regarding the scope and schedule of construction, as well as certain construction activities causing disruptions or access restrictions. 2. Coordinate with traffic police of Vi Xuyen and Bac Quang districts to implement appropriate traffic diversion schemes to avoid inconvenience due to subproject operations to road users, ensure smooth traffic flow and avoid or minimize accidents, traffic hold ups and congestion 3. Coordinate with traffic police of Vi Xuyen and Bac Quang districts to schedule transport of materials to avoid congestion, set up clear traffic signal boards and traffic advisory signs at the roads going in and out the road and bridge construction sites to minimize traffic build-up. 4. Provide safe vehicle and pedestrian access around construction areas. 5. Install bold diversion signs that would be clearly visible even at night and provide flag persons to warn of dangerous conditions. 6. Provide sufficient lighting at night within and in the vicinity of construction sites. 7. Designate traffic officers in construction sites. 8. Avoid material transportation on Saturday morning, during the market session.
12. Cumulative impact	1. Inform construction schedule and scope to Dong Tam CPC in advance 2. Work with the contractor of Dong Tam - Dong Tien Inter-commune road Project to find out suitable construction, material transportation time. 3. Consider the capacity of material mines, borrow pits and disposal sites for both project.

D. Appendix 4: National Technical Regulations of Vietnam

NATIONAL TECHNICAL REGULATION

ON SURFACE WATER QUALITY

1. GENERAL PROVISIONS

1.1. Scope of application

1.1.1. This regulation specifies the limit value of surface water quality parameters.

1.1.2. This regulation applies to assess and control the quality of surface water source, as a basis for the protection and use of water appropriately.

1.2. Explanation of terms

Surface water referred to in this Regulation is water flowing through or stagnate on the ground, streams, canals, ditches, gullies, arroyos, lakes, ponds, swamps,...

2. TECHNICAL REGULATIONS

Limit values of the surface water quality parameters are specified in Table 1.

Table 1. Limit values of the surface water quality parameters

No.	Parameters	Unit	Limit values			
			A		B	
			A1	A2	B1	B2
1	pH		6-8,5	6-8,5	5,5-9	5,5-9
2	Dissolved oxygen (DO)	mg/l	≥ 6	≥ 5	≥ 4	≥ 2
3	Total suspended solidss (TSS)	mg/l	20	30	50	100
4	COD	mg/l	10	15	30	50
5	BOD_5 (20^0C)	mg/l	4	6	15	25
6	Ammonium (NH^+_4) (as N)	mg/l	0,1	0,2	0,5	1
7	Chloride (Cl^-)	mg/l	250	400	600	-
8	Fluoride (F^-)	mg/l	1	1,5	1,5	2
9	Nitrite (NO^-_2) (as N)	mg/l	0,01	0,02	0,04	0,05
10	Nitrate (NO^-_3) (as N)	mg/l	2	5	10	15
11	Phosphate (PO_4^{3-}) (as P)	mg/l	0,1	0,2	0,3	0,5
12	Cyanide (CN-)	mg/l	0,005	0,01	0,02	0,02
13	Arsenic (As)	mg/l	0,01	0,02	0,05	0,1
14	Cadmium (Cd)	mg/l	0,005	0,005	0,01	0,01
15	Lead (Pb)	mg/l	0,02	0,02	0,05	0,05
16	Chrom III (Cr^{3+})	mg/l	0,05	0,1	0,5	1
17	Chrom VI (Cr^{6+})	mg/l	0,01	0,02	0,04	0,05

18	Copper (Cu)	mg/l	0,1	0,2	0,5	1
19	Zinc (Zn)	mg/l	0,5	1,0	1,5	2
20	Nickel (Ni)	mg/l	0,1	0,1	0,1	0,1
21	Iron (Fe)	mg/l	0,5	1	1,5	2
22	Mercury (Hg)	mg/l	0,001	0,001	0,001	0,002
23	Surface-active substances	mg/l	0,1	0,2	0,4	0,5
24	Total oil & grease	mg/l	0,01	0,02	0,1	0,3
25	Phenol (Total)	mg/l	0,005	0,005	0,01	0,02
26	Organic chlorine pesticide					
	Aldrin + Dieldrin	µg/l	0,002	0,004	0,008	0,01
	Endrin	µg/l	0,01	0,012	0,014	0,02
	BHC	µg/l	0,05	0,1	0,13	0,015
	DDT	µg/l	0,001	0,002	0,004	0,005
	Endosunfan(Thiodan)	µg/l	0,005	0,01	0,01	0,02
	Lindan	µg/l	0,3	0,35	0,38	0,4
	Chlordane	µg/l	0,01	0,02	0,02	0,03
	Heptachlor	µg/l	0,01	0,02	0,02	0,05
27	Organic phosphorus pesticide					
	Parathion	µg/l	0,1	0,2	0,4	0,5
	Malathion	µg/l	0,1	0,32	0,32	0,4
28	Herbicide					
	2,4D	µg/l	100	200	450	500
	2,4,5T	µg/l	80	100	160	200
	Paraquat	µg/l	900	1200	1800	2000
29	Total radioactivity α	Bq/l	0,1	0,1	0,1	0,1
30	Total radioactivity β	Bq/l	1,0	1,0	1,0	1,0
31	E.coli	MPN/ 100ml	20	50	100	200
32	Coliform	MPN/ 100ml	2500	5000	7500	10000

Note: The classification of surface water to assess and control the quality of water for various purposes of water use:

A1 - Good use for the purpose of domestic water supply and other purposes, such as type A2, B1 and B2.

A2 – Used for the purpose of domestic water supply but applying the appropriate treatment technology; aquatic plant and animal conservation, or purposes of use as type B1 and B2.

B1 - Use for irrigation and drainage purpose or other purposes with similar water quality requirements or other purposes of use such as type B2.

B2 – Water transportation and other purposes with low water quality requirements.

3. METHOD FOR DETERMINATION

3.1. Sampling for surface water quality monitoring conducted under the guidance of national standards:

- TCVN 5992:1995 (ISO 5667-2: 1991) - Water quality - Sampling. Guidance on sampling techniques.

- TCVN 5993:1995 (ISO 5667-3: 1985) - Water quality - Sampling. Guidance on storage and handling of samples.

- TCVN 5994:1995 (ISO 5667-4: 1987) - Water quality - Sampling. Guidance on sampling in natural and artificial lakes and ponds.

- TCVN 5996:1995 (ISO 5667-6: 1990) - Water quality - Sampling. Guidance on sampling in rivers and streams.

3.2. Analytical methods to determine the parameters of surface water quality shall comply with the guidance of the national standards or corresponding analytical standards of international organizations:

-TCVN 6492-1999 (ISO 10523-1994) - Water quality - Determination of pH.

-TCVN 5499-1995. Water quality - Determination of dissolved oxygen - Winkler method.

- TCVN 6625-2000 (ISO 11923-1997) - Determination of suspended solids by filtration through glass-fibre filters

- TCVN 6001-1995 (ISO 5815-1989) - Water quality - Determination of biochemical oxygen demand after 5 days (BOD 5) - Dilution and seeding method.

- TCVN 6491-1999 (ISO 6060-1989) - Water quality - Determination of the chemical oxygen demand.

- TCVN 6494-1999 - Water quality - Determination of ions of fluoride, chloride, nitrite, Orthophotphat, bromide, nitrate and soluble sulphate in liquid ion chromatography.

- TCVN 6194-1996 (ISO 9297-1989) - Water quality - Determination of chloride. The method of titration of nitrate silver with chromate indicator (MO method).

- TCVN 6195-1996 (ISO 10359-1-1992) - Water quality - Determination of fluoride - Electrochemical probe method for potable and lightly polluted water

- TCVN 6178-1996 (ISO 6777-1984) - Water quality - Determination of nitrite. Molecular absorption spectrometric method.

- TCVN 6180-1996 (ISO 7890-3-1988) - Water quality - Spectrometric method using sulfosalicylic acid

- TCVN 5988-1995 (ISO 5664-1984) - Water quality - Determination of ammonium - Distillation and titration method.

- TCVN 6181-1996 (ISO 6703-1-1984) - Water quality - Determination of total cyanide.

- TCVN 6336-1998 (ASTM D 2330-1988) - Test method for Methylene Blue Active Substances

- TCVN 5991-1995 (ISO 5666-3-1984) - Water quality - Determination of total mercury by flameless atomic absorption spectrometry - Method after digestion with bromine

- TCVN 6002-1995 (ISO 6333-1986) - Water quality - Determination of manganese - Formaldoxime spectrometric method

- TCVN 6053-1995 (ISO 9696-1992) - Water quality - Measurement of gross alpha activity in non-saline water - Thick source method

- TCVN 6177-1996 (ISO 6332-1988) - Water quality - Determination of iron - Spectrometric method using 1,10 - phenanthroline

- TCVN 6193-1996 (ISO 8288-1986) - Water quality - Determination of cobalt, nickel, copper, zinc, cadmium and lead - Flame atomic absorption spectrometric methods

- TCVN 6197-1996 (ISO 5961-1994) - Water quality - Determination of cadmium by atomic absorption spectrometry

- TCVN 6222-1996 (ISO 9174-1990) - Water quality. Methods for the determination of total chromium by atomic absorption spectrometry

- TCVN 6626-2000 (ISO 11969-1996) - Water quality - Determination of arsenic - Atomic absorption spectrometric method (hydride technique)

- TCVN 6216-1996 (ISO 6439-1990) - Water quality - Determination of phenol index - 4-Aminoantipyrine spectrometric methods after distillation

- TCVN 5070-1995 - Water quality - Weight method for determination of oil and oil products

- TCVN 6053-1995 (ISO 9696-1992) - Water quality - Measurement of gross alpha activity in non-saline water - Thick source method

- TCVN 6219-1995 (ISO 9697-1992) - Water quality - Measurement of gross beta activity.

- TCVN 6187-1-1996 (ISO 9308-1-1990) - Water quality - Detection and enumeration of coliform organisms, thermotolerant coliform organisms and presumptive Escherichia coli - Part 1: Membrane filtration method

The parameters specified in this Regulation not having national standards guiding the analytical method shall apply the corresponding analytical standards of the international organizations

4. IMPLEMENTATION ORGANIZATION

This Regulation shall apply in substitution for TCVN 5942:1995 - Water quality - surface water quality standards in the List of Vietnamese standards on environment which is mandatorily applied and issued together with Decision No. 35/2002/QD-BKHCNMT dated June 25, 2002 of the Minister of Science, Technology and Environment.

In case the national standards referred in this Regulation amended and supplemented or superseded shall be applied under new documents.

QCVN 09 : 2008/BTNMT

NATIONAL TECHNICAL REGULATION

ON UNDERGROUND WATER QUALITY

Introduction

QCVN 09:2008 / BTNMT was written by the Compilation Board of national technical regulations on water quality, submitted by the General Department of Environment and Legal Department for approval and issued under the Decision No. 16/2008/QD-BTNMT dated December 31, 2008 of the Minister of Natural resources and Environment.

NATIONAL TECHNICAL REGULATION

ON UNDERGROUND WATER QUALITY

1. GENERAL PROVISIONS

1.1. Scope of application

1.1.1. This regulation specifies the limit value of underground water quality parameters.

1.1.2. This regulation applies to assess and control the quality of underground water source, as a basis for the orientation of various purposes of use.

1.2. Explanation of terms

Underground water in this Regulation is the water in the soil and rocks underground.

2. TECHNICAL REGULATIONS

Limit values of the underground water quality parameters are specified in Table 1.

Table 1: Limit values of the underground water quality parameters

No.	Parameters	Unit	Limit values
1	pH	-	5,5 - 8,5
2	Hardness (as CaCO3)	mg/l	500
3	Total solids	mg/l	1500
4	COD ($KMnO_4$)	mg/l	4
5	Ammonium (as N)	mg/l	0,1
6	Chloride (Cl-)	mg/l	250
7	Fluoride (F-)	mg/l	1,0
8	Nitrite (NO^-_2) (as N)	mg/l	1,0
9	Nitrate (NO^-_3) (as N)	mg/l	15
10	Sulgreasee (SO_4^{2-})	mg/l	400
11	Cyanide (CN-)	mg/l	0,01
12	Phenol	mg/l	0,001
13	Asenic (As)	mg/l	0,05

14	Cadimi (Cd) Cadmium (Cd)	mg/l	0,005
15	Lead (Pb)	mg/l	0,01
16	Chromium VI (Cr6 +)	mg/l	0,05
17	Copper (Cu)	mg/l	1,0
18	Zinc (Zn)	mg/l	3,0
19	Manganese (Mn)	mg/l	0,5
20	Mercury (Hg)	mg/l	0,001
21	Iron (Fe)	mg/l	5
22	Selenium (Se)	mg/l	0,01
23	Total radioactivity α	Bq/l	0,1
24	Total radioactivity β	Bq/l	1,0
25	E.Coli	MPN/100ml	Not found
26	Coliform	MPN/100ml	3

3. METHOD FOR DETERMINATION

3.1. Sampling for underground water quality monitoring conducted under the guidance of national standards:

- TCVN 5992:1995 (ISO 5667-2: 1991) - Water quality - Sampling - Guidance on sampling techniques

- TCVN 5993:1995 (ISO 5667-3: 1985) - Water quality -sampling -Guidance on the preservation and handling of samples

- TCVN 6000:1995 (ISO 5667-11: 1992) - Water quality -sampling -Guidance on the sampling of groundwaters

3.2. Analytical methods to determine the parameters of underground water quality shall comply with the guidance of the national standards or corresponding analytical standards of international organizations:

- TCVN 6492-1999 (ISO 10523-1994) - Water quality - Determination of pH

- TCVN 2672-78 – Potable water – Method for determing the general hardness

- TCVN 6178-1996 (ISO 6777-1984) - Water quality -Determination of nitrite - Molecular absorption spectrometric method

- TCVN 6180-1996 (ISO 7890-3-1988) - Water quality - Determination of nitrate - Spectrometric method using sulfosalicylic acid

- TCVN 6200-1996 (ISO 9280-1990) - Water quality - Determination of sulgreasee - Gravimetric method using barium chloride

- TCVN 6181-1996 (ISO 6703-1-1984) Water quality - Determination of total cyanide

- TCVN 5988-1995 (ISO 5664-1984) - Water quality - Determination of ammonium -Distillation and titration method

- TCVN 6194-1996 (ISO 9297-1989) Water quality -Determination of chloride - Silver nitrate titration with chromate indicator (Mohr's method)

- TCVN 6195-1996 (ISO 10359-1-1992) - Water quality - Determination of fluoride - Part 1: Electrochemical probe method for potable and lightly polluted water

- TCVN 6216-1996 (ISO 6439-1990) - Water quality - Determination of phenol index -4-Aminoantipyrine spectrometric methods after distillation

- TCVN 6626-2000 (ISO 11969-1996) - Water quality - Determination of arsenic - Atomic absorption spectrometric method (hydride technique)

- TCVN 6193-1996 (ISO 8288-1986) - Water quality - Determination of cobalt, nickel, copper, zinc, cadmium and lead - Flame atomic absorption spectrometric methods

- TCVN 6197-1996 (ISO 5961-1994) - Water quality - Determination of cadmium by atomic absorption spectrometry

- TCVN 6002-1995 (ISO 6333-1986) - Water quality - Determination of manganese - Formaldoxime spectrometric method

- TCVN 6177-1996 (ISO 6332-1988) - Water quality - Determination of iron - Spectrometric method using 1,10 - phenanthroline

- TCVN 6183-1996 (ISO 9965-1993) -Water quality - Determination of selenium - Atomic absorption spectrometric method (hydride technique)

- TCVN 59910-1995 (ISO 5666-3-1984) Water quality - Determination of total mercury by flameless atomic absorption spectrometry - Method after digestion with bromine

- TCVN 6222-1996 (ISO 9174-1990) - Water quality -Determination of chromium - Atomic absorption spectrometric methods

- TCVN 6187-1-1996 (ISO 9308-1-1990) - Water quality - Detection and enumeration of coliform organisms, thermotolerant coliform organisms and presumptive Escherichia coli - Part 1: Membrane filtration method

The parameters specified in this Regulation not having national standards guiding the analytical method shall apply the corresponding analytical standards of the international organizations

4. IMPLEMENTATION ORGANIZATION

This Regulation shall apply in substitution for TCVN 5944:1995- Water quality - underground water quality standards in the List of Vietnamese standards on environment which is mandatorily applied and issued together with Decision No. 35/2002/QD-BKHCNMT dated June 25, 2002 of the Minister of Science, Technology and Environment.

In case the national standards referred in this Regulation amended and supplemented or superseded shall be applied under new document

QCVN 05:2013/BTNMT

NATIONAL TECHNICAL REGULATIONS ON AMBIENT AIR QUALITY

Introduction

QCVN 05:2013/BTNMT was written by the Compilation Board of national technical regulations on ambient air quality, submitted by the General Department of Environment and Legal Department for approval and issued under the Circular No. 32/2013/TT-BTNMT dated October 25, 2013 of the Minister of Natural resources and Environment.

National Technical Regulation on Ambient Air Quality

1. GENERAL PROVISIONS

1.1. Scope of applications

1.1.1. This Regulation deals with limitations on values of basic factors including sulphur dioxide (SO2), carbon monoxide (CO), dioxide nitrogen (NO2), ozone (O3), total suspended particles (TSP), PM10, PM2.5, particles, and lead (Pb) in ambient air.

1.1.2. This Regulation applies to supervision and assessment of ambient air quality.

1.1.3. This Regulation does not apply to air within manufacturing facilities and indoor air.

1.2. Interpretation of terms

In this Regulation, the terms below are construed as follows:

1.2.1. Total suspended particles (TSP) is total particles with aerodynamic diameter less than or equal to 100 μm.

1.2.2. Particle PM_{10} is total suspended particles with aerodynamic diameter less than or equal to 10 μm.

1.2.3. Particle $PM_{2,5}$ is total suspended particles with aerodynamic diameter less than or equal to 2,5 μm.

1.2.4. Average 1 hour: The arithmetic average of the measured values over a period of 1 hour.

1.2.5. Average 8 hours: The arithmetic average of the measured values over a period of 8 consecutive hours.

1.2.6. Average 24 hours: The arithmetic average of the measured values over a period of 24 consecutive hours (a day).

1.2.7. Annual average: The arithmetic average of the 24-hour average values measured over a period of one year.

2. Technical Reputation

Maximum value of basic parameters of ambient air is specified in Table 1.

Table 1: Maximum value of basic parameters of ambient aire

Unit: Micro gram over cubic meter ($\mu g/m^3$)

No.	Paramater	Average 1 hour	Average 8 hours	Average 24 hours	Annual average
1	SO_2	350	-	125	50

2	CO	30.000	10.000	-	-
3	NO_2	200	-	100	40
4	O_3	200	120	-	-
5	Total Suspended Particle (TSP)	300	-	200	100
6	Dust PM_{10}	-	-	150	50
7	Dust $PM_{2,5}$	-	-	50	25
8	Pb	-	-	1,5	0,5
Note: (-) unspecified					

E. Appendix 5: Meeting minutes and list of attendance for public consultation

Dự án Hạ tầng Cơ bản Phát triển Toàn diện
các tỉnh Đông Bắc

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc

PHIẾU ĐIỀU TRA KHẢO SÁT MÔI TRƯỜNG

Ngày 21 tháng 9 năm 2016

Tại Sở Tài nguyên và Môi trường tỉnh Hà Giang

Đại diện nhóm khảo sát điều tra môi trường - Dự án Hạ tầng Cơ bảnPhát triển Toàn diện các tỉnh Đông Bắc

1/ Ông Nguyễn Thanh Dương - Trưởng nhóm

2/ Bà Doãn Hồng Anh - Cán bộ hỗ trợ

Đã làm việc với:

Đại diện Sở Tài nguyên và Môi trường tỉnh Hà Giang (có danh sách kèm theo)

Nội dung trao đổi làm việc:

1) Trao đổi các thông tin chung về DA Hạ tầng Cơ bản PT Toàn diện các tỉnh Đông Bắc
- TDA: Nâng cấp tỉnh lộ 184 từ Đồng Tâm đi Ngọc Linh
- TDA: NSH thị Vinh Quang và xã Bản Nhùng, Hoàng Su Phì

2) Các thông tin về khu vực TDA:

Hà Giang có 6 khu bảo tồn, khu dự trữ sinh quyển nhưng không nằm trong khu vực 2 TDA này.

NSH ở thị trấn Vinh Quang hiện công suất 500 m3/ngày đêm vận hành từ 2.010.2011 nhưng do tiền điện quá cao nên vô hiệu quả.

Hoàng Su Phì hay bị mưa bão, lũ quét, sạt lở. Các huyện thị đều đã có bãi rác tập trung.

Cần nâng cấp đào tạo về giám sát, quan trắc, bảo vệ theo quy định của ADB.

Dự án Hạ tầng Cơ bản Phát triển Toàn diện các tỉnh Đông Bắc

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc

PHIẾU ĐIỀU TRA KHẢO SÁT MÔI TRƯỜNG

Ngày 21 tháng 9 năm 2016

Tại Nông nghiệp và Phát triển Nông thôn tỉnh Hà Giang

Đại diện nhóm khảo sát điều tra môi trường - Dự án Hạ tầng Cơ bảnPhát triển Toàn diện các tỉnh Đông Bắc

1/ Ông Nguyễn Thanh Dương - Trưởng nhóm

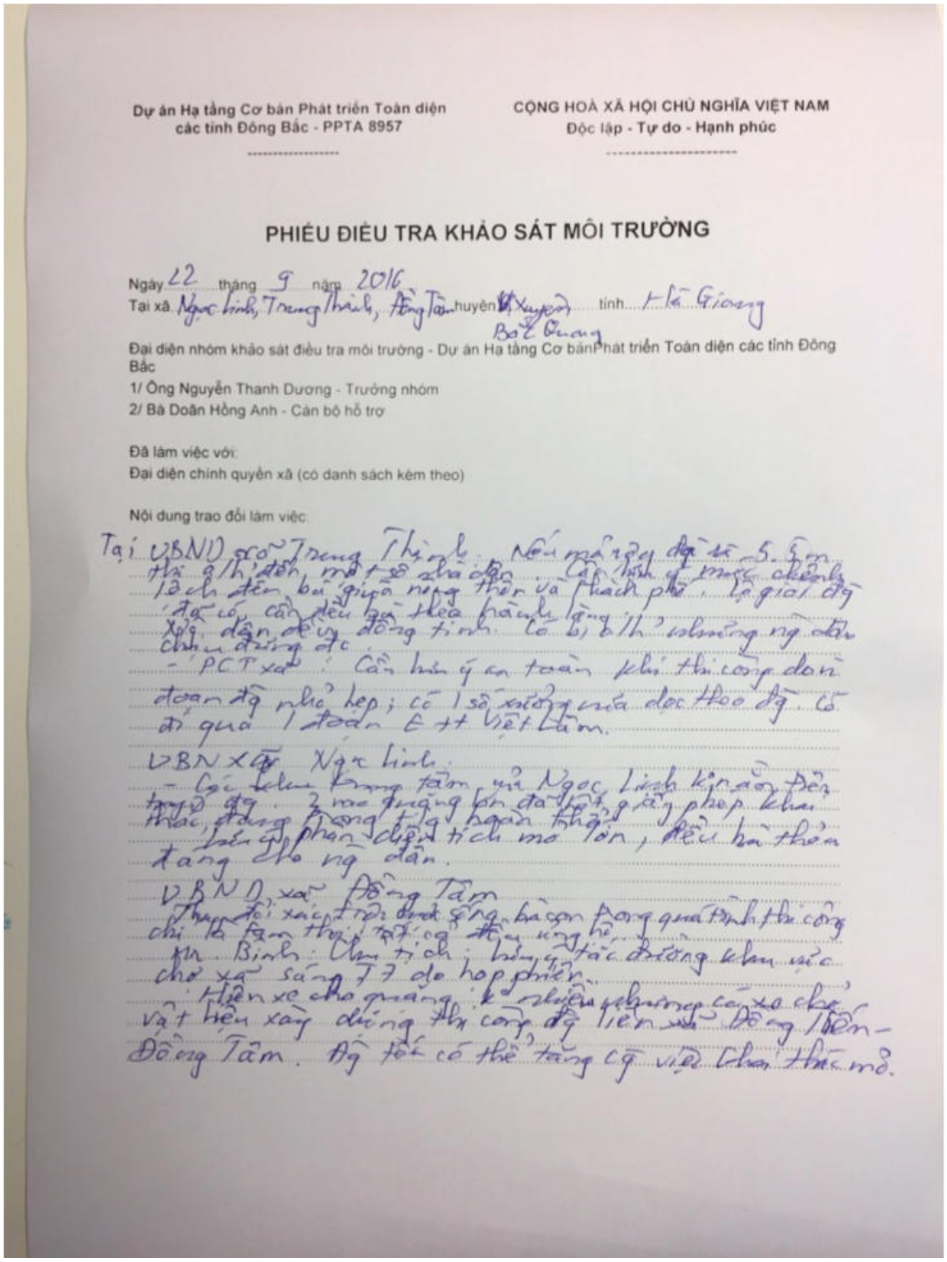
2/ Bà Doãn Hồng Anh - Cán bộ hỗ trợ

Đã làm việc với:

Đại diện Sở Nông nghiệp và Phát triển Nông thôn tỉnh Hà Giang (có danh sách kèm theo)

Nội dung trao đổi làm việc:

1) Trao đổi thông tin chung về DA BIIG và 2 TDA
2) Các thông tin về khu vực TDA
- Cả 3 huyện Bắc Quang, Vị Xuyên và Hoàng Su Phì đều ko có diện tích rừng đặc dụng.
Hiện Hà Giang chưa giao rừng cho dân. Rừng sx giao cho các cơ quan đơn thể nhà nước như UBND xã
Rừng phòng hộ giao cho BQL Bảo vệ PT rừng.
BQL BVPT rừng huyện Vị Xuyên
BQL BVPT rừng huyện Bắc Quang (Ban 611)
Ở Vị Xuyên trên danh nghĩa rừng do UBND xã q/lý
nhưng trên thực tế ng dân đang sử dụng.
Kiến nghị: Ngành NN ủng hộ. Cần khảo sát bồi thường thoả đáng diện tích đất NN của dân bị a/h.
- Tả Sử Choóng có các c/trình thủy lợi nhỏ tưới diện tích 10 - 15 ha. Xem chắn dòng suối có a/h đến các c/trình này không.



Dự án Hạ tầng Cơ bản Phát triển Toàn diện các tỉnh Đông Bắc - PPTA 8957

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc

PHIẾU ĐIỀU TRA KHẢO SÁT MÔI TRƯỜNG

Ngày 22 tháng 9 năm 2016
Tại xã Ngọc Linh, Trung Thành, Đồng Tâm huyện Vị Xuyên, Bắc Quang tỉnh Hà Giang

Đại diện nhóm khảo sát điều tra môi trường - Dự án Hạ tầng Cơ bản Phát triển Toàn diện các tỉnh Đông Bắc
1/ Ông Nguyễn Thanh Dương - Trưởng nhóm
2/ Bà Doãn Hồng Anh - Cán bộ hỗ trợ

Đã làm việc với:
Đại diện chính quyền xã (có danh sách kèm theo)

Nội dung trao đổi làm việc:

Tại UBND xã Trung Thành. Nếu mở rộng đg từ 5.5m thì ảnh hưởng đến một số nhà dân. Cần [illegible] mục đích [illegible] đến bù giữa nông thôn và thành phố. Lộ giới đg đã có, cần đền bù theo hành lang. Xã, dân đều đồng tình. Có bị ảnh hưởng nhưng ng dân chịu đựng được.

- PCT xã: Cần lưu ý an toàn khi thi công đoạn đg nhỏ hẹp; có 1 số xưởng cửa dọc theo đg. Có đi qua 1 đoạn [illegible] Việt Lâm.

UBND xã Ngọc Linh.

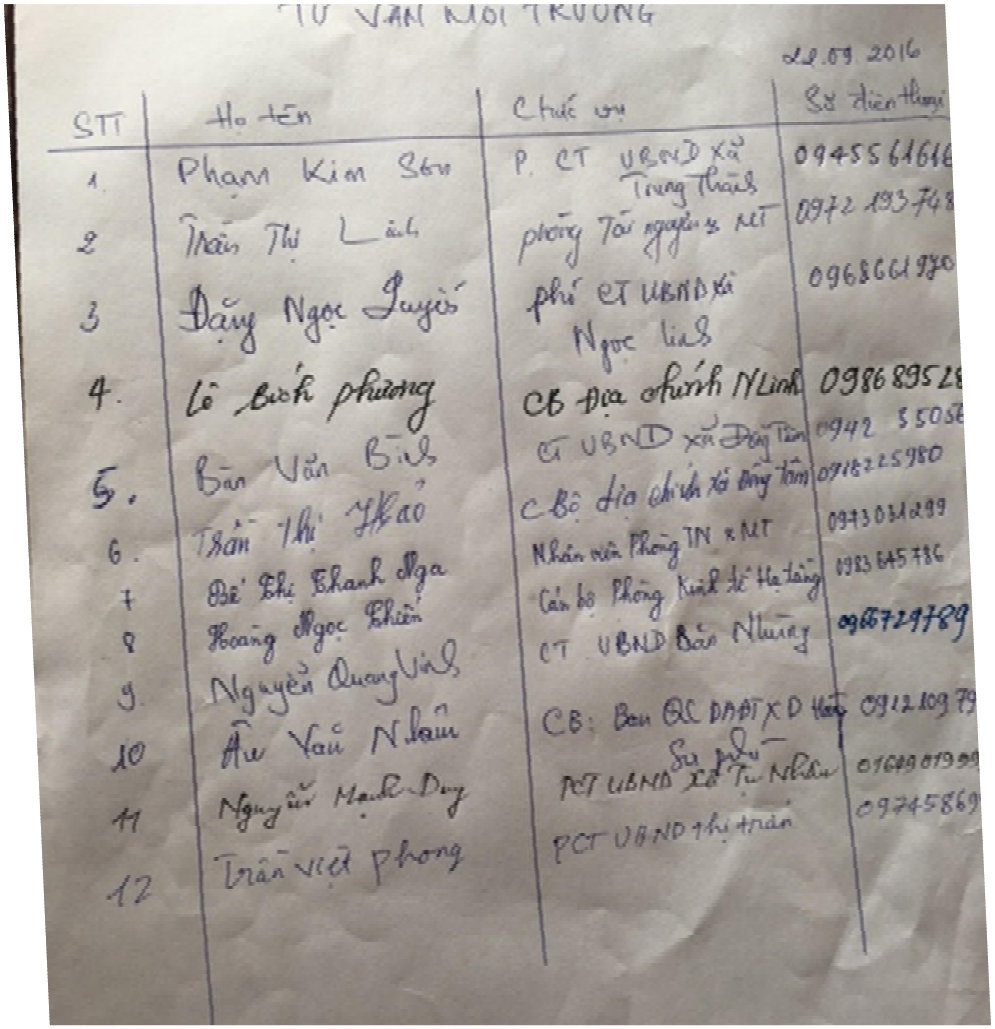
- Các [illegible] trung tâm xã Ngọc Linh [illegible] đến tuyến đg. 2 mỏ quặng lớn đã [illegible] giấy phép khai thác, đang trong t/g hoàn thiện.
[illegible] phần diện tích mỏ lớn, đều hỗ trợ [illegible] cho ng dân.

UBND xã Đồng Tâm

[illegible] xác [illegible] ở [illegible] bà con trong quá trình thi công chỉ là tạm thời, tất cả đều ủng hộ.

Ơ. Bình: Chủ tịch: [illegible] tác đường [illegible] chờ xã sáng T7 do họp [illegible].

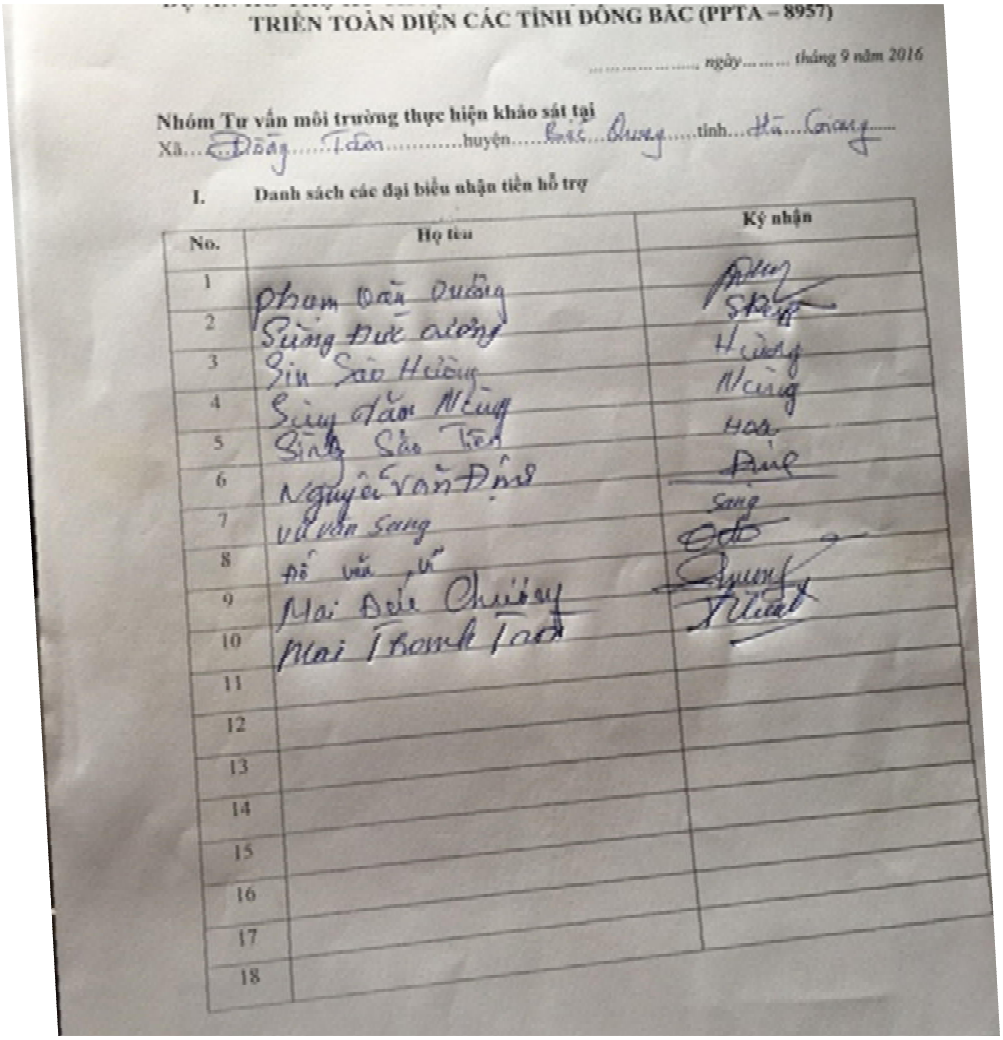
Hiện xe chở quặng, [illegible] phương tiện xe chở vật liệu xây dựng thi công đg liên xã Đồng Tiến - Đồng Tâm. Đg tốt có thể tăng cg việc khai thác mỏ.



TƯ VẤN MÔI TRƯỜNG

22.09.2016

STT	Họ tên	Chức vụ	Số điện thoại
1.	Phạm Kim Sơn	P. CT UBND Xã Trung Thành	0945561616
2	Trần Thị Lành	phòng Tài nguyên & MT	0972 193748
3	Đặng Ngọc Quyến	phó CT UBND Xã Ngọc Linh	0968661970
4.	Lê Bích phương	CB địa chính Ngọc Linh	0986895
5.	Bàn Văn Bình	CT UBND xã Đồng Tâm	0942 55058
6.	Trần Thị Khảo	C.Bộ địa chính xã Đồng Tâm	0916225980
7	Bế Thị Thanh Nga	Nhân viên Phòng TN & MT	0973031299
8	Hoàng Ngọc Thiên	Cán bộ Phòng Kinh tế Hạ tầng	0983645786
9.	Nguyễn Quang Vinh	CT UBND Bản Nhừng	0987729789
10	Âu Văn Nhân	CB: Ban QL DADT XD Huyện	0912109
11	Nguyễn Mạnh Dũng	PCT UBND Xã Sơn Thủy Tu Nhân	0169019
12	Trần việt phong	PCT UBND thị trấn	0974586



TRIỂN TOÀN DIỆN CÁC TỈNH ĐÔNG BẮC (PPTA – 8957)

..... ngày ..... tháng 9 năm 2016

Nhóm Tư vấn môi trường thực hiện khảo sát tại
Xã ... Đông ... Tân ... huyện ... Bắc ... Quang ... tỉnh ... Hà ... Giang

I. Danh sách các đại biểu nhận tiền hỗ trợ

No.	Họ tên	Ký nhận
1		
2	Phạm Văn Dưỡng	
3	Sùng Đức Dương	
4	Sin Sào Hường	
5	Sùng Văn Nếng	
6	Sùng Sào Tồn	
7	Nguyễn Văn Định	
8	Vũ Văn Sang	
9	Đỗ Văn Vũ	
10	Mai Đức Chương	
11	Mai Thanh Tâm	
12		
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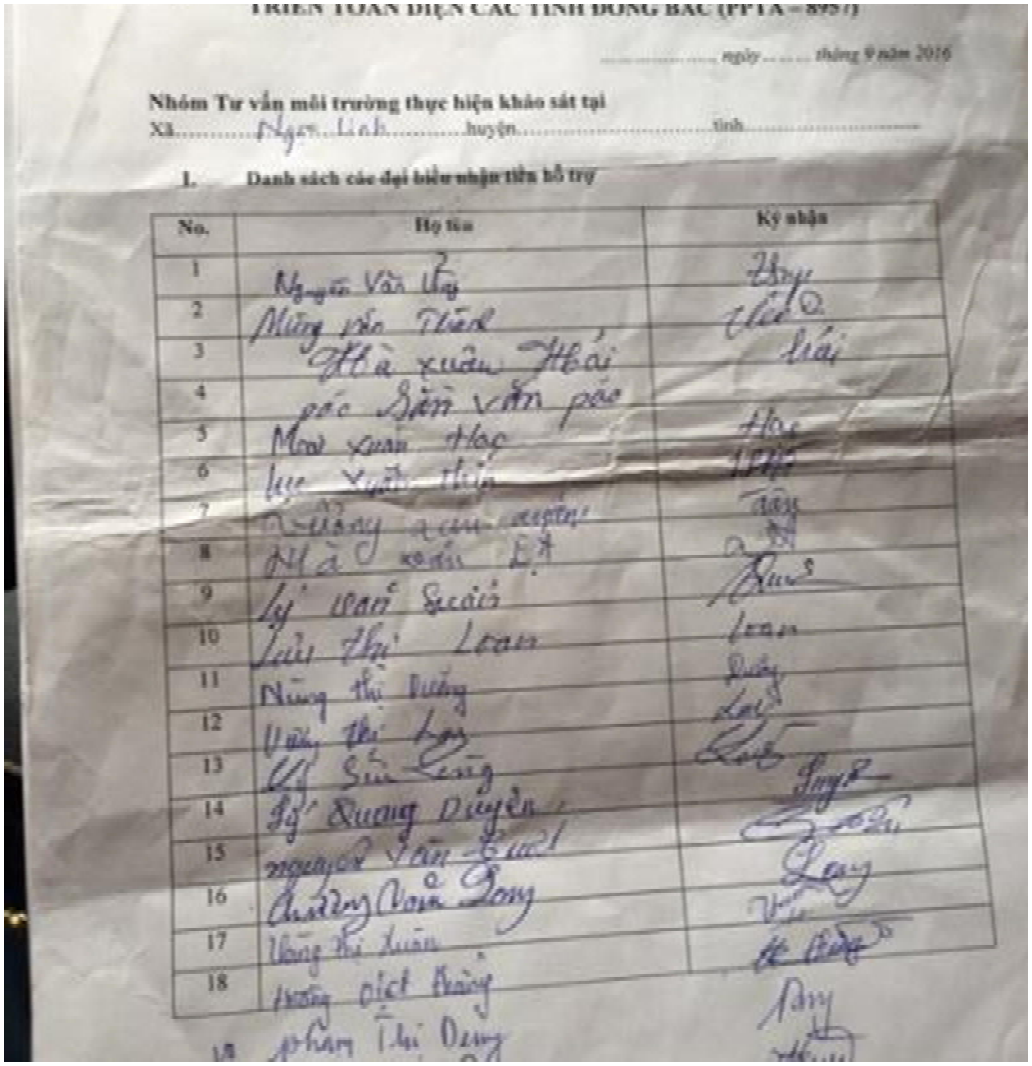
18		



TRIỂN TOÀN DIỆN CÁC TỈNH ĐÔNG BẮC (PPTA – 8957)

..... ngày ..... tháng 9 năm 2016

Nhóm Tư vấn môi trường thực hiện khảo sát tại
Xã ..... huyện ..... tỉnh .....

I. Danh sách các đại biểu nhận tiền hỗ trợ

No.	Họ tên	Ký nhận
1		
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DỰ ÁN HỖ TRỢ KỸ THUẬT CHUẨN BỊ DỰ ÁN HẠ TẦNG CƠ BẢN PHÁT TRIỂN TOÀN DIỆN CÁC TỈNH ĐÔNG BẮC (PPTA – 8957)

……………, ngày……… tháng 9 năm 2016

Nhóm Tư vấn môi trường thực hiện khảo sát tại

Xã ……Trung Thành…… huyện……Vị Xuyên…… tỉnh……Hà Giang……

I. Danh sách các đại biểu nhận tiền hỗ trợ

No.	Họ tên	Ký nhận
1	Trần Văn Giáp	Đạt
2	Phùng Ngọc Giáp	[illegible]
3	Vũ Văn Chài	Chài
4	Nguyễn Mạnh Huỳnh	[illegible]
5	Lương Văn Thủy	Thuy
6	Linh Việt Thắng	[illegible]
7	Phương Văn Nguyện	Nguyện
8	Hoàng Văn Hảo	Hảo
9	Nguyễn Văn Chung	Chung
10	Nguyễn Văn Chương	[illegible]
11	Ma Văn Hà	Hà
12	Cầm Minh Tâm	[illegible]
13	Ngô Thị Thái	Thái
14	Nguyễn Hồng Sáo	[illegible]
15	Trần Thị Viên	Viên
16	Nguyễn Mạnh Huy	[illegible]
17		
18		