

Updated Environmental Management Plan

Project 41456-043

May 2021

Viet Nam: Water Sector Investment Program – Tranche 3

Water Supply System Development in Thai Nguyen Province

Prepared by Thai Nguyen Water Joint Stock Company for Thai Nguyen Provincial People's
Committed and the Asian Development Bank.

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THE PEOPLE'S COMMITTEE OF THAI NGUYEN PROVINCE
THAI NGUYEN WATER SUPPLY JOINT STOCK COMPANY

**LOAN 3251-VIE: VIET NAM WATER SECTOR INVESTMENT
PROGRAM–PFR3**

**Project: Water Supply System Development
in Thai Nguyen city**

UPDATED ENVIRONMENTAL MANAGEMENT PLAN
Construction of Underground Pipelines
Crossing The Main Roads and Railway

Thai Nguyen – May 2021

Prepared by Thai Nguyen Water Joint Stock Company for the Asian Development Bank

CURRENCY EQUIVALENTS

(as of 1 December 2020)

Currency unit	–	Vietnamese Dong (VND)
VND 1.00	=	\$ 0.0000431928
\$1.00	=	23,152 VND

ABBREVIATIONS

ADB	The Asian Development Bank
BTNMT	Ministry of natural resources and environment of the socialist republic of Vietnam
CSC	Construction Supervision Consultant
DONRE	Department of Natural Resources
EIA	Environmental Impact Assessment
EMP	Environmental Monitoring Plan
IEE	Initial Environmental Examination
PMU	Project Management Unit
PPC	Provincial People's Committee
QCVN	Standards of Vietnam
SMR	Safeguards Monitoring Report
TOR	Terms of Reference
uEMP	Updated Environmental Management Plan
USD	US dollar
VND	Vietnamese Dong
WHO	The World Health Organization

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1 INTRODUCTION

1.1 Project Overview

Thai Nguyen Provincial People's Committee (PPC) and Thai Nguyen Water Supply Joint Stock Company (JSC) are implementing Thai Nguyen City Water Supply System Development Project under Asian Development Bank (ADB)'s Loan 3251-VIE to meet a fast-increasing demand for clean water. Until 2020 there will be a clean water shortage of about 120,000 m³ per day for Thai Nguyen city and its neighborhood. The Project includes two phases aiming at upgrading the supply capacity with additional 100,000m³ of clean water per day (each phase will supplement 50,000 m³ per day). Thai Nguyen Provincial People's Committee signed Decision No. 3050 QD-UBND dated 03/12/2008 on the adjustment of the detailed plan on the construction of the tourism area in the South of Nui Coc Lake in general and at Voi Phun Hill in particular in order to build a water supply plant with a capacity of 100,000 m³ per day. The Project presented in this uEMP will be for Phase I of the above mentioned project.

The direct benefactors of this Project are customers who use clean water for purposes of daily living, production and business activities. They include local residents, government officers, students, and production as well as business units that use clean water in Thai Nguyen city, in the South of Dai Tu and Phu Luong districts and in the tourism area in the North of Nui Coc Lake. In addition, this project will create jobs for local people through the process of recruiting workers for implementation and operation project. When the project is completed it will expand the clean water company's capacity in production and business and attract more technical engineers as well as enhance the company's market competitiveness. Furthermore, the project will contribute considerably to the province's socio - economic development.

Thai Nguyen PMU had updated an EMP and submitted to ADB. The updated EMP (uEMP) was approved by ADB and disclosed on its website in March 2019.¹ According to the first uEMP, 9.18 ha of production forest would be affected by the project (construction of water treatment plant (WTP) and its access road), however, afterward, Thai Nguyen PMU realized that 7.75 ha of Nui Coc Lake Protection forest and 1.43 ha of production forest need to be acquired instead. Therefore, the uEMP for Thai Nguyen city water supply system development project was prepared to reflect the national procedures, environmental issues and concerns related to the protection forest acquisition due to the Thai Nguyen project

During the project implementation period, at the working mission in November 2020, *"the information on construction method, potential impacts, mitigation measures, and plan on construction supervision of underground pipelines at crossing locations under Contract TN-CW02"* was requested to be updated by ADB. *It is the matter relating to the construction technique of the Contractor and realized by the ADB as the important knots in the deployment of the Contract TN-CW02, which may cause impacts on the local environment and social safety but are still not considered and concerned thoroughly in the 1st time updated EMP and uEMP (issued in March, 2019).*

Therefore, this version of uEMP (updated 2nd time) which serves for Thai Nguyen City Water Supply System Development Project is continued to be prepared for reflecting, observing, and ensuring the national procedures and environmental and social safety issues that relate to the construction of underground pipelines crossing main roads under the Contract TN-CW02. The 2nd updated version of this uEMP totally matches the Environmental Impact Assessment Report (EIA) of the Project, which as prepared and approved in April 2019, complying with relevant regulations of the Government of Vietnam.

The Environmental Management Plan is updated 2nd time for Thai Nguyen Water Supply System Development Project. It is updated based on the original version of the Environmental Management Plan (issued in March 2019) to maintain the initial impact assessment reported in the Initial Environmental Examination (IEE) report. The goal is not to create a new EMP but to supplement the content and scope required. A secondary, important objective of upgrading the EMPs is to develop

¹<https://www.adb.org/sites/default/files/project-documents/41456/41456-043-emp-en.pdf>

specific but consistent EMP for the project which will assist the overall implementation of environmental safeguards.

1.2 Main work items

1.2.1 Overall water supply solution

Construction of Nui Coc WTP with a capacity of 50,000 m³/day, including:

- Water intake structure; raw water pumping station; raw water pipeline DN800 to provide 55,000m³/day.
- Reaction tank; Settling tank; Filter tank; Reservoir
- Sludge pond;
- Clean water pumping station;
- Administrative house and Laboratory;
- Guardhouse;
- Costs of leveling, constructing bulkheads, building roads and plant fence;
- Transformer station and power system: install two 250 KVA transformers for the WTP area and install one 560 KVA and one 250 KVA transformers for raw water pumping station
- Plant fence; yard, internal roads;
- Internal water supply pipeline system;
- Drainage system.

Overall Diagram of Thai Nguyen water supply system is presented in figure below:

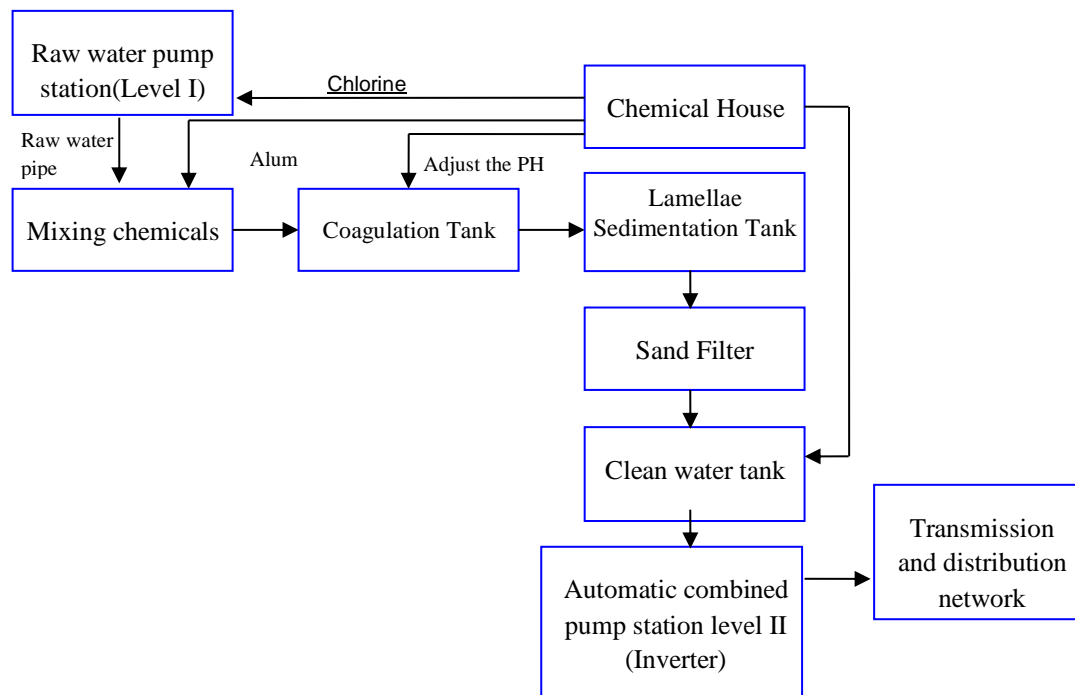


Figure 1. Overall Diagram of Thai Nguyen water supply system

1.2.2 The investment work items of the project include:

a) Construction of Nui Coc Water Supply Plant with a capacity 50.000 m³/day including:

- Intake structures, raw water pumping station, raw water pipeline DN800.
- Clean water treatment technology includes: Reaction tank, settling tank, filtering tank, clean water tank.
- Sludge tank and water filtering intake tank.
- Clean water pumping station.

- Administration house, Testing house, Chemical house, Repairing factory, Material warehouse, Permanency house.
- Transformer station and electric system.
- Leveling, stone embankment, access road to the Plant.
- Gate, Fence, Yard, Internal road, Internal Drainage and Water Supply System.

b) Installation of pipeline network

- Transmission pipeline DN 800:	8,149m.
- Transmission pipeline DN 600:	4,201m
- Transmission pipeline DN 400:	4,632m
- Transmission pipeline DN 225:	1,739m
- Distribution pipeline D225mm:	11,035m.
- Distribution pipeline D160:	9,276m
- Distribution pipeline D110:	10,602m
- Service pipeline:	49,344km
- Household connection:	5,713 HHs

According to the design documents, there will have four points where the underground pipelines of the Project cutting main traffic routes within project area (please refer to Figure 6). They are as follows:

- 1) Crossing point with National Road No.3 (from Pole 4.63A to Pole 4.64A)
 - + HDPE water supply pipeline DN400 mm: L = 57 m;
 - + Shell-tubed pipeline DN600 mm: L = 47 m;
 - + Block valves: DN400 mm;
 - + Construction method: Pipe-jacking method is applied to push the armored pipeline crossing the road base (water supply pipeline is installed inside shell-tubed pipe).
- 2) Crossing point with Hanoi-Thai railway (from Pole 9A to Pole 9B)
 - + HDPE water supply pipeline DN400 mm: L = 17,1 m;
 - + Steel reinforced shell-tubed pipeline DN600 mm: L = 17 m;
 - + Block valves: DN400 mm;
 - + Construction method: open-cut method is applied following the operation schedule of the railway to install reinforced armored pipeline on concrete bearing (water supply pipeline is installed inside steel reinforced shell-tubed pipe).
- 3) Crossing point with new Bac Son road (from Pole 1.181 to Pole 1.182)
 - + HDPE water supply pipeline DN800 mm: L = 120 m;
 - + Steel reinforced shell-tubed pipeline DN1200 mm: L = 100 m;
 - + Bearings at two ends for connecting cast-iron DN800-DI;
 - + Construction method: open-cut method is applied in combination with the construction process of the Project on new Bac Son road to install steel reinforced shell-tubed pipe on concrete bearing (water supply pipeline is installed inside steel reinforced shell-tubed pipe).
- 4) Crossing point with new Bac Son road (from Pole C5.21 to Pole C5.23)
 - + HDPE water supply pipeline DN800 mm: L = 100 m;
 - + Steel reinforced shell-tubed pipeline DN1200 mm: L = 80 m;
 - + Bearings at two ends for connecting cast-iron DN800-DI;
 - + Construction method: open-cut method is applied in combination with the construction process of the Project on new Bac Son road to install steel reinforced shell-tubed pipe on concrete bearing (water supply pipeline is installed inside steel reinforced shell-tubed pipe).

Beside the four crossing points above, the underground water supply pipelines under the Project also cut some small urban roads and lanes. For each such location, it will depend on the traffic flow to apply

flexible construction method which will construct the pipeline with $\frac{1}{2}$ road at low-load hours (at night) and temporary recovery of road surface for traffic operation before construction of the rest road path, or undertake the construction work at low-load hours (at night) entire crossing section and temporarily recover the road surface before the dawn to ensure the smooth operation of local traffic.

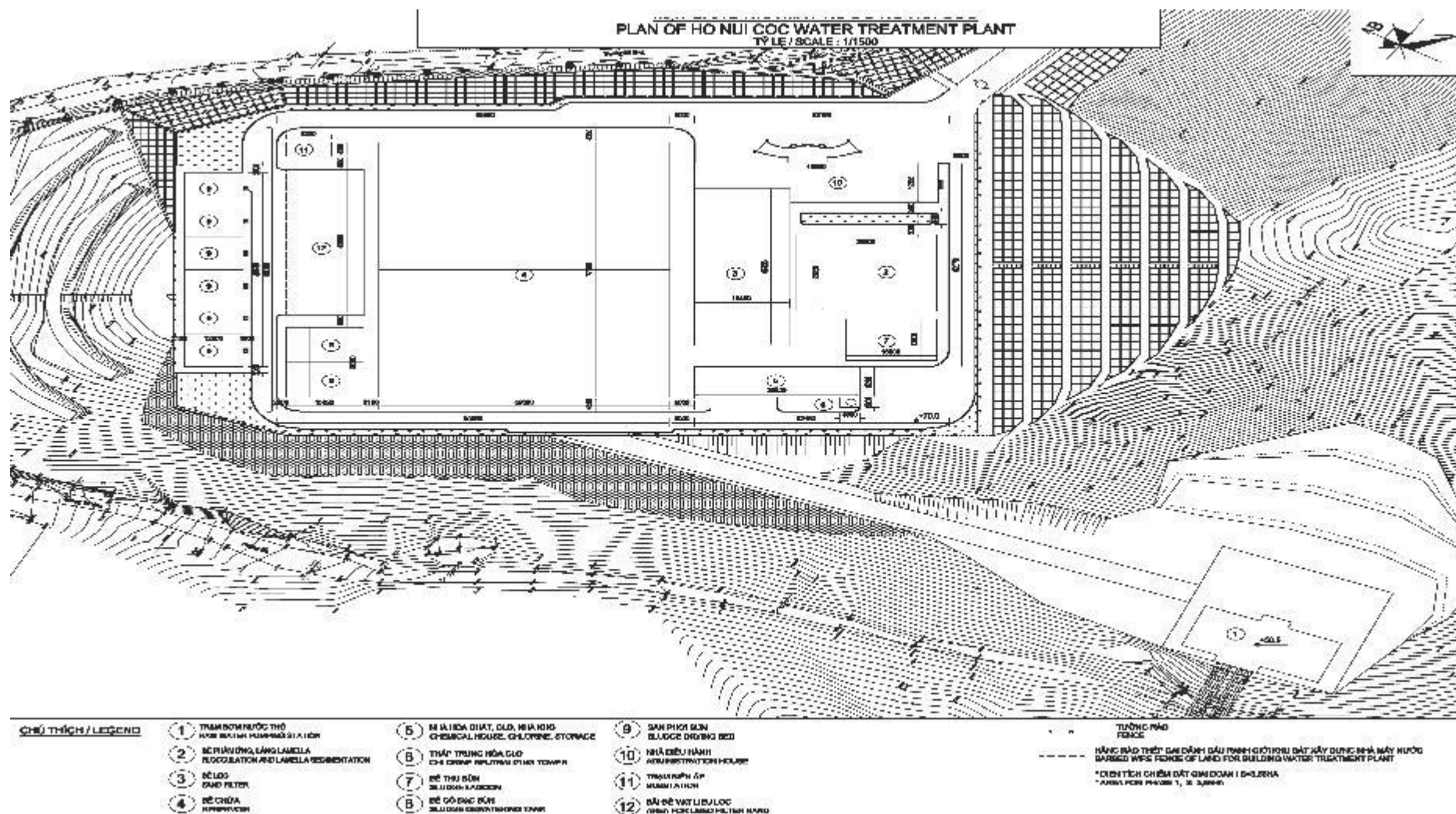


Figure 3. General Plan of water treatment plant

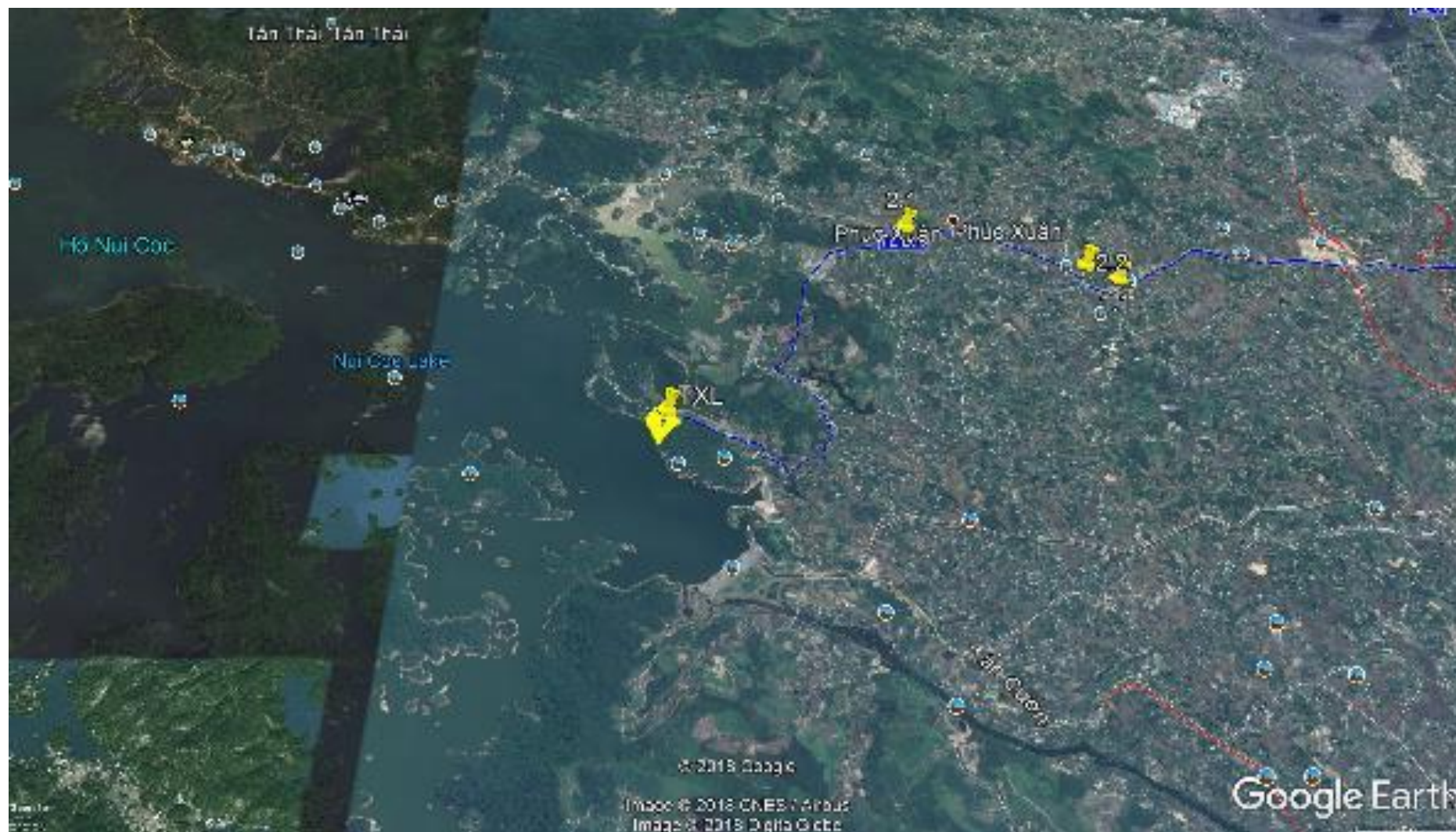


Figure 5. Land slot for construction of Nui Coc water treatment plant

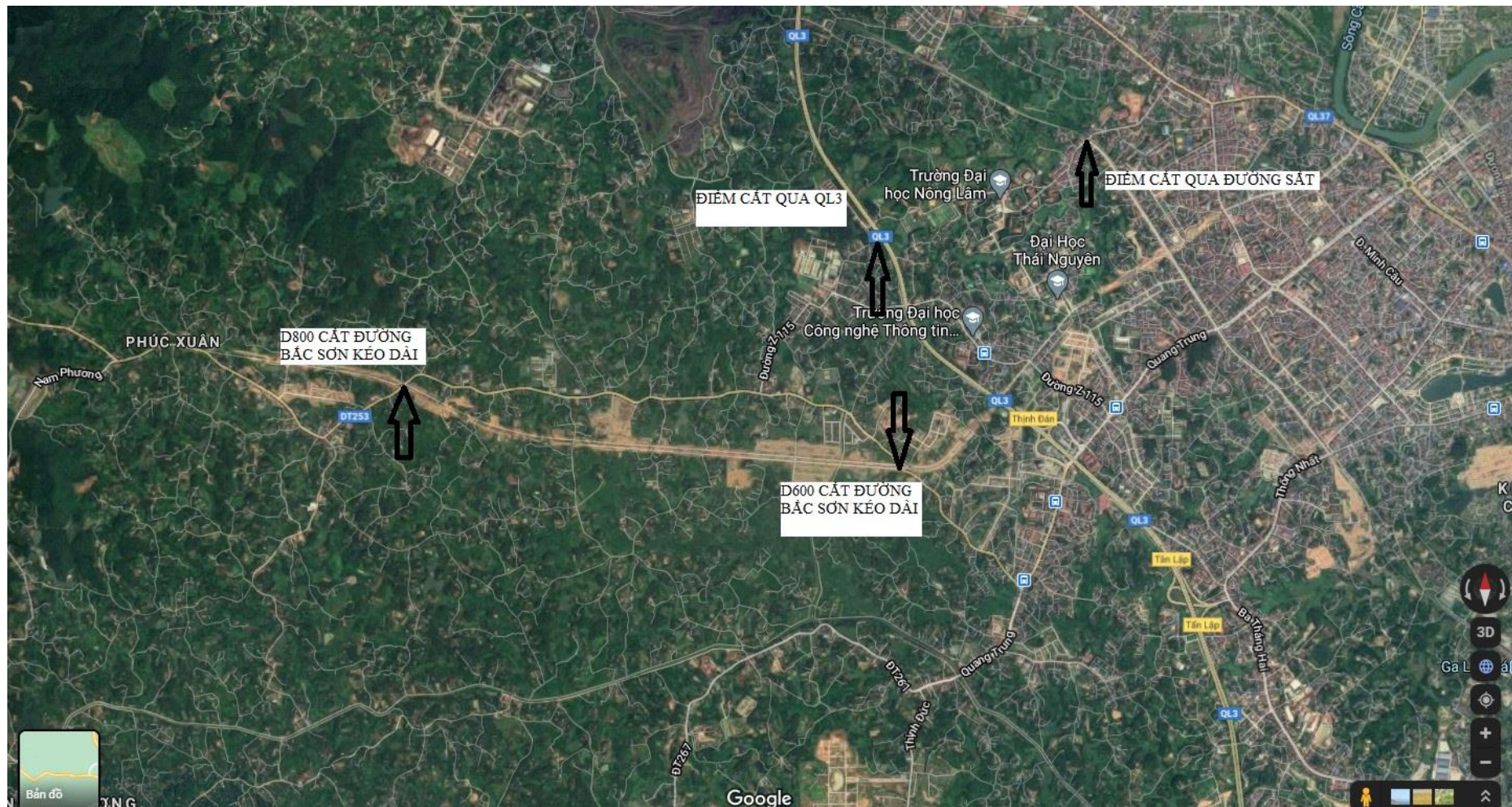


Figure 6. *Locations of underground pipelines crossing main traffic routes*

Demand for construction activities

Construction materials: According to the Survey Profile of construction materials quarries by the TWACO, sources of construction materials include sand, leveling soil, stone materials, which are extracted from mines in the area surrounding construction area and transported to the site by 15-ton trucks. Location of quarries and transport routes are described in the following table:

Table 1: Construction Material Demand and Sources

No.	Parameter	Soil and Sand Quarries	
		Sand mine	Rock and stone
1	Location	Sand mine, Cu Van commune, Dai Tu district, Thai Nguyen province	Nui Chuong quarry, Yen Lac commune, Phu Luong district, Thai Nguyen province.
2	Transport distance	12.2 – 16.5 km.	40 – 50 km
3	Quality	Suitable for normal	Suitable for project
4	Operation condition	Is being managed by Mountain Mining Joint Stock Company	Is being managed by Mountain Mining Joint Stock Company
5	Exploitation capacity	On demand	On demand
6	Exploitation by the project	40,650 m ³	14,867 m ³
7	License	Approval by of Thai Nguyen PC	Approval by of Thai Nguyen PC

Concrete: Concrete will be purchased in these local stations near project area.

Other materials: The construction supplies will be sourced from areas within the Dai Tu district, Phu Luong district and transported to the construction site by trucks for a distance of 20 -25 km.

Fuel: Fuel is bought at petroleum retailers, transported in big casks to tent sites and stored in depots/stores, which are equipped with fire prevention facilities and environmental hygiene;

Disposal area: The remaining volume of construction waste will be used for leveling purposes in Soi Mit landfill in Soi Mit village, Phuc Triu commune with the remaining capacity of 300,000 m³ out of 300,000 m³. The written agreement on the disposal of the construction waste has been obtained by the PMU signing with the local government.

1.3 Main Activities relevant to environmental aspect

1.3.1 Pre-construction activities:

- (a) Detailed design
- (b) Land clearance

1.3.2 Construction activities:

- (a) Construction works (Nui Coc WTP): water intakes, storage lake, raw water pumping stations, treatment cluster, treated water reservoir, treated water pumping stations, chemical house, sludge collecting chamber and auxiliary works such as: administrative house, store, guardhouse, yard, fence, trees ...
- (b) Construction works: Treated water reservoir, treated water pumping station, administration house, assembly house, warehouse, guard house, garage; motor garage, technical pipes in WTP and drainage discharge, leveling, Fence, gate, inner road and trees.
- (c) Installation of treated water transmission and distribution pipelines (including crossing points between underground pipelines and roads);
- (d) Concreted access road, Road surface completion
- (e) Sand back filling;

1.3.3 Activities during Operational Phase:

- (a) Operation of the Nui Coc WTP, raw water pumping station, network;
- (b) Maintenance activities: Nui Coc WTP, raw water pumping station, network

1.4 Construction schedule

Construction activities will be started in March of 2019 and completed in March 2021. Total construction time will be around 24 months.

1.5 EMP Aims and Structure

This Environmental Management Plan (EMP) has been prepared to document the environmental management commitments and obligations that will be implemented throughout the pre-construction, construction and operational phases of the project. The EMP specifies the commitments and obligations, documents the responsibilities and timing for implementation and provides detailed costs estimates for implementation.

Table 2: Reviewing and updating from IEE of the project

Major environmental impact consideration	Included in IEE report	Update status in EMP
<i>Pre-construction phase</i>		
Land acquisition	Yes	Updated for more detail information
Unexploded Ordnance (UXO) remove	Yes	Yes
<i>Construction phase</i>		
Noise generation	Yes	Updated for detail information
Dust and exhaust emission	Yes	Updated for detail information
Water quality impacts	Yes	Updated for detail information
Impacts by solid waste management	Yes	Updated for detail information
Use of hazardous substances and hazardous waste disposal	No	Yes
Traffic disturbance	Yes	Updated for detail information
Increase risk of road and railway damaging and traffic accident by construct crossing underground pipelines	No	Yes
Public and Worker Health and Safety	Yes	Updated for detail information
Public infrastructure encroachment	Yes	Updated for detail information
<i>Operation phase</i>		
Noise generation	Yes	Updated for detail information
Water pollution	Yes	Updated for detail information
Water pollution	Yes	Updated for detail information
Soil erosion on segments pipeline	Yes	Updated for detail information
Effect of sludge from the sedimentation tank, wastewater from filter washing	Yes	Updated for detail information

2 SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS

Study and assessment of environmental impacts have predicted a series of potential impacts due to the Project activities. Selection of the potential impacts for assessment is based on analyzed impacts in the IEE report which was prepared during FS preparation, site investigation, discussions with TWACO, Provincial DONRE and reference to the relevant documents including ADB's Safeguard Policy Statement (2009), annual provincial environmental assessment reports, the Detail Design Report, the environmental protection commitment reports specifically prepared for the Project and references. Table 3 below provides a summary of potential environmental impacts that can be occurred due to the Project's activities, which are described in detailed in the environmental assessment reports.

Table 3. Summary of Potential Environmental Impacts

Potential Environmental Impacts	Significance of Impacts	Discussion of Impacts
<i>Pre-construction phase</i>		
Land acquisition	Medium	<p>The main transmission pipeline will be placed along the existing route, only temporarily requisitioned land during construction.</p> <p>In order to build Nui Coc water treatment plant (WTP) needs permanently acquired 99,938.3 m² of land owned by 8 households in Phuc Triu commune, of which:</p> <ul style="list-style-type: none"> - Affected forestry land: 91,804.8 m². - Affected perennial land: 7,733.5 m² - Affected rural residential land: 400 m². <p>All opted for cash compensation and assistance for their lost. This is also quite consistent with the results of socio-economic survey of households: agriculture is not a main income source of the households and they all have better jobs. The compensation activities will be completed in the end of August 2019.</p>
Protection forest acquisition	Minor	<p>The Project will affect 9.18 hectares of forest land in which protection and production forest areas are 7.75 hectares and 1.43 hectares respectively. The protection forest area to be acquired by the Project is within the area of Nui Coc Lake Protection forest (3,453.78 hectares in total) which was established by the Decision No.3467/QĐ-UBND of Thai Nguyen PPC dated 28 December 2009. According to the Decision, the main purposes of the protection forest are; (i) protection of Nui Coc water quality and quantity by preventing land erosion and sedimentation; and (ii) protection of landscape for tourism. The Decision also points out the activities that can be done within the area of protection forest: (i) logging activity following Decision 186/2006/QĐ-TTg dated 14 August 2006, (ii) tourist activity and scientific research, and (iii) planting of agricultural crop and medicinal plant and use of 30 % of the protection forest area for agricultural purposes.</p>

Potential Environmental Impacts	Significance of Impacts	Discussion of Impacts
		<p><u>Background and history of the forest land to be acquired</u></p> <p>The forest land (9.18 hectares) located on Voi Phun hill at Phuc Triu commune, Thai Nguyen City was handed over to ordinary people with purpose of developing new economic area in 1993 (Refer to Appendix 4: the legal basis of the forest land acquired by the project). Up to May 2019, 9.18 hectares of the forest land was under the management of 8 local households. All of these affected households had legal land use certificates. These people planted commercial trees, mostly acacia, and lived stably on these areas.</p> <p><u>Current designation of the acquired forest land</u></p> <p>On 3 December 2008, Thai Nguyen PPC issued the Decision No. 3050 QD-UBND to approve the adjustment of the detailed plan for the construction of the tourist area south of Nui Coc lake – Voi Phun hill area. Per this plan, an area of 30 ha of Voi Phun hill was identified for a WTP to supply clean water to Thai Nguyen city and its vicinity.</p> <p>However, on 28 December 2009, the PPC issued the Decision No.345/QD-UBND of Thai Nguyen PPC on approval of establishment of Nui Coc lake protection forest that included Voi Phun hill where had been planned for the WTP as in the Decision No. 3050 QD-UBND. This decision stated that, of total 3,453.78 ha of protection forest, 2,447.98 ha is under the management of the protection forest management unit, 8 ha is under the management of Phuong Nam company for tourist purposes, and 998.3 ha is under the management of local households. The protection forest land to be acquired by the Project is located in the area under the management of local households.</p> <p><u>Procedure to change forest land to the land for other purposes</u></p> <p>According to item 19 of Law on Forest (in 2017), Thai Nguyen People's Council is the state agency who is authorized to decide the land use change of protection forest. Therefore, to use 7.75 ha of protection forest for other purposes, on 14 March 2019, Thai Nguyen Water Company sent the Report No. 57/BC-CTCPCNS on request of changing the land use of 7.75 ha protection forest to the land for other purposes (building WTP and its access road) to Thai Nguyen PPC. On the day of receiving the Statement No. 529/TTr-SNN from DARD dated 21 March 2019 which agreed with the Report of Thai Nguyen water company, the PPC submitted the Statement No. 26/TTr-UBND (Appendix 5: Statement No 26/TTr-UBND) to Thai Nguyen People's Council on request of agreement on the change of 7.75 ha protection forest on Voi Phun hill, Phuc Triu commune to land for other purposes. On 27 March 2019, Thai Nguyen People's Council has issued the Resolution No. 03/NQ-HDND (Appendix 6: The Resolution No. 03/NQ-HDND) on agreement of using 7.75 ha protection forest for other purposes (the Project) which also assigned PPC to implement the change of protection forest land in compliance with existing national regulations (Law on Forestry and Land Law). Following the Resolution</p>

Potential Environmental Impacts	Significance of Impacts	Discussion of Impacts
		<p>No. 03/NQ-HDND, PPC instructed Thai Nguyen Water Company to sign contract with Thai Nguyen City Center of Land Development to implement land acquisition for the project. Based on this contract, Thai Nguyen Water Company will pay an amount of money calculated based on the acquired area and type of removed trees to Provincial Forest Development and Protection Fund (PFDF) under management of DARD. Cost for the forest re-plantation/forestation is about VND 465,000,000 and the payment will be completed no later than August 2019. This cost will contribute to implement some reforestation projects in 2020 in Thai Nguyen province that are (i) protection and production forest plantation (<i>acacia</i> and <i>michelia mediocris</i> trees for both types of forest with total area of 60 ha) and strengthening forest fire protection capacity of Thai Nguyen province project in Dong Hy and Dai Tu districts; and (ii) forest protection and development in Vo Nhai district which will plant <i>acacia</i> trees on 40 ha of forest. This will ensure no net loss of the protection forest and production forest.</p> <p>After completion of the payment of VND 465,000,000, PPC will issue the final decision on the land use change within August 2019 and then the acquired land will be handed over to Thai Nguyen Water Company for construction.</p> <p><u>Anticipated impacts from protection forest land acquisition</u></p> <p>The forest acquisition is 7.75 ha accountable for only 0.2 % of total area 3,453.78 ha of the forest located within land areas which have been handed over to ordinary people with a purpose of developing new economic area since 1993. The forest to be acquired is currently under management of 8 local households. These people have planted commercial trees, mostly <i>acacia</i>, and lived stably on these areas up to date. Through meetings with the forest management unit, local authorities (People's Committee of Phuc Triu commune) and the 8 affected households as well as through site visits, it is confirmed that there are no endangered species listed in VN Red Book found within the Project area, and that there are few popular birds (sparrow, kingfisher). The acquisition of protection forest may affect the protection functions of the forest that can deteriorate surface water quality by soil erosion and sedimentation or damage of local landscape. However, given that; (i) the proportion of acquisition is minor compared to total area of the forest and measures preventing erosion has been taken in the design (c.f. <i>Table 4. Summary of the proposed mitigation measures</i>), (ii) the landscape of proposed WTP area has been affected by human for a longtime and it is about 10 km far from tourist areas surrounding Nui Coc Lake, and (iii) the low biodiversity of affected area, it can be concluded that the impact resulting from the protection forest acquisition is minor.</p>
Unexploded Ordnance (UXO) removal	Minor Negative	In addition to the land clearance process, it is necessary to pay attention to the risks of UXOs. Since excavation related infrastructure development is one of the main causes of the sudden explosion UXO in Vietnam, and habits of pipe installation roadwork closed to densely populated areas, it is needed to be vigilant to ensure that the pipeline construction

Potential Environmental Impacts	Significance of Impacts	Discussion of Impacts																																																																																																												
		area was surveyed for the presence of UXOs before any excavation takes place. Although the risk is very low, the contractor will be responsible for ensuring the safety for the construction and can hire the army to disarm the bombs and mines before the land clearance activities. If such explosives are detected and verified, the demining work would need to be made, and be subject to the procedures established by the competent bodies, before performing any civil work.																																																																																																												
Construction phase																																																																																																														
Loss of forest	Minor	See the item “Protection forest acquisition” under the pre-construction phase																																																																																																												
Noise and vibration generation	Minor Negative	<p>The noise is generated from construction activities, machinery and vehicle such as trucks, bulldozers, tillers, and pile drivers at construction areas of WTP and raw water pumping station and household connection a long on water pipelines. Based on the main activities of the project, it is estimated that at the location within 80m from the source noise levels of most construction machinery and equipment will exceed the permitted limits during the period from 6am to 9pm (the noise level ranges from 70 to 88dBA). The level of noise is presented as follow:</p> <table><tr><th rowspan="2">No</th><th rowspan="2">Name of engines and equipment</th><th rowspan="2">Noise at 15,24 m*</th><th colspan="6">Spreading the noise (dB)</th></tr><tr><th>50 m</th><th>80 m</th><th>100 m</th><th>120 m</th><th>150 m</th><th>200 m</th></tr><tr><td>1</td><td>Crane</td><td>88</td><td>77.68</td><td>73.60</td><td>71.65</td><td>70.08</td><td>68.14</td><td>65.64</td></tr><tr><td>2</td><td>Bulldozer</td><td>85</td><td>74.68</td><td>70.60</td><td>68.66</td><td>67.08</td><td>65.14</td><td>62.64</td></tr><tr><td>3</td><td>Elevators</td><td>85</td><td>74.68</td><td>70.60</td><td>68.66</td><td>67.08</td><td>65.14</td><td>62.64</td></tr><tr><td>4</td><td>Pile stuffing machine</td><td>98</td><td>87.68</td><td>83.60</td><td>81.66</td><td>80.08</td><td>78.14</td><td>75.64</td></tr><tr><td>5</td><td>Tiller</td><td>83</td><td>72.68</td><td>68.59</td><td>66.66</td><td>65.08</td><td>63.14</td><td>60.64</td></tr><tr><td>6</td><td>Roller</td><td>74</td><td>63.68</td><td>59.59</td><td>57.66</td><td>56.08</td><td>54.14</td><td>51.64</td></tr><tr><td>7</td><td>Truck</td><td>88</td><td>77.68</td><td>73.60</td><td>71.65</td><td>70.08</td><td>68.14</td><td>65.64</td></tr><tr><td>8</td><td>Cutting machine</td><td>93</td><td>82.68</td><td>78.60</td><td>76.66</td><td>75.08</td><td>73.14</td><td>70.64</td></tr><tr><td colspan="3">QCVN 26- 2010/ BTNMT</td></tr><tr><td colspan="2">6h – 21h</td><td>70</td><td>70</td><td>70</td><td>70</td><td>70</td><td>70</td><td>70</td></tr><tr><td colspan="2">21h – 6h</td><td>55</td><td>55</td><td>55</td><td>55</td><td>55</td><td>55</td><td>55</td></tr></table> <p>According to calculations, the use of trucks transporting materials will generate noise beyond the regulations in the National Regulated standards QCVN 26-2010/BTNMT. In particular, according to the regulation on the permitted noise</p>	No	Name of engines and equipment	Noise at 15,24 m*	Spreading the noise (dB)						50 m	80 m	100 m	120 m	150 m	200 m	1	Crane	88	77.68	73.60	71.65	70.08	68.14	65.64	2	Bulldozer	85	74.68	70.60	68.66	67.08	65.14	62.64	3	Elevators	85	74.68	70.60	68.66	67.08	65.14	62.64	4	Pile stuffing machine	98	87.68	83.60	81.66	80.08	78.14	75.64	5	Tiller	83	72.68	68.59	66.66	65.08	63.14	60.64	6	Roller	74	63.68	59.59	57.66	56.08	54.14	51.64	7	Truck	88	77.68	73.60	71.65	70.08	68.14	65.64	8	Cutting machine	93	82.68	78.60	76.66	75.08	73.14	70.64	QCVN 26- 2010/ BTNMT			6h – 21h		70	70	70	70	70	70	70	21h – 6h		55	55	55	55	55	55	55
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Potential Environmental Impacts	Significance of Impacts	Discussion of Impacts
		<p>levels for residential areas from 21h-6 in the standards, the use of the construction machines in this period will generate noise beyond the permitted levels within the distance of 200m.</p> <p>Workers at the construction site will be constantly exposed to high-intensity noise. According to calculations, within the range of 15m, the intensity of noise is higher than 85dB. This threshold of noise will make people feel tired when exposed continuously the noise; the threshold of 90dB or higher will affect hearing.</p>
Dust and exhaust generation	Moderate Negative	<p>Dust and exhaust emission gases are identified that the main sources from the construction activities. Dust generated from construction activities is forecasted by the rapid assessment coefficient of World Health Organization (WHO) as follow: Concentration of dust generated from excavation and leveling activities is 1-100 mg/m³ (corresponding to 0.3 mg/m³ on QCVN 05/2013/BTNMT), dust generated from material loading is 0.1-1 mg/m³ and from truck is 0.1-1 mg/m³. The detail analysis for Project activities could be listed as follow:</p> <ul style="list-style-type: none"> - Dust and exhaust emission gases generated from the construction activities in WTP and raw water pump station such as leveling, compaction, excavation, embankment, transport and material gathering. Dust swept up from material storage area as cement, soil and graves. The construction area of WTP is far from residential area so that these impacts to resident are minor. Dust mainly affects to the workers in construction site. - Dust and noise generated from the construction activities of water pipelines. The main impacted areas are a long on distribution pipeline on main roads as To Huu road, Quang Trung road, provincial road no. 267, 270, De Nong Lam road, Z115 road and at the communes/wards such as Tan Cuong, Phuc Triu, Phuc Xuan, Quyet Thang, Tan Thinh, Thinh Dan. At these areas, it is very easy to the households will feel uncomfortable caused by dust. The scope of construction area is large but the construction time for each pipe section is short, so the impacts caused by dust and exhaust emission are moderate negative.
Causing local flooding	Minor Negative	<p>There may be flooded on construction area of WTP and raw water pumping station during heavy rain caused by stagnant water in the pits. Since the construction site location in the vacant area which closed to the beg lake and construction duration will be very short, therefore, the risk of localized flooding is quite minor.</p>
Land subsidence	Minor Negative	<p>The phenomenon of land subsidence may be happened during construction of facilities, which need be deepened. However, the concordant construction method will be solved these issues and the most important is these construction sites area far from residential area so the impacts area minor negative.</p>

Potential Environmental Impacts	Significance of Impacts	Discussion of Impacts
Water pollution	Minor Negative	The water pollution sources which would impact on ambient water quality in the project area include: i) runoff water from WTP construction site; ii) discharged wastewater from workers' camps; and iii) wastewater from maintenance activities of construction machinery. Affected area is surface water source at Nui Coc lake in Phuc Triu commune. Regarding to water pipelines: because the construction site is narrow, and the scale of works is small, the workers do not stay on site and there is no domestic wastewater. The impact of domestic wastewater is inconsiderable.
Generation of solid waste	Minor Negative	Solid waste from construction activities includes: i) Construction refuse: soil, sand, stone, which are usually non-toxic; ii) Domestic waste and garbage: generated from workers' camps, On construction site of WTP and raw water pumping station, a large amount of solid waste generated in the process of construction is gravelly soil, cement, iron and steel scrap. Domestic waste: It is estimated that there are 150 workers on site per day at the construction area of Nui Coc WTP. On average, each worker releases 0.5 kg of waste. Thus, the amount of daily waste is about 75kg. The pipelines will be constructed in section and number of 100 workers is forecasted for each section, so the domestic waste is estimated about 50 kg/day. Generally, it is difficult to calculate the amount of solid waste. It needs a suitable management, however, to avoid the waste dispersing in surrounding environment such as cause water pollution, insanitation condition and communal disease.
Generation of Hazardous waste	Minor Negative	Hazardous wastes in the construction process are mainly oil, lubricant from engines, machinery, trucks transporting construction materials. According to the technical documentation, the average lubricant emission from construction machinery is about 30 liters every change in the period of 3 - 4 months. Waste is generated mainly at the construction site of WTP and raw water pumping station because of the large area and focus of machinery and workers. Although the large construction area of the pipeline, the pipelines with the small diameter (D50-D400) are constructed in section by hand. The impact of hazardous waste is minor given its small amount.
Traffic disturbance	Moderate Negative	Traffic disturbance could be potential impacted due to operation of transport vehicles, construction machines and equipment near by the transport routes and improvement of access road. These areas are major transport routes with a large volume of traffic or travel so the increase of vehicle and machinery for construction, excavation and material gathering will cause the impacts to traffic or traffic jams on rush hours. Besides, the installation of pipes on the road surface or at the intersection points need to temporary occupy the road surface. The traffic accident risks may increase. The road may be affected as follow: <ul style="list-style-type: none"> - The area along To Huu road; - The area along Quang Trung road;

Potential Environmental Impacts	Significance of Impacts	Discussion of Impacts
		<ul style="list-style-type: none"> - The area along provincial road no. 267; - The area along provincial road no. 270; - The area along De Nong Lam road; - The area along Z115 road
Increase risk of road and railway damaging and traffic accident by construct crossing underground pipelines	Medium impact	<p>In the construction activities of the project, especially for the treated water transmission and distribution pipeline system, there are many points where underground pipes have to be built and installed across the existing roads, including: (i) lanes of residential areas (communes / wards such as: Tan Cuong, Phuc Triu, Phuc Xuan, Quyet Thang, Tan Thinh, Thinh Dan); (ii) Urban roads (Quang Trung street, To Huu street, Z115 road, etc.); (iii) Provincial roads (Provincial Road No.267, Provincial Road No.270, etc.); and (iv) National roads (Highway 3, Hanoi - Thai Nguyen railway).</p> <p>In which, there are 4 points of underground pipeline as designed to pass through important traffic routes with a high density of daily traffic, including: (i) Point passing through National Road No.3, Point from pole 4.63A to pole 4.64A; (ii) Point crossing Hanoi - Thai Nguyen railway, Point from pole 9A to pole 9B; (iii) Point crossing new Bac Son road, from pole 1,181 to pole 1,182 (Km5 + 560 ÷ Km5 + 460 on To Huu road); and (iv) Point crossing new Bac Son road, from pole C5.21 to pole C5.23 (Km1 + 380 ÷ Km1 + 250 on To Huu road).</p> <p>The construction work at these points will increase the risk of road and railway damaging and without appropriate solutions and measures, the construction sites for underground pipes acrossing the roads will be the locations with many potential risks of causing environmental impacts and social safety, such as:</p> <ul style="list-style-type: none"> - Causing damage and degradation of roads; - Obstructing normal traffic on roads (especially on national traffic routes such as: National Road No.3 and Hanoi - Thai Nguyen railway), thereby causing economic and social costs (loss of time in the traffic carelessness, delay in transporting goods, etc.); - Causing local congestion at construction sites, especially during rush hours; - Increasing risk of traffic accidents around construction sites (among vehicles in traffic; between construction vehicles and equipment of the Contractor and vehicles in traffic; People in traffic are not concentrating on the uneven road ...); - Generating additional environmental pollutants such as dust, exhaust gas, construction solid waste, etc. - Causing damage to and affecting other underground utility infrastructure systems running along the traffic road (i.e. sewers, underground lines, underground telecommunication cables ...); - Being easy to cause frustration and public opinion. <p>However, as the volume of these work items is not much and they are important work items, they often receive the attention and special focus of the Contractor as well as the Employer, thus the construction period will be short and</p>

Potential Environmental Impacts	Significance of Impacts	Discussion of Impacts
		impacts can also completely cease after construction work being completed. Furthermore, the aforementioned impacts can also be significantly minimized thanks to the appropriately selected engineering solutions and construction methods (some of the solutions have been already mentioned in the project design documents).
Risk of Occupational and Community Health and Safety	Moderate Negative	<p>Labor safety accidents in the construction phase may occur due to the following reasons:</p> <ul style="list-style-type: none"> - Not train labor safety for commanders and workers; - Not equip well of labor protection facilities for workers; - Not comply with labor safety measures; - Lack of supervision of the commander in the process of construction; - Not follow the right technical process <p>For communication: Without the scope of construction site, the scale of construction is not big, and the pipeline is small (D50-D400) so the impacts to communication health is minor negative.</p>
Electrocution	Minor Negative	<p>During the construction, electrocution may occur on construction site due to three common causes as follows:</p> <ul style="list-style-type: none"> - The workers contact with power lines and they run the risk of electrocution - Extension cords that are improperly maintained and improperly used can become conduits for electrocution. Extension cords on construction sites often have to extend around windowsills, doors, and unfinished surfaces. These can exert wear and tear on even heavy industrial cords beyond the norm. The surfaces can fray and expose the interior. The plug-ins can become unsafe. - Equipment that is either damaged or defective can also pose a risk of electrocution. Equipment needs to be inspected frequently to ensure it is safe to operate. If it has become damaged due to hitting an obstacle or being used improperly, it needs to be removed from active service and inspected. <p>However, this risk is minor because:</p> <ul style="list-style-type: none"> - There are no existing power lines on the area of construction site - The number of electrical equipment is a few such as pump, welder, hand grinding machine - Extension cords are only for lighting at night when most workers already leave construction sites - Workers who use electric equipment will be trained on electrical safety prior to use
Risk of Occupational and Community Health and Safety caused by	Minor Negative	For construction activities, some construction vehicles will be mobilized such as truck, bulldozer, excavator for material transportation and earthwork. The mobilization of trucks might increase local traffic flow on local roads leading possibility of traffic congestion or traffic accidents. In addition, the operation of heavy construction machinery (bulldozer, excavator) generates high noise level, exhausted airs that might cause nuisances to people living near construction sites and leads risks of safety to people passing through or near construction areas.

Potential Environmental Impacts	Significance of Impacts	Discussion of Impacts
mobilization of vehicles and machinery		This risk is assessed as Minor because (i) only a few heavy machines will be mobilized for construction; (ii) the area for construction is sparsely populated; and (iii) local roads with low traffic flow will be used for material transportation.
Public infrastructure encroachment	Minor Negative	<p>The increase of vehicle output due to activities of transporting material, gathering construction materials and wasted ones is the main reason for obstruction. The affected objects are To Huu road, Quang Trung road, provincial road no. 267, 270, De Nong Lam road, Z115 road and at the communes/wards such as Tan Cuong, Phuc Triu, Phuc Xuan, Quyet Thang, Tan Thinh, Thinh Dan. However, the impact is just temporary as mobilizing vehicles.</p> <p>Internal traffic on the way will be affected as transport vehicles are gathered. The gathering of materials also affects the movement of people. In addition, the system of internal roads can be damaged when the number of heavy transport vehicles and machinery increase.</p> <p>The excavation activities for pipe laying pits also affect to damages of existing facilities such as power lines, drainage pipes, and communication lines.</p>
Social disturbance	Moderate Negative	<p>The focus of the work force in construction area increases the risks arising public order, social evils and diseases issues; arising job conflicts among employees, conflicts between workers and local people. In addition, some types of unhealthy services, social evils can also appear. Therefore, the implementation of managing workers needs to be strict to avoid disorder in the area.</p> <p>During construction, valuable equipment, raw materials will increase the risk of theft, robbery or vandalism. Therefore, the management has to be closed, the guard force has to be strong enough and need to cooperate with the local authorities and residents to minimize the unfortunate loss</p>
Operation phase		
Degradation of input/output water quality	Moderate Negative	<p>Water in culvert network of water-supply system commonly has no effect on the natural environment.</p> <p>Water in the pipeline will be polluted by pollutions from environment penetrated into the pipeline though the leakage, or when the pipe breaks. The pipeline is not washed regular causes to settle as sediment and pollute water supplied to people. In case of remaining chlorine in the pipeline is not enough, the microorganism can grow again in the water.</p>
Pipe breakdown incidences, Loss of water	Minor Negative	The reason of pipe breakdown may be caused by external effects such as destruction, impacts by vehicles or internal effects such as surged pressures, corrosion of pipe. The breakdown of pipe effects to daily activities of the people in the service area (including communes/wards as Tan Cuong, Phuc Triu, Phuc Xuan, Quyet Thang, Tan Thinh, Thinh Dan).

Potential Environmental Impacts	Significance of Impacts	Discussion of Impacts
		<i>Loss of water due to leaking or broken pipes due to acts of vandalism, stealing water. Water loss causes to waste water, economic losses and reduce water supply capability.</i>
Operational risks (chemical leak etc.)	Minor Negative	The disinfection of water using chlorine. During operation, there are risks of gaseous chlorine leakage caused to dangers to operators. Exposure to chlorine gas at a concentration of 250ppm in 30 minutes can lead to be fatal.
Sludge	Minor Negative	Sludge wastes from water treatment process need to discharge according to current regulations. The sludge is forecasted about 30 m ³ per day.
Domestic wastewater and solid wastes	Minor Negative	It is estimated that there are 20 workers on site per day. The domestic wastewater flow is 20 m ³ /day and the amount of daily waste is about 10kg. The impact is insignificant.
Fire, Electrocutation	Minor Negative	<p>WTP generally has power nominally supplied at 230-volt (single phase) and 400-volt (3 phase). The information below relates to workplaces using 230- and 400-volt supplies.</p> <p>The main hazards with electricity are:</p> <ul style="list-style-type: none"> - contact with live parts causing shock and burns - faults which could cause fires; - fire or explosion where electricity could be the source of ignition in a potentially flammable or explosive atmosphere, e.g. in a spray paint booth <p>The risk of injury from electricity is strongly linked to where and how it is used and there is greater risk in wet and/or damp conditions. If workers come into contact with electricity, the worker may not be able to remove themselves from the electrical source. The human body is a good conductor of electricity. If you touch a person while they are in contact with the electrical source, the electricity will flow through the body causing electrical shock. However, this risk is minor given all electric equipment used in the plant will be controlled automatically reducing chances to contact directly with electric sources.</p>

3 MITIGATION MEASURES

Mitigation measures proposed for negative impacts identified in Table 3 will be summarized in Table 4 below. Mitigation measures for construction phase shall be included in the bidding documents for the Contractor to implement. The related costs that would be borne by the Contractor are not presented in this table - these costs will become part of the civil works contracts.

Table 4. Summary of the proposed mitigation measures

Project Activity	Potential impacts	Proposed Mitigation Measure	Responsibility	Cost Estimate
<i>Pre-construction phase</i>				
Land acquisition	Land acquisition at location of WTP and raw water pump station has been done. The construction of network pipeline has no land acquisition but temporarily recovery of land is required.	<ul style="list-style-type: none"> - The compensation payment will be completed in August 2019;a DDR report was also prepared to confirm the procedures of compensation activities strictly follow the approved resettlement plan. - PMU and consultant team cooperating with the leaders of Phuc Triu commune conducted two public consultations on 26 September 2017 and 23 April 2019. All the AHs were invited to attend. Consulted attendants wanted the project to be implemented as quickly as possible, avoiding project delays. - All the affected households have cooperated with the local authorities and project owner to carry out Detailed Measurement Survey (DMS.). Please see more detail in updated resettlement plan report. - Mitigation measures: Compensation for land, structures, crops and livestock; Support to stabilize production life; Support for job transition; Support for Vulnerable Aps. - During the project preparation, land requisition is minimized and conformable to the general urban development plan of the city, in accordance with the legitimate aspirations of the affected people. Specifically, as follows: <ul style="list-style-type: none"> • There are meetings between local leaders with clusters of population, analyzing and resolve any questions before proceeding for compensation. • A notice in writing or on the news or through meetings to individual households about compensation clearance plans. • The clearance works need to perform after the harvest in order to avoid influencing the use of land and arable of the people and limiting compensation costs. • Calculation exactly amount of compensation and policies adequate compensation of rice and fish shrimp for farmers. • Clearance each part, construction where, clearance there. This is necessary to avoid wasting the people, to avoid traffic jams. 	Thai Nguyen Water Joint Stock Company	Completed Included in resettlement plan

Project Activity	Potential impacts	Proposed Mitigation Measure	Responsibility	Cost Estimate
Protection forest acquisition	Degradation of surface water Damage of landscape	<p>PPC has been aware of forest land acquisition for the WTP and its access road through two Reports made by DARD and Thai Nguyen water company and agreed that the forest acquisition would be complied with the Decree 156/2018/ND-CP issued by Prime Minister dated 16 November 2018 on detail regulation for implementing some items in Law of Forestry.</p> <p>However, during detailed design, some measures will be implemented to avoid the disturbance of the protection forest which are</p> <ul style="list-style-type: none"> - Reduction of tree loss by designing green zones within the WTP where existing trees should be kept for the landscape of WTP - Demarcation of forest to be cleared and remaining area of Protection forest will be clearly defined in the planning scale 1/500 of the Project area - Design of terraces to help slow down erosion - The design of WTP including green zones therein should be sent to Nui Coc lake protection forest management unit for consultation; all comments/concerns of this unit must be addressed adequately in the final design before it is approved. 	Detailed design consultant/	Included in the contract of design consultant
		<p>Thai Nguyen water company will implement following measures</p> <ul style="list-style-type: none"> - Integrating the requirement of green zones, demarcation of forest to be cleared and remaining area of Protection forest for preventing soil erosion into the detailed planning scale 1/500 for the Project area; sending a draft of planning to the forest management unit for review before it is approved - Payment of VND 465,000,000 to PFDF for 7.75 ha re-plantation/forestation as a compensation for the forest area lost by the Project. (by the end of August 2019) - Payment of the compensation for 8 affected households (by the end of August 2019) - Informing the forest management unit of the project schedule and progress during pre-construction phase - Initiate the monitoring of re-plantation/forestation progress 	Thai Nguyen Water Joint Stock Company	VND 465,000,000 TWACO fund
Unexploded	Accidents due to	- Currently, demining and removal of unexploded ordnance haven't implemented at the WTP, raw water pumping station and network pipelines.	Thai Nguyen Water Joint	605,000,000 VND –

Project Activity	Potential impacts	Proposed Mitigation Measure	Responsibility	Cost Estimate
Ordnance removal	UXO	- PMU will be hiring a specialized army unit to clear UXO before construction commences.	Stock Company	TWACO fund
Construction phase				
Construction activity in and around the forest area	Loss of forest	Contractors must comply with following measures - Establishment of barriers, fences to separate the areas for construction sites and the remaining forest area - Education and awareness of workers that the remaining forest area is not to be accessed for any purposes; - No materials to be used from the remaining forest area;	Contractors	Included in the contract of contractor
		Thai Nguyen water company will pay an amount of money calculated based on the acquired area and type of removed trees to Provincial Forest Development and Protection Fund (PFDF) under management of DARD. Cost for the forest re-plantation/forestation is about VND 465,000,000 and the payment will be completed no later than August 2019. This cost will contribute to implement some reforestation projects in 2020 in Thai Nguyen province that are (i) protection and production forest plantation (<i>acacia</i> and <i>michelia mediocris</i> trees for both types of forest with total area of 60 ha) and strengthening forest fire protection capacity of Thai Nguyen province project in Dong Hy and Dai Tu districts; and (ii) forest protection and development in Vo Nhai district which will plant <i>acacia</i> trees on 40 ha of forest. This will ensure no net loss of the protection forest and production forest.	Provincial Forest Development and Protection Fund (PFDF)	PFDF budget
Construction: Nui Coc WTP; raw water pumping station combined as the company office, Network pipelines	Noise and vibration generation	- Limiting construction during the period from 9pm – 6am at residential areas such as To Huu road, Quang Trung road, provincial road no. 267, 270, De Nong Lam road, Z115 road and at the communes/wards such as Tan Cuong, Phuc Triu, Phuc Xuan, Quyet Thang, Tan Thinh, Thinh Dan. - Regularly maintenance of construction machines, quality registration and washing machinery complying with manufacturer's requirements. - Provision noise protection equipment for worker; - In case of construction at night in populated areas such as To Huu road, Quang Trung road, provincial road no. 267, 270, De Nong Lam road, Z115 road and at the communes/wards such as Tan Cuong, Phuc Triu, Phuc Xuan, Quyet Thang,	Contractor	Include in construction cost of the contractor

Project Activity	Potential impacts	Proposed Mitigation Measure	Responsibility	Cost Estimate
		<p>Tan Thinh, Thinh Dan, the information has to be informed to community at least 2 days.</p> <ul style="list-style-type: none"> - Local communities must be informed about construction schedules - Using of machinery with periodically quality registration 		
	Dust and exhaust generation	<ul style="list-style-type: none"> - Transporting vehicles must be covered carefully and before leaving the construction site as WTP and raw water pumping station they have to be washed and brushed sticky soil. - On hot and dry days, regularly watering on the transportation routes and on the construction site 2 times per day to reduce dust especially the populated areas where the tertiary pipes are constructed such as the communes/wards such as Tan Cuong, Phuc Triu, Phuc Xuan, Quyet Thang, Tan Thinh, Thinh Dan. - The leveling materials poured from transporting vehicles need to be bulldozed and compacted to avoid the spread of wind and being pulled over by other vehicles running on the construction site as WTP and raw water pumping station at Phuc Triu commune ward and especially the populated areas where the tertiary pipes is constructed such as Tan Cuong, Phuc Triu, Phuc Xuan, Quyet Thang. - Setting barriers in the construction site of WTP and raw water pumping station (Phuc Triu commune), fence 2.5 meters in height. - Covering carefully the areas gathering materials and waste. - Machineries, construction vehicles must be ensured in term of registration certificate of environment and technique 	Contractor	Include in construction cost of the contractor
Flood on construction site by heavy rain	Causing local flooding	<ul style="list-style-type: none"> - Redundancy drainage pump at construction site of WTP and raw water pumping station (Phuc Triu commune). - Dredging canals/trench on construction site of WTP and raw water pumping station (Phuc Triu commune) 	Contractor	Include in construction cost of contractor
Excavation activities during construction of raw water	Land subsidence	<ul style="list-style-type: none"> - Reinforcements must be performed with piles and steel piles at the construction sites for large-size pipelines and with great depths; - In case of incident, construction must be immediately suspended, and repairs and compensation must be made for local people. - Checking the current condition of soil before construction of raw water pump station and WTP 	Contractor	Include in construction cost of contractor

Project Activity	Potential impacts	Proposed Mitigation Measure	Responsibility	Cost Estimate
pump station and WTP		- In case of land subsidence, the contractor has to take reinforcement measures immediately		
Excavate activities and worker camp establish on sites	Water pollution	<ul style="list-style-type: none"> - Worksite, camps, material storage areas and load/unload construction material/waste activities must be located far from watercourse such as Nui Coc lake at Phuc Triu commune to ensure that materials will not be disposed into water, - Collecting and tidying up waste at the construction site everyday - Digging soil canal around construction site of raw water pump station and WTP with width 30 cm and height 40 cm for drainage, sewerage and pre-settle before discharging to receive sources in the region as Nui Coc Lake. - Propagating and educating workers about awareness of protecting environment. - Provide adequate facilities in the site including latrines, holding areas and garbage cans. - Waste from latrines will be collected and treated properly through an economic contract with local environmental co-operatives/companies. - Equipping the dustbins and mobility septic tanks to work sites (it is proposed that there will be 2 dustbins and 1 mobility septic tanks provided at construction site) 	Contractor	Include in construction cost of contractor
<ul style="list-style-type: none"> • Daily life of workers • Transporting waste and materials • Building the treatment plant 	Generation of solid waste	<ul style="list-style-type: none"> ▪ Arranging 2 trash bins with a capacity of 200 liters on each construction site ▪ Collecting waste on the construction site every day, setting rules of place to gather waste to avoid littering. Hiring the environmental sanitation services or local environmental cooperation ▪ There has been disposal area at construction site; waste will be transported every day to the disposal areas at Tan Cuong landfill site, Tan Cuong commune. ▪ Construction waste materials such as broken bricks, concretes, waste steel, soil should be gathered and sorted into groups to process and transport to Tan Cuong landfill site; ▪ Waste fuel emitted by machinery should be put into a separated tank and should not discharge into the environment 	Contractor, Thai Nguyen Water Joint Stock Company	Included in construction cost of contractor

Project Activity	Potential impacts	Proposed Mitigation Measure	Responsibility	Cost Estimate
		<ul style="list-style-type: none"> Educating workers' awareness of environmental protection for, the proposing regulations on disposal on building site. 		
	Generation of Hazardous waste	<ul style="list-style-type: none"> Arranging trash bins covered and labeled with a capacity of 200 liters to store Hazardous waste. Ensure that the storage of safe fuels, other hazardous substances under the current law is under the supervision of TWACO. Equipment/vehicle maintenance and refueling areas will be confined to areas in construction sites designed to contain spilled lubricants and fuels. Fuel and other hazardous substances shall be stored in areas provided with roof. Conduct daily records on use of hazardous substance and waste generation Hiring a unit with treatment function as prescribed at Circular no 36/2015/TT-BTNMT on management of hazardous waste 	Contractor	Included in construction cost of contractor
Mobilizing trucks for waste transportation	Traffic disturbance	<ul style="list-style-type: none"> Placing construction signs, speed limit sign and temporary fence and mobilizing transportation instructors for traffic management at the routes with pipeline construction Regulating the transport vehicle speed will not be over 20km when circulating on the road near the construction site of WTP, raw water pumping station, and water pipelines. Barriers around WTP, raw water pumping station construction area At the populated areas such as the area along on To Huu road, Quang Trung road, provincial road no. 267, 270, De Nong Lam road and Z115 road. It needs to place construction signs, speed limit sign and temporary fence and mobilize transportation instructors for traffic management at the routes with pipeline construction. Construction materials shall be stored tidily at the required locations. Temporary access shall be provided in along the pipelines which high household density streets at identified above for the affected households; Reinstate access to affected households upon completion of the works items and road surface at the sections need to be excavated by construction activities 	Contractor	Included in construction cost of contractor

Project Activity	Potential impacts	Proposed Mitigation Measure	Responsibility	Cost Estimate
		<ul style="list-style-type: none"> The Contractor must always maintain security fences for the construction sites which are close to residential areas if needed. The fences must define clearly the site boundaries. 		
Construction for installation of underground pipelines crossing roads and railway	Increase risk of road and railway damaging and traffic accident by construct crossing underground pipelines	<p>Applying appropriate technical solutions and construction methods to minimize impacts incurred for four important locations as follows:</p> <ol style="list-style-type: none"> For the location of the underground pipeline across National Road NO.3, from pole 4.63A to pole 4.64A: Construction by the method of jackhammering DN600 mm steel pipe across the foundation of National Road No.3 to make a treated water transmission pipeline. (Do not damage the road surface and still ensure normal traffic activities on the National Road No.3 during construction period); Inform the management board of National Road No. 3 at least 2 weeks before the crossing pipeline construction commencement. For the location of the underground pipeline acrossing Hanoi - Thai Nguyen railway, from pole 9A to pole 9B: The contractor will hire a specialized railway subcontractor to construct open excavations through the railway foundation to install precast reinforced concrete pipe DN600 mm on the concrete support as a conduit for treated water transmission pipes (the sub-contractor must ensure adequate specialized equipment to construct the pipelines. Inform the management board of Hanoi – Thai Nguyen railway at least 2 weeks before the crossing pipeline construction commencement For the location of underground pipeline across new Bac Son road, from pole 1,181 to pole 1,182: Cooperate with the construction contractor of Bac Son road project to construct open excavation through the under-construction road foundation to install precast reinforced concrete pipe DN1200 mm on the concrete support to make the pipe for treated water transmission pipeline (the road is under construction so there is no traffic vehicle); For the location of underground pipeline across new Bac Son road, from pole C5.21 to pole C5.23: Cooperate with the Contractor of Bac Son Road Project to undertake open excavation through the under-construction road foundation for installation of reinforced concrete pipe DN1200 mm on the concrete support to make a treated water transmission pipeline (the road is under construction so there is no traffic vehicle); 	Contractor	Included in construction cost of contractor

Project Activity	Potential impacts	Proposed Mitigation Measure	Responsibility	Cost Estimate
		<p>For underground pipe locations across alleys, urban roads (such as Quang Trung, To Huu, Z115 ...), Provincial roads (No. 267, No. 270, etc.), which will be constructed by open excavation, the following specific solutions are applied:</p> <ul style="list-style-type: none"> - Coordinating with local authorities to fully inform the construction plan to local residents before construction; - Investigating and carefully surveying the systems of underground utility works in the construction area; - Adequately arranging barriers, signs, signal lights, and lights for traffic warning; - Arranging personnel to control traffic and organize traffic flow throughout the construction period; - Organizing the construction in the form of rolling and finishing in the shortest time for the underground pipeline segments installed across the roads; - Gathering profound materials, manpower and equipment to carry out the construction during low traffic times (from 22:00 to 5:00 AM) and immediately or temporarily recover the road surface before 5:00 AM to ensure normal daytime traffic in the project area; <p>For roads with wide roadbeds and low daily traffic volume, it is possible to temporarily block ½ part of the roadway for construction. After such construction being completed, recovering the road surface, cleaning up the site and blocking the remaining part of the roadway for construction.</p>		
Focus of workers, accident risks and impacts on dust in construction site	Risk of Occupational and Community Health and Safety	<ul style="list-style-type: none"> ▪ Equipping fully labor protection tools for workers ▪ Training workers in labor safety. ▪ Preparing first aid facilities on the construction site ▪ Ensuring living conditions for workers, preparing camps for workers in the construction site. ▪ Periodically inspecting safety equipment, operation mode of devices. ▪ Direct workers at construction site or operating officials must be trained and practiced proper operation rules when having problems. ▪ Rules and safety warning signs at construction site 	Contractor	Included in construction cost of contractor

Project Activity	Potential impacts	Proposed Mitigation Measure	Responsibility	Cost Estimate
		<ul style="list-style-type: none"> ▪ Full lighting system if constructing at night ▪ Periodically checking workers' health 		
	Electrocution	<ul style="list-style-type: none"> ▪ Power lines in offices and construction sites must be safely installed. Power connectors must not be left on the ground and must have plugs and sockets. Outdoor electrical panels must be securely placed in protective boxes/cabinets; ▪ Safety rules must be posted at construction sites; ▪ Warning signs on areas prone to fire and explosion must be installed; ▪ Construction sites must be equipped with fire extinguishers; ▪ Install appropriate lighting system; ▪ Install automatic fire equipment for the whole area; ▪ Install fire extinguishing system inside the wall; ▪ Arrange fire and explosive rescue system; ▪ Inspect the fire and explosive prevention on a regular basis; ▪ Regularly communicate, train officials, workers on fire protection methods; ▪ Design and construct water supply systems with a sufficient storage capacity to ensure the fire prevention and protection in the entire Project area; ▪ Fully comply with fire protection and prevention regulations, such as fire protection and prevention Act, TCVN 2622-1995 on fire protection and prevention for houses and buildings - design requirements; TCVN 5738-2000: automatic fire alarm systems - technical requirements, TCVN 5760-1993: Fire prevention system - General requirements for the design, installation and usage. TCVN 5040-1990: group fire protection and prevention equipment - symbols on the diagram of fire prevention - technical requirements; ▪ Regularly check the equipment on the probability of fire and explosives such as electrical appliances for daily activities; 	Contractor	Included in construction cost of contractor
Mobilization of vehicles and machinery	Risk of Occupational and Community Health and Safety	<ul style="list-style-type: none"> ▪ When automobiles are mobilized, brake and safe navigation system must be inspected, transportation vehicles must have wide lights and signboard; ▪ When it is foggy or smoky affecting visibility less than 30m, turn yellow lights or taillights. When the visibility is less than 30m or it is rainy or has thunderstorms which are dangerous, automobiles must be stopped running; 	Contractor	Included in construction cost of contractor

Project Activity	Potential impacts	Proposed Mitigation Measure	Responsibility	Cost Estimate
		<ul style="list-style-type: none"> Transportation vehicles to/from the construction sites must not generate dust and mud on the routes. 		
	Public infrastructure encroachment	<ul style="list-style-type: none"> The vehicles for transportation need to be operated with registration load and covered carefully. The contractor does not excavate outside the construction area. Filling soil and ground restore need to be conducted immediately after pipe laying. An investigation for the location of underground facilities along the pipeline alignment, including site survey and consultation from competent authorities such as water supply agency, electricity Power Company, Communication Company, local PCs and communities will be carried out prior to the commencement of construction activities. The results of the investigation will be input for the construction method and plan in order to avoid the damages of the existing underground facilities A plan for possible contingencies will be set up in which there is any broken facilities will be compensated by Contractor if any In case of road is broken, Contactor has responsibility to repair existing condition of the road. 	Contractor	Included in construction cost of contractor
Construction activities Concentration of workers and equipment	Social disturbance	<ul style="list-style-type: none"> Avoid prolonging construction: focus on construction, ensure the schedule for the pipeline constructed in section. Coordinating with the local authority to strictly manage with labors from other areas such as staying temporary absent registration procedures. Set up rules on work hours, workers must have the cards to enter the area of the project to facilitate the management Announcing the progress and schedule of construction, aggregating material in the construction area There must be electric lighting on the site Construction materials shall be stored tidily at the required locations. Installation of barriers (temporary fence) at construction areas to prevent people access to the construction site of WTP and raw water pumping station (Phuc Triu commune) 	Contractor	Include in construction cost of contractor

Project Activity	Potential impacts	Proposed Mitigation Measure	Responsibility	Cost Estimate
		<ul style="list-style-type: none"> The local people shall not be allowed in high-risk areas (excavation sites and areas where heavy equipment is in operation). Construction workers who are not local people must register temporary residents and obtain temporary residential certificate from local authority. Educate workers on appropriate behavior for interactions with local community and risks of communicable diseases 		
Operational phase				
Impacts of treatment machinery, pressure affected to wall pipe, broken pipe by external forces	Degradation of input/output water quality	<ul style="list-style-type: none"> Control of the input and output water quality of the treatment station, testing periodically to ensure the quality of treated water getting standard at least 3 months per time. Assigning staffs for regularly checking water pipelines and facilities of project; Handling and repairing timely of water leaking pipe, broken pipe cause by natural accident, human activities to avoid water loss and flooding which can affect to local people; Testing influent raw water and treated water periodically 	Management Unit	Include in operation cost
external forces crack and break pipe, increase of internal pressure	Pipe breakdown incidences, Loss of water	<p>By technical solutions such as removal of old dust-iron pipe and valves by the new HDPE pipe and valves, the project reduces water loss into environment. So, environment incidents cause by water loss and broken pipe is reduced.</p> <p>Besides, project owner must do the following measures to reduce environment incidents:</p> <ul style="list-style-type: none"> - Assigning staffs for regularly checking water pipelines and facilities of project; - Handling and repairing timely of water leaking pipe, broken pipe cause by natural accident, human activities to avoid water loss and flooding which can affect to local people; <p>Signing and recommendation symbol for people to know what the water pipes go through residential areas to avoid damaging pipes</p>	Management Unit	Include in operation cost
Chlorine leakage, electrical short-circuit, lightning	Operational risks (chemical leak etc.)	<ul style="list-style-type: none"> Need quantitative check of proper concentration of chemicals (chlorine) coming into a tank. Checking the chemicals storage regularly to avoid chemical leakage into environment 	Management Unit	Include in operation cost

Project Activity	Potential impacts	Proposed Mitigation Measure	Responsibility	Cost Estimate
		<ul style="list-style-type: none"> • Arranging backup generator • Training operation procedures to entire workers • Labor protection has to be equipped fully • The equipment for fire prevention and fighting such as fire extinguishers and fire hydrant has to be equipped fully • Proposal of fire prevention and fighting measures, gaseous chlorine leakage measures • Chlorine detecting equipment, spays at the chlorine room 		
Water treatment activities	Sludge	<ul style="list-style-type: none"> • Dredging periodically, • Shipping disposal in accordance with provincial regulations • Transport vehicles should be carefully covered, not overloaded to avoid spillage of mud on the road through the village causing to unsanitary environment. 	Management Unit	Include in operation cost
Activities of Operators	Domestic wastewater, solid waste	<ul style="list-style-type: none"> • Arrange barrels at the WTP, pumping station area • Wastewater is treated in septic tank before discharging to environment 	Management Unit	Include in operation cost
General operation	Fire, Electrocutation	<ul style="list-style-type: none"> ▪ Inspect the fire and explosive prevention on a regular basis; ▪ Regularly communicate, train officials, workers on fire protection methods; ▪ Regularly check the equipment on the probability of fire and explosives such as electrical appliances for daily activities; ▪ Manage the use of electrical equipment in the offices and operating rooms of WTP properly. Avoid using overloaded electrical equipment that may affect the electrical system of whole works. 	Management Unit	Include in operation cost

4 ANALYSIS OF ALTERNATIVES

1. During FS study in 2014, Thai Nguyen Water Company proposed three options for selecting location for the WTP and its access road:

- (i) Option I: Constructing the plant on the southern side of Voi Phun Hill, in Phuc Tien hamlet, Phuc Triu commune
- (ii) Option II: to construct the plant at the location near the area of Voi Phun mountain, behind the lake's sub-dam (on the side of Da Dung Hill, the height of the ground of the plant is from + 65.00 to + 38.00 m)
- (iii) Option III: to construct the plant on the west-north side of Voi Phun Hill

Prioritized criteria for selecting the location of WTP

- The ground level for the WTP that has a significant role for sustainable operation of WTP
 - Avoidance or limitation of forest land acquisition
 - Avoidance or limitation of building auxiliary works such as water tank, pumping station, access road, extra pipeline
2. Comparison of three options is shown in Table 5

Table 5. Comparison of options for the WTP

	Option 1	Option 2	Option 3 (Selected)
Description	The option has been put in the planning of South Nui Coc – Voi Phun Hill. The water from Nui Coc lake will be pumped up to the water supply plant located on the top of Voi Phun Hill.	The position is located on the side of Da Dung Hill, near the area of Voi Phun mountain, behind the lake's sub-dam.	The position is located on the west-north side of Voi Phun Hill
Ground level	Height of constructed plant: + 95.00 m (the selected height was based on the results of hydraulic calculation of water supply network of Thai Nguyen city). The water from Nui Coc lake will be pumped up to the water supply plant located on the top of Voi Phun Hill. Then, the clean water will be supplied to the city by means of gravity due to the altitude difference of the terrains.	Height of constructed plant: + 48.00 m. Raw water from Nui Coc lake would be pumped to the WTP. After treatment, the clean water would be supplied to the city by the combined method of using the secondary pumping station II and self-flowing from storage tank	Height of constructed plant: + 60.00 m to + 70.00 m. Raw water from Nui Coc lake would be pumped to the WTP. After treatment, the clean water would be supplied to the city by the combined method of using the secondary pumping station II and self-flowing from storage tank at the beginning of network thanks to the terrain altitude difference.

	Option 1	Option 2	Option 3 (Selected)
Forest acquisition	Acquiring the most forest land to build large water storage tanks, long access road, drainage system,	Acquiring forest land is the second for extra water storage tanks, secondary pumping stations, sludge drying yards, and raw water pipeline network (1400 m compared with 300m and 170m of option 1 and 3 respectively)	Acquiring forest land is lowest due to no need of construction of long access road, raw water pipeline.
Auxiliary works	Construction cost is highest due to large volume of earthwork, leveling, long access road and drainage system Large water storage tanks need to be built Access road: 400 m	Construction cost is lowest due to construction being in the lower area that reduces the volume of earthwork, leveling Easier to build the drainage system. However, sludge drying yards, water storage tanks, secondary pumping stations need to be built Access road: 80 m	Construction cost is medium among three options. Easier to build the drainage system water storage tanks, secondary pumping stations need to be built Access road: 130 m
Advantages/ Disadvantages	Operation cost is lowest due to high altitude of the WTP, water after treatment can flow by means of gravity to users. Construction cost is highest, forest acquisition is largest which may lead to soil erosion and sedimentation impacts	Construction cost is lowest Operation cost is highest	Forest land acquisition is lowest using both methods (i) the secondary pumping station II and (ii) self-flowing from storage tank to save operation cost

3. The above comparison shows that Option III is the best option for the location of WTP its access road on both environmental and economic aspects. It will acquire the smallest area of Nui Coc Lake Protection forest which helps to reduce the impact in term of soil erosion and sedimentation and construction and operation costs are more reasonable than the costs of other options.

5 ENVIRONMENTAL MONITORING

4. Environmental monitoring activities of the project include: (1) monitoring the EMP compliance, and (2) monitoring of environmental impacts caused by the Project activities. Environmental effect monitoring will be implemented with major concentration on the construction phase.

(i) Environmental Performance Monitoring is conducted to evaluate compliance with standard operating procedures, national standards on environment and technical specifications. The main purpose of environmental performance monitoring is to ensure that all proposed mitigation measures will be complied with contractors during the construction time.

(ii) Environmental Effect Monitoring is conducted to evaluate the impacts by the project activities on ambient environmental quality.

5. Responsibilities and budget for environmental effect monitoring during the construction and operation phases are identified as follows.

Construction phase

6. All mitigation measures will belong to the Contractor's responsibilities, which shall be implemented by the Contractor. The costs are included in the contract between Construction Contractor and Thai Nguyen Water Joint Stock Company.

7. Both environmental performance monitoring and environmental effect monitoring will be mainly conducted by Construction Supervision Consultant (CSC) and the TOR and cost for these tasks will be included under contract of CSC and Thai Nguyen Water Joint Stock Company (see Appendix 1 for the cost estimate of environmental effect monitoring). PMU under Thai Nguyen Water Joint Stock Company will also be responsible for the environmental performance monitoring through periodic or random site inspection. The contractors will be responsible for conducting performance monitoring for their subcontracts, suppliers in implementing technical specifications of relevant mitigation measures.

Operation phase:

8. During the operation and maintenance phase, the works operation and management unit will provide budget for implementing mitigation measures, capacity strengthening training, and staff salary.

9. There is no cost estimate for environmental monitoring during the operation and maintenance phase is included in this EMP.

10. Obligations and responsibilities to undertake mitigation measures and monitoring activities are presented in Section 7 of the EMP

5.1 Project Performance Monitoring²

Table 6. Compliance Monitoring

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
Pre-construction Phase						
<p>Land acquisition at location of WTP and raw water pump station will be completed in August 2019.</p> <ul style="list-style-type: none"> - There are meetings between local leaders with clusters of population, analyzing and resolve any questions before proceeding for compensation. - A notice in writing or on the news or through meetings to individual households about compensation clearance plans. - The clearance works need to perform after the harvest in order to avoid influencing the use of land and arable of the people and limiting compensation costs. - Calculation exactly amount of compensation and policies adequate compensation of rice and fish shrimp for farmers. - Clearance each part, construction where, clearance there. This is necessary to avoid wasting the people, to avoid traffic jams 	<p>Properly relocation of all affected facilitates</p> <p>Permanent land acquisition was compensated</p> <p>Monitoring parameters:</p> <ul style="list-style-type: none"> - Public consultations and monitoring activities related to land acquisition; - Complains from affected people; - Cash compensation. 	Phuc Triu commune	Community consultation was performed at area of the project as Phuc Triu commune during detailed design preparation	Before construction phase	RAP consultant	In a separate contract with Thai Nguyen Water Joint Stock Company

²Implementation of monitoring activities of project to evaluate Contractor's conformity of activities procedures, specifications and/ or technical requirements to EMP;

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
Protection forest acquisition - Reduction of tree loss by designing green zones within the WTP where existing trees should be kept for the landscape of WTP - Demarcation of forest to be cleared and remaining area of Protection forest will be clearly defined in the plan 1/500 of the Voi Phun hill area - Design of terraces to help slow down erosion - The design of WTP including green zones therein should be sent to Nui Coc lake protection forest management unit for consultation; all comments/concerns of this unit must be addressed adequately in the final design before it is approved.	- Green zones within WTP - Requirements integrated in the planning scale 1/500 for the Project area - The design of terraces, diversions - Comment/concern of the forest management unit	Voi Phun hill	Observation / review documents	Once	Thai Nguyen Water Joint Stock Company	TWACO fund

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
<ul style="list-style-type: none"> - Integrating the requirement of green zones, demarcation of forest to be cleared and remaining area of Protection forest for preventing soil erosion into the detailed planning scale 1/500 for the Project area; sending a draft of planning to the forest management unit for review before it is approved - Payment of VND 465,000,000 to PFDF for 7.75 ha re-plantation/forestation as a compensation for the forest area lost by the Project. (by the end of August 2019) - Payment of the compensation for 8 affected households (by the end of August 2019) - Informing the forest management unit of the project schedule and progress during pre-construction phase - Initiate the monitoring of re-plantation/forestation progress 	<ul style="list-style-type: none"> - Requirements integrated in the planning scale 1/500 for the Project area - Compensation payment - Progress of re-plantation/forestation projects implemented by PFDF - Consultation meetings with the forest management unit 	N/a	Observation / review documents	Once	Thai Nguyen Water Joint Stock Company	TWACO fund
Unexploded Ordnance removal						
Demining at the project area is not performed yet	Agreement document with relevant agency in carrying out UXO remove	In all construction sites under civil work	Contract with a specialized army unit to clear UXO		PMU (under Thai Nguyen Water Joint Stock Company)	Not performed yet
Construction Phase						
Loss of forest						
<ul style="list-style-type: none"> - Establishment of barriers, fences to separate the areas for construction sites and the remaining forest area 	<ul style="list-style-type: none"> - Establishment of barriers, fences - Education program, training course - Material sources used by contractors 	Voi Phun hill	Observation / review documents	Every 3 months	Contractors	Included in the contract of contractor

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
<ul style="list-style-type: none"> - Education and awareness of workers that the remaining forest area is not to be accessed for any purposes; - No materials to be used from the remaining forest area; 						
<p>Thai Nguyen water company will pay an amount of money calculated based on the acquired area and type of removed trees to Provincial Forest Development and Protection Fund (PFDF) under management of DARD. Cost for the forest re-plantation/forestation is about VND 465,000,000 and the payment will be completed no later than August 2019. This cost will contribute to implement some reforestation projects in 2020 in Thai Nguyen province that are (i) protection and production forest plantation (<i>acacia</i> and <i>michelia mediocris</i> trees for both types of forest with total area of 60 ha) and strengthening forest fire protection capacity of Thai Nguyen province project in Dong Hy and Dai Tu districts; and (ii) forest protection and development in Vo Nhai district which will plant <i>acacia</i> trees on 40 ha of forest. This will ensure no net loss of the protection forest and production forest.</p>	<ul style="list-style-type: none"> ▪ The progress of the forestation projects implemented by PFDF in Thai Nguyen Province ▪ The total size (by ha) of the lost protection forest and production forest (in 2019 and 2020) in Thai Nguyen Province ▪ The total size of the replanted protection forest and production forest (in 2019 and 2020) in Thai Nguyen Province ▪ The types of trees used for forestation 	Dong Hy, Dai Tu and Vo Nhai Districts	<p>Observation / check documents related to the forestation projects by PFDF</p> <p>Every 6 months, PFDF must submit to Thai Nguyen PPC a progress report for their forestation projects</p>	Every 6 months	Thai Nguyen PPC/ Thai Nguyen Water Joint Stock Company	Annual operational budget of Thai Nguyen PPC
Noise and vibration generation						
All noise and vibration generation activities shall be restricted to the hours of 9pm – 6am	Construction time, noise level	In all construction sites under network pipelines and WTP	Observation and public consultation, worker interview	Every week	Construction Supervision Consultant (CSC); PMU (under Thai	In a contract with Thai Nguyen Water Joint Stock Company

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
					Nguyen Water Joint Stock Company)	
Regularly maintenance of construction machines, use of qualified mechanic and equipment periodically	Construction machines and equipment must be maintained frequently (every 3 months)	In all construction sites under network pipelines and WTP	Document review and worker interview	Every 3 months	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Provision noise protection equipment for worker	Noise protection equipment for worker	In all construction sites under network pipelines and WTP	Observation and worker interview	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
In case of construction at night the contractor has to informed to community at least 2 days	Method and notifications of the contractor	In all construction sites under network pipelines and WTP	interview	Construction at night	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Local communities should be informed about construction schedules people meetings and notice board	Meeting minutes Notices Information dissemination methods	In all construction sites under network pipelines and WTP	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
<i>Dust and exhaust generation</i>						

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
Transporting vehicles must be covered carefully and regularly washed and cleaned after being used.	Checking the covers of vehicles and sticky soil of each vehicle	In all construction sites under civil work	Observation and interview worker	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Keeping machineries from idle operation	Activities of machineries in the construction site	In all construction sites	Observation and interview worker and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
On hot and dry days, regularly watering on the transportation route and on the construction site 2 times per day to reduce dust	Water spraying in the construction site	In all construction sites	Observation and interview worker and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
The leveling materials poured from transporting vehicles need to be bulldozed and compacted to avoid the spread of wind and being pulled over by other vehicles running on the construction site	Checking the excavation activities and cover of vehicles	In all construction sites	Observation and interview worker and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Setting barriers in the construction site, tole fence 2.5 meters in height	Checking fence and barriers	In WTP construction sites	Observation		CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
Limiting construction in the period time from 9. p.m. to 6.a.m.in order not to disturb local people's life	Checking construction diary, construction time	In all construction sites	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Covering carefully the areas gathering materials and waste.	Checking recovered activities	In all construction sites	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Machineries, construction vehicles must be ensured in term of registration certificate of environment and technique	Construction machines and equipment must be maintained frequently (every 3 months)	In all construction sites	Document review and worker interview	every 3 months	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Causing local flooding						
Redundancy drainage pump	Checking duty pumps	In all construction sites	Observation	during testing pumping	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Discharging to existing canal/trench or constructed canals/trench	Checking condition of canal, trench for drainage on the site	In all construction sites	Observation	during testing pumping	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
						Stock Company
Land subsidence						
Checking soil before construction	Note and information to related agencies in case of the phenomenon of subsidence is happened during construction	In all construction sites	Observation	During construction	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
In case of land subsidence, the contractor has to take reinforcement measures immediately	Piles reinforcement, finish of the phenomenon of subsidence	In all construction sites	Observation	During construction	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Water pollution						
Worksite, camps, material storage areas and load/unload construction material/waste activities must be located far from watercourse to ensure that materials will not be disposed into water	Checking position compared to other surface water in the area	In all construction sites under civil work	Observation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Collecting and tidying up waste at the construction site everyday	Waste collection activities, trash bins in construction site	In all construction sites under civil work	Observation, construction diary	Every day	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Building a temporary drainage system on the construction site to reduce wastewater or	Checking drainage system in the work site	In all construction	Observation, questionnaire	Every week	CSC, PMU under Thai	In a contract of CSC with

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
rainwater on the construction site which sweeps away contaminants into the lake, river		sites under civil work	e to contractor, construction documents of contractor		Nguyen Water Joint Stock Company	Thai Nguyen Water Joint Stock Company
Propagating and educating workers about awareness of protecting environment	Education and communication activities	In all construction sites under civil work	Interview worker, contractors	In every weekly meeting	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Ensuring construction progress	Check the construction schedule	In all construction sites under civil work	Observation, Construction diary	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Provide adequate facilities in the site including latrines, holding areas and garbage cans. Waste from latrines will be collected and treated properly through an economic contract with local environmental co-operatives/companies	latrines, holding areas, garbage cans at the sites and waste collection	In all construction sites under civil work	Observe and interview worker	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Equip dustbins and mobility septic tanks to work sites ((it is proposed that there will be 6 dustbins and 3 mobility septic tanks provided at each construction site)	Number of dustbins and mobility septic tanks at work site	In all construction sites under civil work	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Generation of solid waste						

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
Arrangement of barrels and trash bins	Volume of waste, trash bins in construction site	In all construction sites under civil work	Observation interview worker, public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Discharging waste soil to landfill according to regulation	Volume of waste, condition of receiving source, Discharging contract	In all construction sites under civil work	Check the trash bins, the discharging contracts	Once at the beginning of the civil construction phase	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Collecting waste on the construction site every day, setting rules of place to gather waste to avoid littering. Hiring the environmental sanitation services or local environmental cooperation	Volume of waste, condition of receiving source, Discharging contract, trash bins in construction site	In all construction sites under civil work	Observation, Take interview with local public, workers	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Construction waste materials such as broken bricks, concretes, waste steel, soil should be gathered and sorted into groups to process and transport to Tan Cuong landfill.	Volume of waste, condition of receiving source, Discharging contract, trash bins in construction site	In all construction sites under civil work	Check the discharging contracts, public consultation	Once at the beginning of the civil construction phase and Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Construction waste which is mainly damaged building materials should be gathered and sorted into groups to process	Volume of waste, condition of receiving source, Discharging contract, trash bins in construction site	In all construction sites under civil work	Observation public consultation Supervision diary	Monthly	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
Waste fuel emitted by machinery should be put into a separated tank and should not discharge into the environment	Check trash bin and barrels on the site	In all construction sites under civil work	Observation interview worker, public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Educating workers' awareness of environmental protection for, the proposing regulations on disposal on building site	Education and communication activities	In all construction sites under civil work	Interview worker, contractors	Every weekly meetings	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Generation of Hazardous waste						
Collecting to separated trash bin	Checking trash bin on the site	In all construction sites under civil work	Observation interview worker, public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Ensure that safe storage of fuel, other hazardous substances are agreed by Thai Nguyen Water Joint Stock Company	Storage locations and safety specifications	In all construction sites under civil work	Site observation, document review	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Equipment/vehicle maintenance and refueling areas will be confined to areas in construction sites designed to contain spilled lubricants and fuels	Equipment/vehicle maintenance and refueling locations and safety specifications	In all construction sites under civil work	Site observation, document review	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
						Stock Company
Fuel and other hazardous substances shall be stored in areas provided with roof	Storage locations and safety specifications	In all construction sites under civil work	Site observation, document review	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Conduct daily records on use of hazardous substance and waste generation	Records and content on the records	In all construction sites under civil work	Site observation, document review	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Hiring a unit with treatment function as prescribed at Circular no 36/2015/TT-BTNMT on management of hazardous waste	Status of hazardous storage	In all construction sites under civil work	Observation and document inspection Treatment Hiring contract	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
<i>Traffic disturbance</i>						
Place sign boards near construction sites to direct traffic means to slow down at the section close to existing road	Status of sign boards and method to direct traffic means at the construction sites	In all construction sites under civil work network pipelines	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Regulating the transport vehicle speed will not be over 20km when passing above areas	Status of regulation and notices Speed of transport vehicles	In all construction sites under	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen	In a contract of CSC with Thai

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
		civil work network pipelines			Water Joint Stock Company	Nguyen Water Joint Stock Company
Barriers around construction area	Checking fence and barriers	In WTP, Pumping station construction sites	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Regarding to the construction of intersections to pipeline and railway, highway, pipe jacking method will be performed to minimize impacts to transport	Checking sign, notification boards	In all construction sites	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Construction materials shall be stored tidily at the required locations	Location for material gathering, storage	In all construction sites	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Temporary access shall be provided in along the pipelines which high household density streets at identified above for the affected households	Status of access roads; number of access roads; improvement of traffic status;	Along the pipeline installation	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Reinstate access to affected households upon completion of the works items and	Level of compensation; level of completion; responsibility; satisfaction of affected households	Along the pipeline installation	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen	In a contract of CSC with Thai

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
road surface at the sections need to be excavated by construction activities					Water Joint Stock Company	Nguyen Water Joint Stock Company
The Contractor must always maintain security fences for the construction sites which are close to residential areas if needed. The fences must define clearly the site boundaries	Checking fence and barriers	In all construction sites	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
<i>Ensurance of traffic activities and social safety regarding the construction of underground pipeline sections across roads and railway</i>						
It is requested to prepare appropriate construction solutions and methods for each cross point.	Checking and approval of Contractor's construction method	Cross points of underground pipelines and roads	Review of related documents	Weekly	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Coordinating with management boards of railway, roads and local authority during the construction of crossing pipelines and inform the residents within project area about the construction schedule of cross points	- Announcement content; - Measure for disclosure.	Area surrounding project site	Document review and public consultation	Weekly	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Installation of temporary fences, giving signal boards and lights at the site during the construction period	Checking fences, system of signal boards and lights	Cross points of underground pipelines and roads	Observing and public consultation	Daily	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
						Stock Company
Organization for traffic flow diversion and arrangement of personnel for traffic regulation during the construction time	- Checking plan on traffic diversion; - Checking the arrangement of personnel for traffic regulation	Cross points of underground pipelines and roads	Observation and public consultation	Daily	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Fully gathering materials, equipment and staff for construction work	Locations for gathering materials, equipment and staff for construction work	Construction site	Direct observation	Daily	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Focus is given to strongly finish the construction work at each location of cross points	Supervision of construction work	Cross points of underground pipelines and roads	Direct observation	Daily	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Organization of construction work at low traffic loading time (from 22:00 to 5:00)	Supervision of construction work	Cross points of underground pipelines and roads	Direct observation	Daily	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Full recovery/ temporary recovery of road surface to ensure the normal traffic activities in day time of the project site	Checking and assesment of the level of road recovery	Cross points of underground pipelines and roads	Observation and public consultation	Daily	CSC, PMU under Thai Nguyen Water Joint	In a contract of CSC with Thai Nguyen Water Joint

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
					Stock Company	Stock Company
Road recovery after completion of construction work	<ul style="list-style-type: none"> - Checking and assesment of the level of road recovery; - Satisfaction of professional management units/ affected households 	Cross points of underground pipelines and roads	Observation and public consultation	Daily	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
<i>Risk of Occupational and Community Health and Safety</i>						
Equipping fully labor protection tools for workers	The quantity and kinds of work protection	In all construction sites under civil work	Observation and public consultation worker interview	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Training workers in labor safety	Interview about work insurance	In all construction sites under civil work	Worker interview	Before construction	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Preparing first aid facilities on the construction site	Check the first aid box and telephone number of health center	In all construction sites under civil work	Observation and worker interview	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Ensuring living conditions for workers, preparing camps for workers in the construction site	Checking sanitation condition in camps	In all construction sites under civil work	Observation and worker interview	Every week	CSC, PMU under Thai Nguyen Water Joint	In a contract of CSC with Thai Nguyen

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
					Stock Company	Water Joint Stock Company
Periodically inspecting safety equipment, operation mode of devices.	Number and categories of safety equipment, fire extinguishers and first-aid kits	In all construction sites under civil work	Observation and worker interview	Every 3 months	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Direct workers at construction site or operating officials must be trained and practiced proper operation rules when having problems	Construction rules, the contents of training program and duration	In all construction sites under civil work	Observation and worker interview	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Rules and safety warning signs at construction site	Checking Rules and safety warning signs at construction site	In all construction sites under civil work	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Full lighting system if constructing at night	Lighting, lighting activities at night	In all construction sites under civil work	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Periodically checking workers' health	Worker's health	In all construction sites	worker interview	Every 6 months	CSC, PMU under Thai Nguyen Water Joint	In a contract of CSC with Thai Nguyen

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
					Stock Company	Water Joint Stock Company
<i>Electrocution</i>						
Power lines in offices and construction sites must be safely installed. Power connectors must not be left on the ground and must have plugs and sockets. Outdoor electrical panels must be securely placed in protective boxes/cabinets;	Power lines and Outdoor electrical panels in offices and construction sites	In all construction sites under civil work	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Safety rules must be posted at construction sites;	Checking Safety rules at construction site	In all construction sites under civil work	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Warning signs on areas prone to fire and explosion must be installed;	Checking Warning signs at construction site	In all construction sites under civil work	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Construction sites must be equipped with fire extinguishers;	Checking fire extinguishers	In all construction sites under civil work	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Install appropriate lighting system;	Checking lighting system	In all construction	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen	In a contract of CSC with Thai

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
		sites under civil work			Water Joint Stock Company	Nguyen Water Joint Stock Company
Install automatic fire equipment for the whole area;	Checking automatic fire equipment for the whole area	In all construction sites under civil work	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Install fire extinguishing system inside the wall;	Checking fire extinguishing system inside the wall	In all construction sites under civil work	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Arrange fire and explosive rescue system;	Checking fire and explosive rescue system	In all construction sites under civil work	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Inspect the fire and explosive prevention on a regular basis;	Checking the fire and explosive prevention	In all construction sites under civil work	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Regularly communicate, train officials, workers on fire protection methods;	Fire protection rules, the contents of training program and duration	In all construction	Observation and worker interview	Every week	CSC, PMU under Thai Nguyen	In a contract of CSC with Thai

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
		sites under civil work			Water Joint Stock Company	Nguyen Water Joint Stock Company
Design and construct water supply systems with a sufficient storage capacity to ensure the fire prevention and protection in the entire Project area;	Checking a sufficient storage capacity	In all construction sites under civil work	Observation and worker interview	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Fully comply with fire protection and prevention regulations, such as fire protection and prevention Act, TCVN 2622-1995 on fire protection and prevention for houses and buildings - design requirements; TCVN 5738-2000: automatic fire alarm systems - technical requirements, TCVN 5760-1993: Fire prevention system - General requirements for the design, installation and usage. TCVN 5040-1990: group fire protection and prevention equipment - symbols on the diagram of fire prevention - technical requirements;	Check compliance	In all construction sites under civil work	Observation and worker interview	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Regularly check the equipment on the probability of fire and explosives such as electrical appliances for daily activities;	Check the equipment	In all construction sites under civil work	Observation and worker interview	Every day	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
<i>Risk of Occupational and Community Health and Safety caused by mobilization of vehicles and machinery</i>						
When automobiles are mobilized, brake and safe navigation system must be inspected,	Check vehicles	In all construction	Observation and worker interview	Every day	CSC, PMU under Thai Nguyen	In a contract of CSC with Thai

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
transportation vehicles must have wide lights and signboard;		sites under civil work			Water Joint Stock Company	Nguyen Water Joint Stock Company
When it is foggy or smoky affecting visibility less than 30m, turn yellow lights or taillights. When the visibility is less than 30m or it is rainy or has thunderstorms which are dangerous, automobiles must be stopped running	Check weather and vehicles conditions	In all construction sites under civil work	Observation and worker interview	Every day	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Transportation vehicles to/from the construction sites must not generate dust and mud on the routes	Check vehicles	In all construction sites under civil work	Observation and worker interview	Every day	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
<i>Public infrastructure encroachment</i>						
The vehicles for transportation need to be operated with registration load and covered carefully	Record of vehicle load	In all construction sites	Document review and observation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
An investigation for the location of underground facilities along the pipeline alignment, including site survey and consultation from competent authorities such as water supply agency, electricity Power Company, Communication Company, local PCs and communities will be carried out prior to the commencement	Records of agencies consultation; Results of investigation written in the work-plan; damages of existing structures	In all construction sites	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
of construction activities. The results of the investigation will be input for the construction method and plan in order to avoid the damages of the existing underground facilities						
A plan for possible contingencies will be set up in which there is any broken facilities will be compensated by Contractor if any	Availability of contingency plan; Affected facilities; status of compensation; present facilities compensated;	In all construction sites	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
In case of road is broken, Contactor has responsibility to repair existing condition of the road.	Checking status of pipe	In all construction sites under civil work	Observation and public consultation	Road is broken	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
<i>Social disturbance</i>						
Avoid prolonging construction	Construction plan of the Contractor	In all construction sites under civil work	Observation and On site Checking	Weekly	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Coordinating with the local authority to strictly manage in the aspect of law as for the labor which is not local people	Checking staying temporarily absent registration of entire workers, access card (if any) and construction site rules	In all construction sites under civil work	Checking staying temporarily absent registration of entire workers, access card	Monthly	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
			(if any) and construction site rules			
There are rules on work hours, workers must have the cards to enter the area of the project to facilitate the management	Checking access card (if any) and construction site rules	In all construction sites under civil work	access card (if any) and construction site rules	Every day	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Announcing the progress and schedule of construction, aggregating material in the construction area	Issued documents and reports	In all construction sites under civil work	Public consultaion		CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
There must be electric lighting on the site	Keep light on during the nighttime	Areas: Nui Coc WTP, raw water pumping station. Area under construction pipeline	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Construction materials shall be stored tidily at the required locations	Management of materials and location of storage areas	In all construction sites under civil work	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Install barriers (temporary fence) at construction areas to deter people access to the site	Availability of fences and suitability of fence used	In all construction	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen	In a contract of CSC with Thai

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
		sites under civil work			Water Joint Stock Company	Nguyen Water Joint Stock Company
The local people shall not be allowed in high-risk areas (excavation sites and areas where heavy equipment is in operation)	Provision of any warning signals in the sites	In all construction sites under civil work	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Construction workers who are not local people must register temporary residents and obtain temporary residential certificate from local authority	Status of workers: Registration to local authorities and conflicts available in the areas between local residents and workers	In all construction sites under civil work	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Educate workers on appropriate behavior for interactions with local community and risks of communicable diseases	Understandings of workers on local cultures and behaviors; time of training held by construction contractor;	In all construction sites under civil work	Observation and public consultation	Every week	CSC, PMU under Thai Nguyen Water Joint Stock Company	In a contract of CSC with Thai Nguyen Water Joint Stock Company
Operation phases						
Degradation of input/output water quality						
Control the quality of the input and output water of the treatment station, checking regularly to ensure the quality of treated water getting standard	Monitoring surface water according to QCVN 01,02/2009/BYT	Before and after treatment	Hiring monitoring contract with fully capacity	Every month	Thai Nguyen Water Joint Stock Company	included in operation cost

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
Assigning staffs for regularly checking water pipelines and facilities of project	Operating condition of pipelines	Water pipeline	Observation and public consultation	Every week	Thai Nguyen Water Joint Stock Company	included in operation cost
Handling and repairing timely of water leaking pipe, broken pipe cause by natural accident, human activities to avoid water loss and flooding which can affect to local people	Operating condition on each region	Breakdown area	Checking diary	After incidents	Thai Nguyen Water Joint Stock Company	included in operation cost
<i>Pipe breakdown incidents, Loss of water</i>						
<ul style="list-style-type: none"> - Assigning staffs for regularly checking water pipelines and facilities of project; - Handling and repairing timely of water leaking pipe, broken pipe cause by natural accident, human activities to avoid water loss and flooding which can affect to local people; - Signing and recommendation symbol for people to know what the water pipes go through residential areas to avoid damaging pipes 	Checking signs Operating condition on each region	Water pipeline	Observation and public consultation	Every week	Thai Nguyen Water Joint Stock Company	included in operation cost
<i>Operational risks (chemical leak etc.)</i>						
<ul style="list-style-type: none"> - Need quantitative check of proper concentration of chemicals (chlorine) coming into a tank. - Checking the chemical storage regularly to avoid chemical leakage into environment - Arranging backup generator - Training operation procedures to entire workers - Labor protection has to be equipped fully 	Monitoring the concentration of chlorine Checking labor protection of workers, first-aid kits	At the high-risk areas especially at the chlorine room	Chlorine leakage detector Checking actual condition and operation procedures	Every day	Thai Nguyen Water Joint Stock Company	included in operation cost

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
- Chlorine detecting equipment, spays at the chlorine room						
Sludge						
<ul style="list-style-type: none"> - Dredging periodically, - Shipping disposal in accordance with provincial regulations - Transport vehicles should be carefully covered, not overloaded to avoid spillage of mud on the road through the village causing environment unsanitary 	Sludge volume	Treatment tanks	Count the number of transmission trips	Every 3 months per time	Thai Nguyen Water Joint Stock Company	included in operation cost
Domestic wastewater and solid wastes						
Arrangement of barrels and trash bins	Number of trash bins	At WTP, pumping station	table of quantity	Every day	Thai Nguyen Water Joint Stock Company	included in operation cost
Discharging waste soil to landfill according to regulation	Waste volume, discharging location	At WTP	Checking discharging contract, operation diary	Every week	Thai Nguyen Water Joint Stock Company	included in operation cost
Fire, Electrocutation						
<ul style="list-style-type: none"> - Inspect the fire and explosive prevention on a regular basis; - Regularly communicate, train officials, workers on fire protection methods; - Regularly check the equipment on the probability of fire and explosives such as electrical appliances for daily activities; - Manage the use of electrical equipment in the offices and operating rooms of WTP properly. Avoid using overloaded 	Checking the equipment for fire prevention and fighting.	At WTP, pumping station	Observation	Every week	Thai Nguyen Water Joint Stock Company	included in operation cost

Mitigation measures	Monitoring parameter	Location	Method	Frequency	Responsibility	Cost
electrical equipment that may affect the electrical system of whole works.						

5.2 Monitoring of environmental impacts³

Table 7. Monitoring of environmental impacts

Mitigation Measures	Monitoring parameters	Location	Method	Frequency	Responsibility	Cost
<i>Construction phase</i>						
Monitoring of dust and noxious fumes	TSP, and meteorological indicators	<ul style="list-style-type: none"> - 1 point in Nui Coc WTP - 1 point in No. 270 road (pipeline network). - 1 point in network pipelines (No. 267 road) (pipeline network). 	Take air sample for analysis and compare result with related Vietnam Standards QCVN 05:2013/BTNMT	Every quarter in 24 months	Under contract of CSC with Thai Nguyen Water Joint Stock Company	As specified in Appendix 1
Monitoring of noise	Leq, L50 and Lmax	As the same ambient air monitoring locations as above	Measure at site and compare results with relevant standards (QCVN 26: 2010)	Every quarter in 24 months	Under contract of CSC with Thai Nguyen Water Joint Stock Company	As specified in Appendix 1
Surface water quality	pH, TSS, DO, COD, BOD 5, ammonium (NH ₄) by N, nitrite, nitrate (NO ₃ ⁻), Phosphate, Floating oil, Coliform	<ul style="list-style-type: none"> - 1 point within a radius of 20 m of the collection work in Nui Coc lake (for water supply treatment plant) 	Take water sample for analysis and compare result with related Vietnam Standards (QCVN 08-MT:2015/BTNMT)	Every quarter in 24 months	Under contract of CSC with Thai Nguyen Water Joint Stock Company	As specified in Appendix 1

Note: Monitoring requirements related to resettlement are provided in Resettlement Plan of Project.

³Environmental effects monitoring is conducted to estimate the impacts of the project on ambient environmental conditions

6 PUBLIC CONSULTATION PROCESS AND INFORMATION PUBLICATION

6.1 PUBLIC CONSULTATION PROCESS

11. Public consultation is used to help identify opportunities and risks, improved Project design and implementation, and increase Project ownership and sustainability. Public consultation is specifically required by the ADB's SPS. A meaningful public consultation was used for the Project. This is a two-way process in which beneficiaries provide advice and input on the design of the proposed Project that affect their lives and environment, promotes dialogue between governments, communities, NGOs and implementing agencies to discuss all aspects of the proposed Project. The feedbacks from consultations were incorporated into the original Environmental Management Plan (EMP) and this uEMP has been updated by consultation activities taking place during the detailed design.

12. Those affected by the Project include those resettled and those in the nearby communities affected by Project impacts, intended beneficiaries of the Project, key interest groups – depends upon the Project, local NGOs/Mass organizations, including women's unions, local authorities and other stakeholders.

13. The objectives of public consultation were as follows:

- To share all information on the items and tentative activities of the Project with local community and stakeholders;
- To gather opinions/comments and concerns from local authorities and the community on local particularities and environmentally sensitive matters in the Project area, especially matters that the environmental assessment impact group has not been aware of. On such basis, the concerns of the local community may be proposed for proper settlement during the selection of Project design options;
- To collect opinions/comments from the local community on the Project's tasks in the preparation of the updated EMP as well as comments on the draft EIA to adequately and precisely assess environmental impacts and propose the most effective and feasible mitigation measures for negative environmental impacts.

14. Information disclosure and public consultations are conducted during the Project preparation and implementation processes to ensure that affected households and key stakeholders are timely informed about land acquisition, compensation and resettlement. This is also an opportunity for the affected people to participate and express their opinions with regards to resettlement implementation programs. The resettlement preparation in coordination with the representatives of the CPCs in the Project area, and leaders of the villages organizes public meetings and consultations in order to inform and guide about the next steps in a timely manner. Organizations and individuals concerned about land acquisition and impacts, and resettlement had and will take part of the public meetings and consultations. Representatives of mass organizations in the Project that area attended the meetings and consultations included the Vietnam Women's Union, and Fatherland Front and Vietnam.

15. Key topics covered in the public consultations are as followings:

- i. Disseminate key information related to policies of the ADB, the Government and the Projects.
- ii. Provide locals with Project on resettlement, environment, gender as well as ethnic minority issues through village loudspeaker system and Project information brochures/leaflets;
- iii. Collect opinions and feedback of the local communities regarding the Project implementation;
- iv. In the community consultation, needs to introduce and public all information of Project and ADB's safeguard policies, collect opinions and comments of the residents on design and resettlement options as well as their aspirations and expectations are recorded;
- v. Respond questions to local communities concerning the Project and safeguard policies;

- vi. CPCs and PMU provided answers to questions to local residents related to Project and local policies;
- vii. Local communities, representatives of the CPC's and other stakeholders' contributions.

6.2 PUBLIC CONSULTATION RESULTS

The results of the public consultations are summarized in Table 7, Table 8 and Table 9.

6.3 INFORMATION PUBLICATION

16. The updated EMP had been disclosed at the offices of TWACO and the People's Committee of Project wards and communes. Information on the disclosure date was posted on the website of TWACO. Basing themselves on the contents of the updated EMP, the local people could get the Project information and contribute their opinions/comments on environmental issues of the Project.

17. The updated EMP will also be submitted to ADB for disclosure on ADB website.

Table 8. Public Consultation

Activity	Participant	Result	Schedule	Cost
Pre-construction phase				
Survey team conducts surveys and interviews with local residents of 2 Wards (Tan Thinh ward, Thinh Dan ward) and 4 communes (Phuc Triu commune, Phuc Xuan commune, Quyet Thang commune, Tan Cuong commune) of Thai Nguyen city of the project area from 19 May to 2 June 2017	PMU (Thai Nguyen Water Joint Stock Company), local affected people, local authorities and relevant agencies	Results show that the project gains enthusiastic support among people interviewed. Six (6) community leaders were interviewed in more details on their concerns over potential impacts of the project.	Community Consultant during period of FS updating and detailed design preparation	Cost are covered in Consultant package
The project owner has organized public consultation in PMU of Nui Coc Environmental Protection forest and affected households on 18/04/2019.	Legal Representative of PMU; Legal Representative of ADB; Representative of PMU of Nui Coc Environmental Protection forest; Legal representative of consultancy unit;	Collecting information to assess the impact of protection forest acquisition: <ul style="list-style-type: none"> - Introduction of the Project - information of acquired land original history and purposes of the protection forest - comments, concerns related to the acquisition of protection forest 	Public consultation for protection forest acquisition	Cost are covered in Consultant package
Construction phase				
Disseminate information to local community via public loudspeakers, announcements on newspapers	Community, PMU (Thai Nguyen Water Joint Stock Company), local environmental officers, Contractors	Informing communities about construction activities, works schedules, potential negative impacts on environment, environmental management measures and how to use the community grievance line	During the construction phase	Covered by the counterpart fund (PMU is responsible for payment). Estimated costs for four times of publication through loudspeakers and in the newspapers is: VND 15,000,000
Community grievance redress mechanism is established by the PMU (Thai Nguyen Water Joint Stock Company).	Community, PMU (Thai Nguyen Water Joint Stock Company), Contractors	PMU and Contractors shall have to reply to all complaints, questions or concerns of local communities, faculties and students about the works.	During the construction phase	

Notes: Consultation activities relating to resettlement and compensation are presented in Resettlement Plan for the Project; therefore, these activities shall not be described in this report.

Table 9. Time, location and participants of the public consultation

Date	Location	Participants
19/05/2017	Phuc Xuan commune	<ul style="list-style-type: none"> • Representative of PMU; • Representative of local government; • Representatives of local mass organizations; • Households in the project area; • Representative of consultant.
19/05/2017	Thinh Dan ward	
18/05/2017	Tan Thinh ward	
16/06/2017	Quyet Thang commune	
24/05/2017	Tan Cuong commune	
10/05/2017 & 18/04/2019	Phuc Triu commune	
02/06/2017	Quang Trung ward	<ul style="list-style-type: none"> • Representative of PMU; • Representatives of PMU of Nui Coc Environmental Protection forest; • Representative of consultant.
18/04/2019	PMU of Nui Coc Environmental Protection forest	

Table 10. The Results of The Public Consultation

No.	Participant's opinion	Feedback of PMU
1	Phuc Triu commune <ul style="list-style-type: none"> ○ The project will change the natural environment ○ Affect the livelihood of households with land acquisition ○ Impact on social order and safety of the area if management is not good ○ Incorporation of green trees after project completion ○ Create jobs for families affected by the project ○ Coordinate well with local authorities and communities in the project area 	<ul style="list-style-type: none"> ○ PMU receives opinions from residents to contribute for the Project. ○ All opinions of local authorities and people are mentioned in Chapter 5 on mitigation measures
2	Phuc Xuan commune <ul style="list-style-type: none"> ○ Agree with the environmental impact assessment of the project. ○ Apply dust minimization measures during construction such as regular irrigation ○ Clean up when construction is stopped, do not empty solid waste in the ward. 	<ul style="list-style-type: none"> ○ PMU receives opinions from residents to contribute for the Project. ○ All opinions of local authorities and people are mentioned in Chapter 5 on mitigation measures

No.	Participant's opinion	Feedback of PMU
	<ul style="list-style-type: none"> ○ It is strongly recommended to take measures to protect the environment during the construction process 	
3	<p>Tan Cuong commune</p> <ul style="list-style-type: none"> ○ Agree with the environmental impact assessment of the project ○ Propose the PMU to implement the mitigation measures in the EIA report ○ In the course of construction and use of the site, it does not affect the people's life, property and crops around the construction area. 	<ul style="list-style-type: none"> ○ PMU receives opinions from residents to contribute for the Project. ○ All opinions of local authorities and people are mentioned in Chapter 5 on mitigation measures
4	<p>Quyet Thang commune</p> <ul style="list-style-type: none"> ○ Quyet Thang Commune People's Committee completely agreed with the contents (in the document sent by the project owner) about the adverse impacts of the project on the natural and socio-economic environment. ○ Fully agreed with mitigation measures, the PMU is requested to strictly enforce these measures to minimize the adverse impacts on the environment and human health. ○ Especially not used construction equipment expired, no longer ensure technical safety 	<ul style="list-style-type: none"> ○ PMU receives opinions from residents to contribute for the Project. ○ All opinions of local authorities and people are mentioned in Chapter 5 on mitigation measures
6	<p>Quang Trung ward</p> <ul style="list-style-type: none"> ○ When installing pipeline through the ward area, it is necessary to have a permit and plan to return the ground to the Ward People's Committee for co-ordination. 	<ul style="list-style-type: none"> ○ PMU receives opinions from residents to contribute for the Project. ○ All opinions of local authorities and people are mentioned in Chapter 5 on mitigation measures
7	<p>Thinh Dan ward</p> <ul style="list-style-type: none"> ○ Ensure traffic safety for people and vehicles ○ Transporting materials must be promoted shielding ○ The environmental sanitation of garbage collection must be good ○ Strictly follow local regulations during the construction process. To carry out the commitments in the project. Adequate compensation for the 	<ul style="list-style-type: none"> ○ PMU receives opinions from residents to contribute for the Project. ○ All opinions of local authorities and people are mentioned in Chapter 5 on mitigation measures

No.	Participant's opinion	Feedback of PMU
	violation cases contractors. Ensure that local people are not disadvantaged by the impact of the contractor.	
8	Tan Thinh ward <ul style="list-style-type: none"> ○ Recommend contractors implement waste minimization. ○ Minimize dust, noise, vibration during construction 	<ul style="list-style-type: none"> ○ PMU receives opinions from residents to contribute for the Project. ○ All opinions of local authorities and people are mentioned in Chapter 5 on mitigation measures
9	Nui Coc Environmental Protection forestManagement Unit <ul style="list-style-type: none"> ○ There is no negative impact on the function of protect forest in the area causing by the acquisition of Voi Phun hill area for construction of the WTP ○ It is necessary to establish detailed planning 1/500 prior to implement and it should be sent to Nui Coc lake protection forest management unit for consultation, all comments/concerns of this unit must be addressed adequately in the final planning before it is approved. ○ An EIA complied with national regulations must be prepared and approved by Thai Nguyen PPC before construction. ○ Compensation for protection forest acquisition must follow the Law on Forestry ○ Green zones should be designed adequately within the campus of the WTP; ○ Informing to the management unit the project schedule and progress during pre-construction phase 	<ul style="list-style-type: none"> ○ An EIA has been prepared (included issues of protection forests) and submitted to the PPC for approval, expectedly in May 2019 ○ The planning is under preparation and will be sent to the management unit for review in the middle of May 2019 ○ The compensation will be followed the Law on Forestry ○ Thai Nguyen PMU received all comments for the project which will be integrated in the uEMP of Project with the solutions

7 INSTITUTIONAL STRENGTHENING AND TRAINING

7.1 Activities during construction phase

18. Experiences in other projects in Vietnam indicate that appointment of an Environmental Staffunder PMU (PMU-ES) whose role is to monitor and coordinate environmental management activities with the Project activities is very important.

19. A PMU-ES should be assigned by the PMU to be responsible for co-ordination of environmental activities of all components of the project. Such a position should be mobilized at the PMU. The main activities of the PMU-ES are as follows:

- (i) To ensure that the PMU are in compliance with the guidelines included in the Projects' Environmental Management Plan
- (ii) To prepare and submit semi-annual Safeguards Monitoring Reports (SMRs) to ADB and DONRE.
- (iii) To ensure the disclosure of the relevant information of SMRs to affected people upon submission to ADB.
- (iv) To act as the liaison between DONRE and other governmental authorities in terms of environmental issues
- (v) To ensure that all environmental considerations will be the PMU's fully understand their roles in integrating environmental concerns into procurement processes.

20. The PMU-ES should have environmental qualifications with experience in the environmental management. Dependent on his/her skills, the PMU-ES will be further trained by attending external training events. Expenses for these training activities are taken from the overall environmental management budget allocated for the Project.

21. Collaboration between PMU and CSC is needed to organize training courses to strengthen knowledge and experiences in environmental supervision and management. In Terms of References (TOR) of CSC, detailed plan and training documents for relevant objects in environmental supervision and management need to be included. These documents are prepared in the early stage and then approved by PMU.

22. The CSC will provide environmental trainings to the PMU and the contractors. The schedule and content of each course will be discussed with PMU depending on scale, level and project progress.

7.2 Activities during operational phase

23. Building of suitable capacities for Owners of infrastructure works is very important to continuously act environmental management during operation phase. TWACO has 01 staff in this section. However, all the construction works under this project are small scale and with lower environmental sensitivity, environmental issues can be implemented by existing staffs. The existing staff does not need to improve their knowledge on implementing EMP during operation phase.

24. Regarding to management of water supply system after completion of construction period, the Thai Nguyen Water Joint Stock Company needs to upgrade management capacity for existing staffs and add more human and equipment to ensure the operation and maintenance of addition water supply treatment plant, raw water pumping station and water network.

8 RESPONSIBILITIES AND AUTHORITIES FOR IMPLEMENTATION OF MITIGATION MEASURES AND MONITORING REQUIREMENTS

Table 11. Responsibilities for implementation

Agency	Responsibilities for implementation of environmental management
Thai Nguyen Water Joint Stock Company (PMU under Thai Nguyen Water Joint Stock Company)	<ul style="list-style-type: none"> - Overall responsibility for EMP implementation during the pre-construction and construction phases - Ensure that contract documents include environmental documents/requirements including this updated EMP - Ensure that sufficient funds are available in project budget for EMP implementation - Allocate adequate resources for environmental requirements. In order to be effective in the implementation process, PMU will assign an environmental staff (PMU-ES) to help with the environmental aspects of the Project - Undertake inspections and monitoring of environmental issues during construction phase - Prepare semi-annual Safeguards Monitoring Reports (SMRs) and submit to ADB for disclosure as well as to Thai Nguyen DONRE
Construction Supervision Consultant (CSC)	<ul style="list-style-type: none"> - The CSC will assign a qualified environmental staff (CSC-ES) with adequate knowledge on environmental protection and construction project management. The CSC-ES will be responsible for routine supervising and monitoring all construction activities and for ensuring that Contractors comply with the requirements of the contracts. - Review and approve the Site-specific EMP (SEMP) prepared by the contractors. - Prepare a detailed plan and training documents for relevant objects in environmental supervision and management, within one month after the mobilization, to be approved by PMU. - Provide environmental training(s) to PMU and contractors. - Carry out environmental effect monitoring (see Appendix 1) - Periodical implementation of onsite compliance monitoring to Construction Contractor; - Periodically complete snap-shot reports on SEMP and send to PMU, giving proposals for improvement. - CSC will also be responsible to support PMU to prepare semi-annual SMRs
Construction contractor	<ul style="list-style-type: none"> - Assign an environmental staff (Contractor's ES) - Prepare detailed SEMP to meet general requirements in EMP and train workers in environmental issues; - Fulfill assigned tasks under the SEMP and other issues related to EMP of the Project. If the Contractors find that mitigation measures in SEMP have been ineffectively implemented, they should recommend new or improved mitigation measures;

Agency	Responsibilities for implementation of environmental management
	<ul style="list-style-type: none"> - Allocate adequate resources to meet the requirements and obligations of Project's EMP; - The SEMP must be approved by the Monitoring Engineer and PMU's environmental team before construction commencement. - Actively communicate with local residents and take actions to prevent disturbance during construction. - Ensure that all staff and workers understand the procedure and their tasks in the environmental management program. - Report to the PMU and CSC on any difficulties and their solutions. - Report to local authority and PMU and CSC if environmental accidents occur and coordinate with agencies and keys stakeholders to resolve these issues
Local community	<ul style="list-style-type: none"> - The community has the right and responsibility to routinely monitor environmental performance during construction to ensure that their rights and safety are adequately protected and that the mitigation measures are effectively implemented by contractors and the PMU. If unexpected problems occur, they will report to the CSC and PMU.
Thai Nguyen DONRE	<ul style="list-style-type: none"> - Provide consultancy service and inform the project about any violation related to environmental management and protection policy of Vietnam, and provide technical support as required during Project implementation;
Works Ownership and Operation Unit	<ul style="list-style-type: none"> - Be responsible for environmental activities in operation phase including EMP implementation during operation; - Undertake inspections and monitoring of environmental issues during operation
District Level Environment Staff ⁴	<ul style="list-style-type: none"> - Provide consultants and support as requested during the process of project implementation; - Implement monitoring and reporting as internal requirements.

⁴Environmental Protection Law and regulations related to enhance roles of District level by taking part in verifying documents of "Environment Impact Assessment" and continuously monitor environmental aspects.

9 Grievance Redress Mechanism

25. A compliance framework, based on the environmental requirements established by the EMP and Environmental Specifications included in bidding documents, will be strictly enforced by Supervision engineers. The minor infringements will be identified as an incident which causes temporary but reversible damage, where the contractor will be given a reasonable period of time to remediate the problem and to restore the environment. If restoration is done satisfactorily during this period, no further actions will be taken. If it is not done during this period, the PMU will immediately arrange for another contractor to do the restoration and deduct the cost from the offending contractor's next payment. The major infringements will be identified as an incident where there is long-term or irreversible damage; there will be a financial penalty in addition to the cost for restoration activities. To minimize the damage, the restoration activities will be implemented without delay.

26. The compliance framework will be applied as follows:

- The CSC will identify or be notified of an infringement (community member, local government)
- The CSC in consultation with the PMU will assess whether it is a minor or major infringement.
- For minor infringements:
 - The CSC will establish the required mitigation measures, and the time period, which is a maximum of five days to remedy the situation.
 - The CSC will review the recommendation and confirm (i) the level of infringement (minor/major); (ii) the mitigation measures; and (iii) the mitigation time period. If they do not agree, they will work with the PMU to reach mutually acceptable recommendations.
 - The Contractor will be informed of the infringement, the required mitigation measures, and time period for resolution.
 - The Contractor shall remedy the infringement in accordance with the recommendations within the agreed time period.
 - The CSC shall confirm the infringement is satisfactory remedied in the time period.
 - If the infringement is not remedied satisfactorily in the time period, the CSC shall inform the PMU. The PMU shall immediately arrange for a separate contractor to undertake the necessary works and the cost of this shall be deducted from the next payment to the offending contractor.
- For major infringements:
 - The CSC shall immediately inform the PMU of the incident
 - The PMU shall inform the appropriate provincial authorities if appropriate
 - The PMU, in consultation with the CSC and other provincial authorities as appropriate, shall agree upon mitigation and clean up measures to be undertaken immediately by the contractor or by specialists to be procured at the contractor's expense. To minimize environmental impacts the restoration activities should be completed within ten days.
 - The Project Office shall apply a financial penalty, not to exceed 1% of the contract cost, for each major infringement, in addition to any costs associated with the infringement not borne by the contractor.
 - The main objective will be to resolve an issue as quickly as possible by the simplest means, involving as few people as possible, and at the lowest possible level. Only when an issue cannot be resolved at the simplest level and/ or within 15 days, will other authorities be involved. Such a situation may arise, for example, when damages are claimed, the to-be-paid amount cannot be resolved

9.1 Complaint procedures and resolution

27. Complaint procedures and resolution will be performed as follows:

- **The first level *People's Committee of ward / commune*.** An affected household is to take his/her complaint to any member of the People's Committee of the ward / commune, through the village head or directly to People's Committee of the commune / ward, in written or oral form. The People's Committee of Ward/Commune will work directly in person with the said affected household and will decide on the settlement of the complaint 5 days after receiving such complaint (this may take 15 days in mountainous or remote areas). The Secretariat of the People's Committee of the relevant commune/ward is responsible for documenting and recording all the complaints that it is handling.
- After the Ward/Commune People's Committee issues its decision, the relevant household can make an appeal within 30 days. In case a second decision has been issued but the said household is still not satisfied with such decision, such household can appeal to the municipal (city) People's Committee (CPC).
- **The second level *the CPC*.** Upon receiving a complaint from a household, the CPC will have 15 days (or 30 days in case of remote and mountainous areas) after receiving the complaint to resolve the case. The CPC is responsible for filing and storing documents on all complaints that it handles. When the CPC has issued a decision, the household can make an appeal within 30 days. In case a second decision has been issued and the household is still not satisfied with such a decision, they can appeal to the Provincial People's Committee (PPC).
- **The third level *the PPC*.** Upon receiving a complaint from the household, the PPC will have 30 days (or 45 days in case of remote and mountainous areas) after receiving the complaint to resolve the case. The PPC is responsible for filing and storing documents for all complaints to be submitted. After the PPC has issued a decision, the household can appeal within 45 days. In case a second decision has been issued and the household is still not satisfied with such decision, they can appeal to the court within 45 days. The PPC will then have to pay the compensation into an account.
- **The Forth level *Provincial Court*.** In case a complainant brings his/her case to a provincial court and the court rules in favor of the complainant, the provincial authorities will have to increase the compensation up to such a rate as may be ruled by the court. In case the court's ruling is in favor of the PPC, the complainant will be refunded the amount of money that has been paid to the court.

9.2 Contractor and Construction Supervision Consultant (CSC)

28. During construction, the GRM will also be managed by the contractors under supervision of the CSC. The contractors will inform the affected communities and communes about the GRM availability to handle complaints and concerns about the Project. This will be done via the community consultation and information disclosure process under which the contractors will communicate with the affected communities and interested authorities on a regular basis. Meetings will be held at least quarterly, monthly information brochures will be published, announcements will be placed in local media, and notices of upcoming planned activities will be posted, etc.

29. All complaints and corresponding actions undertaken by the contractors will be recorded in ProjectSMRs. Complaints and claims for damages could be lodged as follows:

- Verbally: direct to the CSC and/ or the contractors' environmental staff (Contractor's ES) or representatives at the site offices.
- In writing: by hand-delivering or posting a written complaint to specified addresses.
- By telephone, fax, e-mails: to the CSC, the Contractor's ES or representatives.

30. Upon receipt of a complaint, the CSC, the Contractor's ES or representatives will register the complaint in a complaint file and maintain a log of events pertaining to it thereafter, until it is resolved. Immediately after receipt, four copies of the complaint will be prepared. The original will be kept in

the file, one copy will be used by the Contractor's ES, and one copy will be forwarded to the CSC and the fourth copy to the PPMU within 24 hours since receipt of the complaint.

31. Information to be recorded in the complaint log will consist of:

- The date and time of the complaint.
- The name, address and contact details of the complainant.
- A short description of the complaint.
- Actions taken to address the complaint, including contact persons and findings at each step in the complaint redress process.
- The dates and times when the complainants are contacted during the redress process.
- The final resolution of the complaint.
- The date, time and manner in which the complainant was informed thereof
- The complainant's signature when resolution has been obtained.

32. Minor complaints will be dealt with within one week. Within two weeks (and weekly thereafter), a written reply will be delivered to the complainant (by hand, post, fax, e-mails) indicating the procedures taken and progress to date.

33. The main objective will be to resolve an issue as quickly as possible by the simplest means, involving as few people as possible, and at the lowest possible level. Only when an issue cannot be resolved at the simplest level and/ or within 15 days, will other authorities be involved. Such a situation may arise, for example, when damages are claimed, the to-be-paid amount cannot be resolved, or damage causes are determined.

10 RESPONSIBILITIES FOR REPORTING AND REVIEW

Table 12. Responsibility for Reporting

Project phases	Type of report	Frequency	Responsibility	Submitted to whom
<i>Construction phase</i>	Site Environmental Performance Report indicating the compliance with SEMP	Every month	Civil Works contractor for internal monitoring report CSC for compliance monitoring report	PMU
	Periodically environment monitoring report to PMU	Quarterly during construction time depending on construction duration	CSC	PMU
	Periodically taking sample and testing in qualified laboratory	3 months per time	CSC	PMU
	Semi-annual Safeguards Monitoring Reports (SMRs) to ADB (Refer to appendix for content)	Twice a year during construction time and the completion of work construction	CSC, Thai Nguyen Water Joint Stock Company	ADB, DONRE,
<i>Operation phase</i>	EMP Compliance Report: Work operation must be in compliance with project's EMP commitments.	Once a year for the first two years of operation. Ongoing frequency is to be determined basing on evaluation results after 2 years.	Work management and operation unit	ADB, DONRE

11 ENVIRONMENTALLY RESPONSIBLE PROCUREMENT PLAN

11.1 Procurement of Equipment for EMP Implementation

34. No purchase of equipment for EMP implementation is needed.

11.2 Integration of Environmental Considerations into the Procurement/Bidding Process

35. Procurement for civil works and equipment and vehicle for the Projects will be carried out in accordance with Procurement Guidelines (April 2015). A combination of International Competitive Bidding, National Competitive Bidding, Shopping and Direct Purchasing/ Contracting methods will be implemented depending on costs and work items/ equipment being procured. The method for ensuring integration of environmental considerations into each of these procurement processes is described below.

Table 13. The method for ensuring integration of environmental considerations

International Competitive Bidding / National Competitive Bidding ⁵	
<i>Steps in Procurement Process⁶</i>	<i>Integration of Environmental Considerations</i>
1. Draft bidding documents prepared by PMU	<i>PMU incorporates relevant environmental requirements from EMP and standard environmental bidding clauses into draft bidding documents.</i>
2. Draft bidding documents submitted to ADB/PPC	<i>ADB verifies that environmental requirements adequately and appropriately incorporated into bidding documents.</i>
3. PMU issues bidding documents, receives and evaluates bids. PMU prepares bid evaluation report and submit to ADB/ PPC.	<i>PMU's bid evaluation process includes consideration of environmental criteria</i>
4. ADB issues NOL	<i>ADB verifies that environmental requirements have been considered in evaluation process</i>
5. Contract awarded	<i>PMU prepares draft contract that contains relevant environmental requirements/specifications</i>

⁵Competitive bidding applied for high cost items.

⁶Above procurement method applied for the first NCB only, it is not necessary for ADB submission with the following NCB.

12 PRELIMINARY COST ESTIMATES FOR ENVIRONMENTAL MONITORING

36. This section provides cost estimate for EMP implementation, including costs for mitigation measures, environmental monitoring. Costs for implementation of other project components (e.g. resettlement monitoring) will be not presented here.

12.1 Pre-Construction Phase

37. Beside compensation payment for resettlement and social impacts, the PMU will be responsible for implementing payment (VND465,000,000/USD19,955) for replanting an area of forest equivalent to the forest area acquired by the Project as well as for removing UXO (VND605,000,000/USD25,962). The total cost for implementing EMP during Pre-construction phase is **VND1,070,000,000/USD45,917** and the PMU will conduct monitoring activities by their own budget.

12.2 Construction Phase

38. All mitigation measures that belong to the Contractor's responsibilities shall be implemented by the Contractor. The costs are included in the contract between Construction Contractor and Thai Nguyen Water Joint Stock Company. The PMU will be responsible for appointing an environmental staff as PMU-ES using their own budget and pay a cost of **VND15,000,000/USD644** for public disclosure as in Table 8.

39. Costs for implementation of mitigation measures during the construction phase will be the responsibility of the Contractor. These costs are included in the contract between Construction Contractor and Thai Nguyen Water Joint Stock Company. Both environmental performance monitoring and environmental effect monitoring (**VND41,680,000/USD1,789** as in Appendix 1) during construction will be mainly conducted by Construction Supervision Consultant (CSC) and the TOR and cost for these tasks will be included under contract of CSC and Thai Nguyen Water Joint Stock Company (see Appendix 1 for the cost estimate of environmental effect monitoring). PMU under Thai Nguyen Water Joint Stock Company will also be responsible for the environmental performance monitoring through periodic or random site inspection. The contractors will be responsible for conducting performance monitoring for their subcontracts, suppliers in implementing technical specifications of relevant mitigation measures.

12.3 Operation Phase

40. During the operation and maintenance phase, the works operation and management unit will provide budget for implementing mitigation measures. Therefore, there is no cost estimate for environmental monitoring during the operation and maintenance phase, so it's not included in this EMP.

13 APPENDICES

Appendix 1: Cost estimation for environmental supervision and monitoring

No	Parameter	Criteria	Number of positions	Frequency (time)	Total Samples	Unit price (VND)	Amount (VND)	
I. During Pre-construction and Operation								
	No need to implement monitoring							
II	During Construction							
1	Air Quality	TSP	3	8	24	91,000	2,184,000	
		CO	3	8	24	140,000	3,360,000	
		NO ₂	3	8	24	140,000	3,360,000	
		SO ₂	3	8	24	140,000	3,360,000	
		Equipment	3	8	24	250,000	6,000,000	
2	Noise	Leq	3	8	24	141,000	3,384,000	
3	Surface water quality	Temperature	1	8	8	4,000	32,000	
		pH	1	8	8	56,000	448,000	
		TSS	1	8	8	80,000	640,000	
		EC	1	8	8	70,000	560,000	
		DO	1	8	8	104,000	832,000	
		COD	1	8	8	120,000	960,000	
		BOD ₅	1	8	8	200,000	1,600,000	
		Nitrate (NO ₃ ⁻)	1	8	8	140,000	1,120,000	
		Ammonium (NH ₄) to N	1	8	8	98,000	784,000	
		Chlorite (Cl ⁻)	1	8	8	70,000	560,000	
		Fe	1	8	8	130,000	1,040,000	
		Mn	1	8	8	130,000	1,040,000	
		Pb	1	8	8	130,000	1,040,000	
		Cu	1	8	8	130,000	1,040,000	
		As	1	8	8	150,000	1,200,000	
		Zn	1	8	8	130,000	1,040,000	
		Floating oil	1	8	8	400,000	3,200,000	
		Coliform	1	8	8	112,000	896,000	
		Equipment	1	8	8	250,000	2,000,000	
		Total (Rounded)						41,680,000
		Total in USD						USD 1,789

[illegible]

Appendix 3: Community Consultation

1) Community Consultation during project preparation phase

Information disclosure and public consultation activities were performed as part of the basic survey on local environment along pipelines and the WTP. The interviews were carried out using a questionnaire survey helped assess community awareness and concerns about the proposed project.

2) Community Consultant during period of FS updating and detailed design preparation

In 2017, During FS updating and detailed design preparation, The Consultant conducted community consultant in project area.

The representation of Thai Nguyen Water Joint Stock Company and the Consultant presented the scale of the project and implementation schedule.

On the meeting, the representation discussed with community about issues of impacts on environment, the impacts to living of the people during construction on the road and pavements. The Consultant proposed the measures to reduce negative impacts during project Implementation. The rights and responsibilities of the parties, grievance redress mechanism and monitoring activities were presented.

On the meeting, main concerns of the people focused on issues about safe, surface ground cleaning and restoring after construction, the detailed construction method has to be presented and informed to the people before construction and impacts on business activities during construction.

After explanation of the Consultant and representation of Thai Nguyen Water Joint Stock Company, the households already have accepted project implementation and desired the project will be implemented early to supply clean water to people.

3) Future Consultation and Information Disclosure

a) Future consultation

At least two future public consultations will be held right before construction, during construction following the general guidelines below:

- All stakeholders should be invited and encouraged to participate in the consultation workshops;
- The affected people are informed of progress of the Project;
- Suggestions from the general public may be sought, when necessary; and
- The PMUs and, when necessary, People's Committees (at relevant level) should be open to contact by the public on matters concerning the progress of the projects, adverse impacts and mitigation measures and environmental monitoring.

b) Information Disclosure

According to ADB's Safeguard Policy Statement 2009, for projects of Category B, environmental documents that need to be submitted and disclosed on ADB's website include:

- Draft IEE;
- Final IEE;
- Updated or corrective IEE during Project implementation; and
- Environmental monitoring reports.

A draft version of IEE was prepared by the PPTA in 2014. According to the Loan Agreement, this IEE document has to be reviewed and updated in compliance with the ADB's safeguard policy requirements. This updated IEE document will be submitted in the Project Appraisal Report for ADB's approval and disclosed on ADB's website. All of the IEE reports shall be prepared in both English and Vietnamese. The Vietnamese version of the summary IEE shall be attached in notification boards of Thai Nguyen Water Joint Stock Company. Other related documents shall also be attached for reference.

Appendix 4: the legal basis of the forest land acquired by the project

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

ĐƠN XIN

Tỉnh nguyện đi xây dựng vùng kinh tế mới.

Lính gửi : UBND xã Phúc triều !
Đồng kính gửi : Phòng Leo động TB - TP Thái Nguyên !
Ban kinh tế mới xã Leo động - TB
tỉnh Bắc Thái I

Họ và tên : *Đặng Văn Đức* Tuổi : 32
Địa chỉ : *22 Phố Cầu Th. Th.*
Số khẩu trong hộ hiện có : 6 Leo động chính : 3
Leo động phụ : 3

Do điều kiện gia đình leo động đôi thừ, đất đai không đủ để phát triển kinh tế gia đình.

Sau khi có chỉ tiêu theo tinh thần quyết định 147 của tỉnh nhằm phát triển vùng phong hồ Núi Cốc, theo mô hình làm nông thủy sản trong vùng đèo và ban đảo Hồ Núi Cốc, trên cơ sở có đăng ký có chủ hộ lập cư lâu dài và thưng kể

Vậy tôi làm đơn này xin tỉnh nguyện tách hộ, tách leo động để đi chuyên vào Hồ Núi Cốc với số khẩu là : 2
Leo động chính : 1
Leo động phụ : 1

Số điện tích đăng ký nhận để lập cư và phát triển sản xuất là : *3 ha* ở tại khu vực : *Thôn L. Th. Hồ Núi Cốc.*

.....

Sau khi được đi chuyên tôi xin cam kết chấp hành mọi chính sách của Nhà nước ở rạ và Luật đất đai cũng như ngành quản lý trên vùng L. Th. Xúc định một phần tự do vốn và công sức của gia đình, một phần xin Nhà nước trợ cấp thêm để gia đình giảm bớt khó khăn trước khi đi leo động.

Ngày 23 tháng 6 năm 1993
NGƯỜI LÀM ĐƠN.

Đặng Văn Đức

XÁC NHẬN CỦA UBND XÃ.

Đặng Văn Đức

CỦA QUANG TRẦN

SOCIALIST REPUBLIC OF VIETNAM

Independence – Freedom – Happiness

APPLICATION FORM

For volunteering to build new economic zones

To:

- People's Committee of Phuc Triu Commune
- Department of Labor - Invalids and Social Affairs in Thai Nguyen Province
- Board of New Economics of Labor - Invalids and Social Affairs in Thai Nguyen Province

Full name: Dang Van Dao; Age: 32

Address: Phuc Triu commune,

Number of People in Family-register: 6

Breadwinner: 3

Other labors: 3

Because of redundant conditions of labors of our family, the land area is not enough for economic development of household.

After having criteria in accordance with Decision No. 143 of Thai Nguyen province to develop protection forest in Nui Coc lake according to the Agriculture-forestry-aquaculture form in island and peninsula of Nui Coc lake on basis of registration of head of family register and permanent owner and inherit.

Therefore, I made this application form to request for volunteering on separation of household registration and labor to move into Nui Coc Lake with number of people in family-register: 2

Breadwinner: 1; Other labors: 1

Number of registered areas to receive residence and development of production: 3.00 ha at the area: Voi Phun Hill, Nui Coc lake.

After moved, I had committed that I would have complied with all policies of the State on Land Law as well as line management agencies in this area, defined that I had have to contribute part of capital and labor force of our family, part of remaining requested that the State would grant to our family to reduce difficulties before moving.

June 23rd, 1993

**PEOPLE'S COMMITTEE OF PHUC TRIU
COMMUNE**

LÝ PHÚC THÂN

Applicant

Đặng Văn Đào

ĐƠN XIN

Tình nguyện đi xây dựng vùng kinh tế mới.

(Kính gửi : UBND xã Phúc triều !

Đồng kính gửi : Phòng Lao động TB - TP Thái Nguyên !

Ban kinh tế mới xã Lao động - TB

tỉnh Bắc Thái !

Họ và tên : Trần Văn Việt
Địa chỉ : Vũ Phúc Triều TP. TN.
Số khẩu trong hộ hiện có : 6

Leo động chính :
Leo động phụ :

Do điều kiện gia đình lao động đôi thuở (không) để phát triển kinh tế gia đình.

Sau khi cố chỉ tiêu theo tinh thần quyết định của Đảng và Nhà nước nhằm phát triển vùng phong hộ Núi Cốc, theo mô hình làm ruộng thủy sản trong vùng đảo và ben, đảo Hồ Núi Cốc, trên cơ sở tự nguyện đăng ký cơ chủ hộ lập cư lâu dài và thắm kẻ

Vậy tôi làm đơn này xin tình nguyện tách hộ, tách lao động để đi chuyển vào Hồ Núi Cốc với số khẩu là : 3

Leo động chính : 5

Leo động phụ : 1

Số diện tích đăng ký nhận đi lập cư và phát triển sản xuất là : 3,15 ha. ở tại khu vực : Đảo Vũ Phúc Triều
Hồ Núi Cốc.

Sau khi được đi chuyển tôi xin cam kết chấp hành mọi chính sách của Nhà nước đề ra và Luật đất đai cũng như ngành quản lý trên vùng lãnh thổ, xác định một phần tự bỏ vốn và công sức của gia đình, một phần xin Nhà nước trợ cấp thêm để gia đình giảm bớt khó khăn trước khi đi lao động./.

XÁC NHẬN CỦA UBND XÃ.

Ngày 23 tháng 6 năm 1993
NGƯỜI LÀM ĐƠN.



Việt
Trần Văn Việt

SOCIALIST REPUBLIC OF VIETNAM

Independence – Freedom – Happiness

APPLICATION FORM

For volunteering to build new economic zones

To:

- People's Committee of Phuc Triu Commune
- Department of Labor - Invalids and Social Affairs in Thai Nguyen Province
- Board of New Economics of Labor - Invalids and Social Affairs in Thai Nguyen Province

Full name: Trần Văn Việt; Age: 42

Address: Phuc Triu commune, Thai Nguyen province

Number of People in Family-register: 6

Breadwinner: 3

Other labors: 3

Because of redundant conditions of labors of our family, the land is not enough for economic development of household.

After having criteria in accordance with Decision No. 143 of Thai Nguyen province to develop protection forest in Nui Coc lake according to the agriculture-forestry-aquaculture form in island and peninsula of Nui Coc lake on basis of registration of head of family register and permanent owner and inherit.

Therefore, I made this application form to request for volunteering on separation of household registration and labor to move into Nui Coc Lake with number of family-register: 3

Breadwinner: 3; other labors:

Number of registered areas to receive residence and development of production: 3.5ha at the area: Voi Phun Hill, Nui Coc lake.

After moved, I had committed that I would have complied with all policies of the State on Land Law as well as line management agencies in this area, defined that I had have to contribute part of capital and labor force of our family, part of remaining requested that the State would grant to our family to reduce difficulties before moving.

June 23rd, 1993

**PEOPLE'S COMMITTEE OF PHUC TRIU
COMMUNE**

LÝ PHÚC THÂN

Applicant

Trần Văn Việt

CONG HOA XA HOI CHU NGHIA VIET NAM
Độc lập - Tự do - Hạnh phúc

ĐƠN XIN

Tình nguyện đi xây dựng vùng kinh tế mới.

(Kính gửi : UBND xã Phúc triu !
Đồng kính gửi : Phòng Lao động TB - TP Thái nguyên !
Ban kinh tế mới sở Lao động - TB
tỉnh Bắc Thái !

Họ và tên : Đào Văn Sơn Tuổi : 47
Địa chỉ : Xã Phúc Triu TP-TN
Số khẩu trong hộ hiện có : 7 Lao động chính : 4
Lao động phụ : 3

Do điều kiện gia đình lao động đôi thừa, đất đai không đủ
để phát triển kinh tế gia đình.

Sau khi có chỉ tiêu theo tình thần quyết định của Đảng
nhằm phát triển vùng phong hộ núi Cốc, theo mô hình làm
thủy sản trong vùng đảo và bán đảo Hồ Núi Cốc, trên cơ sở có
đăng ký có chủ hộ lập cư lâu dài và thừa kế

Vậy tôi làm đơn này xin tình nguyện tách hộ, tách lao
động để đi chuyên vào Hồ Núi Cốc với số khẩu là : 3

Lao động chính : 2
Lao động phụ : 1

Số diện tích đăng ký nhận đi lập cư và phát triển sản xuất
là : 3, 2 ha ở tại khu vực : Đảo Voi Phán
Hồ Núi Cốc.

Sau khi được đi chuyên tôi xin cam kết chấp hành mọi
chính sách của Nhà nước và Luật đất đai cũng như ngành
quản lý trên vùng lãnh thổ, xác định một phần tự bỏ vốn và
công sức của gia đình, một phần xin Nhà nước trợ cấp thêm để
gia đình gồm một khu nhà ở và một khu đi lao động.

BẢN SAO ĐÚNG VỚI BẢN GỐC
Ngày: 10/7/2015 Ngày: 23 tháng 6 năm 1993
NGƯỜI ĐI ĐƠN.
Kính gửi: UBND xã Phúc triu
Kính gửi: Phòng Lao động TB - TP-TN
Kính gửi: Ban kinh tế mới sở Lao động - TB
tỉnh Bắc Thái !
Đào Văn Sơn

SOCIALIST REPUBLIC OF VIETNAM

Independence – Freedom – Happiness

APPLICATION FORM

For volunteering to build new economic zones

To:

- People's Committee of Phuc Triu Commune
- Department of Labor - Invalids and Social Affairs in Thai Nguyen Province
- Board of New Economics of Labor - Invalids and Social Affairs in Thai Nguyen Province

Full name: Trần Văn Sáu; Age: 47

Address: Phuc Triu commune, Thai Nguyen province

Number of People in Family-register: 7

Breadwinner: 4

Other labors: 3

Because of redundant conditions of labors of our family, the land is not enough for economic development of household.

After having criteria in accordance with Decision No. 143 of Thai Nguyen province to develop protection forest in Nui Coc lake according to the agriculture-forestry-aquaculture form in island and peninsula of Nui Coc lake on basis of registration of head of family register and permanent owner and inherit.

Therefore, I made this application form to request for volunteering on separation of household registration and labor to move into Nui Coc Lake with number of family-register: 3

Breadwinner: 2;

Other labors: 1

Number of registered areas to receive residence and development of production: 3.2ha at the area: Voi Phun Hill, Nui Coc lake.

After moved, I had committed that I would have complied with all policies of the State on Land Law as well as line management agencies in this area, defined that I had have to contribute part of capital and labor force of our family, part of remaining requested that the State would grant to our family to reduce difficulties before moving.

**PEOPLE'S COMMITTEE OF PHUC TRIU
COMMUNE
LÝ PHÚC THÂN**

Applicant
Trần Văn Việt

VIỆT

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

ĐƠN XIN

NHẬN ĐẤT, NHẬN RỪNG ĐỂ BẢO VỆ VÀ XÂY DỰNG RỪNG PHÒNG HỒ

Kính gửi: Ủy ban Quản lý rừng phòng hộ Nhữ Cốc

Tên tôi là: Lê Đình Việt Tuổi: 44
Địa chỉ: Và Phúc Trìu 712 Thị trấn
Số khẩu: 7 Lao động chính: 5 Lô phụ:
Lâm đơn xin nhận đất, nhận rừng để bảo vệ và xây dựng rừng phòng hộ cụ thể như sau:

- 1. Về đất trống để trồng rừng:
 - Diện tích: 3,6 ha
 - Địa điểm: (ghi rõ đồi gò nào theo tên địa phương) Lô 7 Thị trấn
Vai Phum
 - Mục đích để trồng loại cây gì? Trồng cây theo Chương trình phòng hộ

- 2. Về rừng: (Bao gồm rừng tự nhiên, rừng trồng, rừng gia đình)
 - Diện tích: Trên núi 3,6 ha
 - Địa điểm: Trên núi vai Phum
 - Loại rừng: Rừng mồi
 - Mục đích sử dụng: Lấy gỗ, lấy củi, lấy thuốc theo quy định của Nhà nước

Sau khi được giao đất tôi xin cam đoan thực hiện nghiêm chỉnh các quy định và chính sách của Nhà nước về quản lý, bảo vệ, sản xuất, kinh doanh rừng.
- Tự bỏ vốn hoặc tiếp nhận vốn hỗ trợ, sức lao động để trồng cây và quản lý, bảo vệ rừng được giao.
- Tuân theo sự hướng dẫn kỹ thuật của các cơ quan chuyên môn.
Tôn trọng chủ quyền của các hộ khác.

Xác nhận của UBND xã: Nhà 7 năm 1993
(Ký tên, đóng dấu) Chủ hộ ký tên: Lê Đình Việt

SOCIALIST REPUBLIC OF VIETNAM

Independence – Freedom – Happiness

APPLICATION FORM

**FOR RECEIVING LAND AND FOREST TO PROTECT AND GROW PROTECTION
FOREST**

To: Nui Coc Forest Management Board

Full name: Lê Đình Việt. Ages: 44

Address: Phuc Triu Commune, Thai Nguyen Province

Number of People in Family-Register: 7;

Breadwinner: 5; Secondary labor:

I made this application form to request for receiving forest to protect and grow protection forest, details as the follows:

- 1- In term of empty land to grow forest:
 - + Area: 3.6 ha
 - + Location: *(recorded by detailed location name in accordance with name of local): Lot 7 in Voi Phun hill*
 - + Purpose for what trees would have been grown *in accordance with protection forest program.*
- 2- In term of Forest: *(Including natural forest, protection forest, family-forest)*
 - + Area: newly growing 3.6 ha
 - + Location: *Lot 7 in Voi Phun Hill*
 - + Purpose for what trees would have been grown *in accordance with protection forest program.*

After being handed over, I had been committed that I would have complied with regulations and policies of the State on management, protection, production and business of forest.

The forest growing is partially paid by these moved households and funded in accordance with the State law, labor force to grow and manage and protect for handed-over forest.

In addition to comply with technical guideline of specialized agencies;

Respect the ownership of other households.

**PEOPLE'S COMMITTEE OF PHUC TRIU
COMMUNE**

LÝ PHÚC THÂN

Applicant

ĐƠN XIN

NHẬN ĐẤT, NHẬN RỪNG ĐỂ BẢO VỆ VÀ XÂY DỰNG RỪNG PHÒNG HỘ

Kính gửi:

Ban quản lý rừng phòng hộ Mũi Cốc

Tên tôi là Yến Văn Miền Tuổi 34
Địa chỉ: Sản xuất thôn Nhâm Thôn TP. TP
Số khẩu: 4 Lao động chính 2 LD phụ 2
Làm đơn xin nhận đất, nhận rừng để bảo vệ và xây dựng rừng phòng hộ cụ thể như sau

1. Về đất trồng rừng:

+ Diện tích: 5.85 ha gồm 7 lô số 21+22+17+18+20+31+30
+ Địa điểm: (ghi rõ đối gò nào theo tên địa phương)

Đặc Kim bang + Voi phước
+ Mục đích để trồng loại cây gì? Cây thông đỏ + chít + cây ăn quả

2. Về rừng: (Bao gồm rừng tự nhiên, rừng trồng, rừng gia đình)

+ Diện tích: 5.85 ha
+ Địa điểm: Đặc Kim bang + Voi phước
+ Loại rừng: trẻ mới trồng
+ Mục đích sử dụng: nhận làm sản xuất
Sản xuất thôn Nhâm Thôn TP. TP

Sau khi được giao đất tôi xin cam đoan thực hiện nghiêm chỉnh các quy định và chính sách của Nhà nước về quản lý, bảo vệ, sản xuất, kinh doanh rừng.

- Tự bỏ vốn hoặc tiếp nhận vốn hỗ trợ, sức lao động để trồng cây và quản lý, bảo vệ rừng được giao.

- Tuân theo sự hướng dẫn kỹ thuật của các cơ quan chuyên môn.

- Tôn trọng chủ quyền của các hộ khác.

Đã được UBND xã

Xác nhận của UBND Xã
(Ký tên, đóng dấu)

Yến Văn Miền

Ngày 24 tháng 11 năm 93
Chủ hộ ký tên

Yến Văn Miền
Làng Ngọc Viên

SOCIALIST REPUBLIC OF VIETNAM

Independence – Freedom – Happiness

APPLICATION FORM

**FOR RECEIVING LAND AND FOREST TO PROTECT AND GROW PROTECTION
FOREST**

To: Nui Coc Forest Management Board

Full name: Lăng Văn Viễn; Ages: 34

Address: Phuc Triu Commune, Thai Nguyen Province

Number of People in Family-Register: 4;

Breadwinner: 2; Secondary labor: 2

I made this application form to request for receiving forest to protect and grow protection forest, details as the follows:

- 1- In term of empty land to grow forest:
 - + Area: *5.85 ha including 7 lots: 21+22+17+18+20+31+30*
 - + Location: *(recorded by detailed location name in accordance with name of local): Kim Bảng Island + Voi Phun Hill*
 - + Purpose for what trees would have been grown *in accordance with protection forest program.*
- 2- In term of Forest: *(Including natural forest, protection forest, family-forest)*
 - + Area: *5.85 ha*
 - + Type of Forest: *newly growing*
 - + Location: *Lot 7 in Voi Phun Hill*
 - + Purpose for what trees would have been grown *permanent growing and inherit in combined with production according to Agriculture-Forest model.*

After being handed over, I had been committed that I would have complied with regulations and policies of the State on management, protection, production and business of forest.

The forest growing is partially paid by these moved households and funded in accordance with the State law, labor force to grow and manage and protect for handed-over forest.

In addition to comply with technical guideline of specialized agencies;

Respect the ownership of other households

**PEOPLE'S COMMITTEE OF PHUC TRIU
COMMUNE**

LÝ PHÚC THÂN

Applicant
Lăng Văn Viễn

PHÚC TRIU
PHỐ TH

Độc lập Tự Do
Xã Phú Phúc

Phúc triu ngày 26 tháng 4 năm 1993

TỜ TRÌNH ĐI NGHỊ

V.Vừa leo động vào lùm, hồ núi Cốc để xây dựng Rừng phòng hộ theo quy định tại R

(tính gửi: UBND Tỉnh Bắc Thái

Đồng kính gửi: Lãnh đạo Sở lâm nghiệp, ban quản lý Rừng phòng hộ núi Cốc. UBND xã Phú Phúc T.Đ.

- Căn cứ quyết định 143 của UBND Tỉnh Bắc Thái
- Căn cứ vào địa bàn được phân cho xã Phú Phúc triu
- Căn cứ vào khả năng nhân lực leo động tính toán nhất của một số hộ trong địa phương.

Để làm được những yêu cầu trên, xã đã có sự kiến nghị thành lập hồ nước nhất theo tính toán tại địa phương là hồ nước ở khu vực núi Cốc, xã Phú Phúc triu, huyện Phú Phúc, tỉnh Bắc Thái. Hồ nước này có diện tích khoảng 10 ha, nằm ở vị trí thuận lợi cho việc trồng rừng phòng hộ và phát triển du lịch. Xã đã có sự kiến nghị UBND Tỉnh Bắc Thái ban quản lý Rừng phòng hộ núi Cốc tạo điều kiện giúp đỡ địa phương về các mặt như: giao rừng, cấp vốn, mua sắm và vận chuyển theo phình sách đầu tư của Nhà nước, theo tính toán của Nhà nước và dân chúng làm.

Để làm được theo nguyện vọng trên UBND xã Phú Phúc triu mong UBND Tỉnh, Sở lâm nghiệp Bắc Thái ban quản lý Rừng phòng hộ núi Cốc tạo điều kiện giúp đỡ địa phương về các mặt như: giao rừng, cấp vốn, mua sắm và vận chuyển theo phình sách đầu tư của Nhà nước, theo tính toán của Nhà nước và dân chúng làm.

Rất mong Sở lâm nghiệp, ban quản lý Rừng phòng hộ. Tạo điều kiện giúp đỡ địa phương và tiếp nhận sổ hộ trên.

Phúc triu ngày 26 tháng 4 năm 1993
T/M ỦY BAN NHÂN DÂN XÃ PHÚC TRIU
chức tịch

Đã an AL RPK núi Cốc
tổng cho UBND xã Phú Phúc triu
Đề nghị Sở lâm (núi Cốc) tạo
điều kiện cho việc trồng rừng phòng hộ
tại địa phương và vận chuyển theo phình sách đầu tư của
Nhà nước, theo tính toán của Nhà nước và dân chúng làm.

Lý Phúc Thân

Phuc Triu Commune, April 26th, 1993

STATEMENT

Regarding to move labor into the bottom of Nui Coc Lake to grow protection forest as regulated

To: - People's Committee of Bac Thai Province
- Leaders of Department of Forest, Management Board of Nui Coc
Protection forest, People's Committee of Phuc Triu Commune

- Based on Decision No. 143 of People's Committee of Bac Thai province
- Based on the area handed over Phuc Triu Commune
- Based on ability of labor force and aspiration of some households in this local.
To execute these above requirements, the Commune People's Committee expected that production households would establish on the spirit of Decision No. 143 of Bac Thai Provincial People's Committee. Number of expected households would be 50 households. These households wished to be assigned and looked after forest land in Nui Coc lake which firstly was to increase and develop the production for life, and then to perform the task of forest supervision and protection.
- To implement the above desire, People's Committee of Phuc Triu Commune would like to suggest that People's Committee of Bac Thai Province, Leaders of Department of Forest, Management Board of Nui Coc Protection forest, People's Committee of Phuc Triu Commune should facilitate and approve for this local on handing-over of land, forest, and other allowance according to investment policies of the State in the spirit of the State and People executing together.

We are looking forward to receiving the approval and reception of these above households.

Phuc Triu Commune, April 26th, 1993
**On behalf of Phuc Triu Commune
People's Committee
Chairman**

Signed
Ly Phuc Than

Management Board of Nui Coc Protection forest agree with People's Committee of Phuc Triu Commune on moving 50 households (fifty) into receive forest land in the bottom of Nui Coc Lake under the management area of the commune in the spirit of Decision No. 143 of the Province.

Appendix 5: Statement No 26/TTr-UBND

ỦY BAN NHÂN DÂN
TỈNH THÁI NGUYÊN

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

Số: 26/TTr-UBND

Thái Nguyên, ngày 27 tháng 3 năm 2019

TỜ TRÌNH

Về việc đề nghị thông qua quyết định chủ trương chuyển mục đích sử dụng rừng sang mục đích khác để thực hiện dự án trên địa bàn tỉnh Thái Nguyên

Kính gửi: Các vị đại biểu Hội đồng nhân dân tỉnh

Căn cứ Luật Tổ chức chính quyền địa phương năm 2015;

Căn cứ Luật Đất đai năm 2013;

Căn cứ Luật Lâm nghiệp năm 2017;

Căn cứ Nghị định số 156/2018/NĐ-CP ngày 16/11/2018 của Chính phủ quy định chi tiết thi hành một số điều của Luật Lâm nghiệp;

Căn cứ Nghị quyết số 51/NQ-CP ngày 10/5/2018 của Chính phủ về điều chỉnh quy hoạch sử dụng đất đến năm 2020 và kế hoạch sử dụng đất kỳ cuối (2016-2020) tỉnh Thái Nguyên;

Căn cứ Nghị quyết số 27/NQ-HĐND ngày 12/8/2016 của HĐND tỉnh Thái Nguyên khóa XIII, kỳ họp thứ 2 về thông qua điều chỉnh Quy hoạch sử dụng đất đến năm 2020 và Kế hoạch sử dụng đất kỳ cuối (2016 - 2020) tỉnh Thái Nguyên;

Trên cơ sở đề nghị của Công ty Cổ phần nước sạch Thái Nguyên tại Báo cáo số 57/BC-CTCPTNS ngày 14/3/2019 và của Doanh nghiệp tư nhân xây dựng Xuân Trường tại Công văn số 110/CV-DNXT ngày 15/3/2019 về việc đề nghị chuyển mục đích sử dụng rừng sang mục đích khác với nội dung như sau:

- Dự án đầu tư xây dựng công trình phát triển hệ thống cấp nước thành phố Thái Nguyên tại xã Phúc Trìu, thành phố Thái Nguyên của Công ty Cổ phần nước sạch Thái Nguyên đã được UBND tỉnh phê duyệt tại Quyết định số 2009/QĐ-UBND ngày 07/9/2012 với tổng diện tích sử dụng đất 10 ha. Trong đó, diện tích rừng cần chuyển sang mục đích khác để thực hiện Dự án là 7,749 ha.

- Dự án đầu tư xây dựng khu ẩm thực hồ Núi Cốc tại xã Vạn Thợ, huyện Đại Từ và xã Phúc Tân, thị xã Phổ Yên của Doanh nghiệp tư nhân xây dựng Xuân Trường đã có báo cáo đề xuất chủ trương đầu tư và thẩm định của cơ quan chuyên môn tại Văn bản 353/SKHĐT-ĐKKD ngày 26/02/2019 của Sở Kế hoạch và Đầu tư với tổng diện tích sử dụng đất 19,99 ha. Trong đó diện tích rừng cần chuyển sang mục đích khác để thực hiện Dự án là 19,99 ha.

Các diện tích rừng trên có hiện trạng là rừng phòng hộ trồng keo và rừng sản xuất (*không có rừng tự nhiên*) nằm trong quy hoạch chuyển đổi mục đích sử dụng đất tại Nghị quyết số 51/NQ-CP ngày 10/5/2018 của Chính phủ về điều chỉnh quy hoạch sử dụng đất đến năm 2020 và kế hoạch sử dụng đất kỳ cuối (2016-2020) tỉnh Thái Nguyên. Thẩm quyền quyết định chủ trương chuyển mục đích sử dụng rừng thuộc thẩm quyền của UBND tỉnh (*theo quy định tại Khoản 3, Điều 20 Luật Lâm nghiệp năm 2017 và Khoản 3, Điều 41 Nghị định số 156/2018/NĐ-CP ngày 16/11/2018 của Chính phủ*).

Để kịp thời hoàn thiện các điều kiện triển khai các dự án trên, sau khi xem xét đề nghị của Sở Nông nghiệp và PTNT tại Tờ trình số 529/TTr-SNN ngày 21/3/2019, UBND tỉnh trình HĐND tỉnh quyết định chủ trương chuyển mục đích sử dụng rừng sang mục đích khác để thực hiện dự án trên địa bàn tỉnh Thái Nguyên với các nội dung chính như sau:

1. Chủ trương chuyển mục đích sử dụng rừng sang mục đích khác để thực hiện Dự án đầu tư xây dựng công trình phát triển hệ thống cấp nước thành phố Thái Nguyên có tổng diện tích: 7,749 ha.

- Vị trí chuyển đổi: Lô 3 và lô 5 khoảnh 5, tiểu khu 213 theo bản đồ quy hoạch 3 loại rừng xã Phúc Triu, thành phố Thái Nguyên.

- Chức năng rừng: Phòng hộ.

- Hiện trạng: Rừng trồng keo (*không có rừng tự nhiên*).

- Mục đích của việc chuyển mục đích sử dụng rừng: Thực hiện Dự án đầu tư xây dựng công trình phát triển hệ thống cấp nước thành phố Thái Nguyên.

2. Chủ trương chuyển mục đích sử dụng rừng sang mục đích khác để thực hiện Dự án đầu tư xây dựng khu tâm linh hồ Núi Cốc có tổng diện tích chuyển mục đích sử dụng rừng sang mục đích khác: 19,99 ha, trong đó: Rừng phòng hộ 12,78 ha, rừng sản xuất 7,21 ha.

- Vị trí chuyển đổi: Lô 1, lô 2 khoảnh 1, tiểu khu 159 theo bản đồ quy hoạch 3 loại rừng xã Vạn Thọ, huyện Đại Từ và lô 1, lô 3 khoảnh 3, tiểu khu 223 theo bản đồ quy hoạch 3 loại rừng xã Phúc Tân, thị xã Phổ Yên.

- Chức năng rừng: Phòng hộ và sản xuất.

- Hiện trạng: Rừng trồng keo (*không có rừng tự nhiên*).

- Mục đích của việc chuyển mục đích sử dụng rừng: Thực hiện Dự án đầu tư xây dựng khu tâm linh hồ Núi Cốc.

(Có dự thảo Nghị quyết và hồ sơ kèm theo)

UBND tỉnh đề nghị Hội đồng nhân dân tỉnh xem xét thông qua để tổ chức thực hiện./.

Nơi nhận:

- Như trên;
- Chủ tịch và các PCT UBND tỉnh;
- Sở NN&PTNT;
- Chi cục Kiểm lâm;
- CVP và các PCVP UBND tỉnh;
- Lưu: VT, TH, CSN.

Buôn, 21/03/2018

TM. ỦY BAN NHÂN DÂN



Trịnh Việt Hùng

No. 26/TTr-UBND

Thai Nguyen, March 21st, 2019

STATEMENT

Regarding to Approval for Direction Decision of Conversion of Forest Land Use Purpose to other Purpose to execute the project on Thai Nguyen Province

To: delegates of People's Council of Thai Nguyen Province

Based on Law on Local Government Organization issued 2015

Based on Law on Land issued 2013;

Based on Law on Forest issued 2017;

Based on Decree No. 156/2018/NĐ-CP dated 16/11/2018 of the Government on detailed regulation of execution of some articles on Law on Forest;

Based on Resolution No.51/NQ-CP dated 10/05/2018 of the Government on adjustment of land use planning up to 2020 and land use plan at final term (2016-2020) in Thai Nguyen Province;

Based on Resolution No.27/NQ-HDND issued 12/8/2016 of People's Committee of Thai Nguyen Province, Session XIII, Second Meeting on approval for adjustment of Land Use Planning up to 2020 and Land Use Plan at the final term (2016 – 2020) of Thai Nguyen Province;

On basis of proposal of Thai Nguyen Water Joint Stock Company at Report Number 57/BC-CTCPTNS issued 14/03/2019 of Xuan Truong Private Enterprise at Dispatch No. 110/CV-DNXT dated 15/03/2019 on request of conversion from Forest Land Use Purpose to other Purposes with the following:

- Thai Nguyen Water Supply System Development Project in Phuc Triu commune, Thai Nguyen City of Thai Nguyen Water Joint Stock Company approved in Decision No. 2009/QĐ-UBND dated 07/9/2012 with total using area 10 ha. In which, the forestry area required to be converted into other purpose to execute the project is 7.75ha.
- Nui Coc Lake Spiritual Area Construction Investment Project in Van Tho commune, Dai Tu district, and Phuc Tan commune, Pho Yen Town of Xuan Truong Construction Enterprise had Investment Policies Report and Inspection Report of Specialized Agencies at Dispatch No. 353/SKHDT-ĐKKD dated 26/02/2019 of Department of Planning and Investment with total using area 19.99 ha. In which the forestry area needs to be convert into other purpose to execute the project accounting for 19.99 ha.
- Currently, the above area is protection forest used for acacia growing and protection forest (not having natural forest) under Land Use Purpose Conversion Planning in Resolution No. 51/NQ-CP dated 10/05/2018 of the Government of Vietnam on adjustment of land use planning to 2020 and land use plan to final term (2016-2020) of Thai Nguyen province.
- Approval Decision Right for Forest Land Use Purpose Conversion under Provincial People's Council (according to Regulation at Article 3, Clause 20 Forestry Law in 2017 and Clause 3, Article 41 Decree No.156/2018/NĐ-CP dated 16/11/2018 of the Government).
- To timely complete conditions to carry out the above project, after consideration of suggest from Department of Agriculture and Natural Development at Statement No. 529/TTr-SNN

dated 21/3/2019, People's Committee submits to People's Council to decide policy on conversion of forestry land use purpose to other purpose to implement the project on Thai Nguyen Province with the following contents:

1. Policy on conversion of forestry land use purpose to other purpose to implement Thai Nguyen City Water Supply Development Project has total area: 7.75ha.
 - Location: Lot 3 and Lot 5, plot 5, Sub-area 213 in accordance with Planning Map of 03 types of forest in Phuc Triu commune, Thai Nguyen Province.
 - Function: Protection
 - Current status: acacia growing (*no natural forest*)
 - Purpose: execute Thai Nguyen City Water Supply Development Project.
2. Policy on conversion from protection forest use purpose and protection forest use purpose to other purposes to execute Nui Coc Lake Spiritual Area Project with total area: 19.99 ha (in which: protection forest 12.78 ha, protection forest 7.21 ha).
 - Location: Lot 1 and Lot 2, Plot 1, sub area 159 according to Planning Map of 03 types of Forest in Van Tho commune, Dai Tu District, and Lot 1, Lot 3 – Plot 3 in sub area 223 according to the planning map of 03 type of forests in Phuc Tan Commune, Pho Yen Town.
 - Function: Protection and Production
 - Current status: acacia growing (*no natural forest*)
 - Purpose: execute Nui Coc Lake Spiritual Area Project.

(Attached by Draft Resolution and Documents)

PPC sincerely suggest People's Council consider and approve to organize and implement./.

Received by:

- As above;
- Chairman and PCT PPC;
- DARD
- Forest Protection Department
- CVP and PCVP PPC;
- Save: VT, TH, CNN

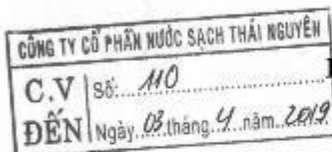
**ON BEHALF OF PEOPLE'S
COMMITTEE
ON BEHALF OF CHAIRMAN
DEPUTY CHAIRMAN**

Trinh Viet Hung

Appendix 6: The Resolution No. 03/NQ-HĐND

HỘI ĐỒNG NHÂN DÂN CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
TỈNH THÁI NGUYÊN **Độc lập - Tự do - Hạnh phúc**
Số: **03** /NQ-HĐND Thái Nguyên, ngày **27** tháng 3 năm 2019

NGHỊ QUYẾT
Quyết định chủ trương chuyển mục đích sử dụng rừng sang mục đích khác để thực hiện dự án trên địa bàn tỉnh Thái Nguyên



HỘI ĐỒNG NHÂN DÂN TỈNH THÁI NGUYÊN
KHÓA XIII, KỲ HỌP BẤT THƯỜNG

Căn cứ Luật Tổ chức chính quyền địa phương ngày 19 tháng 6 năm 2015;
Căn cứ Luật Đất đai ngày 29 tháng 11 năm 2013;
Căn cứ Luật Lâm nghiệp ngày 15 tháng 11 năm 2017;
Căn cứ Nghị định số 156/2018/NĐ-CP ngày 16 tháng 11 năm 2018 quy định chi tiết thi hành một số điều của Luật Lâm nghiệp;
Căn cứ Nghị quyết số 51/NQ-CP ngày 10 tháng 5 năm 2018 của Chính phủ về điều chỉnh quy hoạch sử dụng đất đến năm 2020 và kế hoạch sử dụng đất kỳ cuối (2016-2020) tỉnh Thái Nguyên;

Xét Tờ trình số 21/TTr-UBND ngày 21 tháng 3 năm 2019 của Ủy ban nhân dân tỉnh về việc đề nghị thông qua quyết định chủ trương chuyển mục đích sử dụng rừng sang mục đích khác trên địa bàn tỉnh Thái Nguyên; Báo cáo thẩm tra của Ban kinh tế - ngân sách; ý kiến thảo luận của các đại biểu Hội đồng nhân dân tỉnh tại kỳ họp,

QUYẾT NGHỊ:

Điều 1. Quyết định chủ trương chuyển mục đích sử dụng rừng sang mục đích khác để thực hiện dự án trên địa bàn tỉnh Thái Nguyên với các nội dung như sau:

1. Chuyển mục đích sử dụng rừng phòng hộ sang mục đích khác để thực hiện Dự án đầu tư xây dựng công trình phát triển hệ thống cấp nước thành phố Thái Nguyên với tổng diện tích: 7,749 ha.

Vị trí chuyển đổi: Lô 3 và lô 5 khoảnh 5, tiểu khu 213 theo bản đồ quy hoạch 3 loại rừng xã Phúc Trù, thành phố Thái Nguyên.

2. Chuyển mục đích sử dụng rừng phòng hộ và rừng sản xuất sang mục đích khác để thực hiện Dự án Khu tâm linh Hồ Núi Cốc với tổng diện tích: 19,99 ha (trong đó: Rừng phòng hộ 12,78 ha, rừng sản xuất 7,21 ha).

Vị trí chuyển đổi: Lô 1, lô 2 khoảnh 1, tiểu khu 159 theo bản đồ quy hoạch 3 loại rừng xã Vạn Thọ, huyện Đại Từ và lô 1, lô 3 khoảnh 3, tiểu khu 223 theo bản đồ quy hoạch 3 loại rừng xã Phúc Tân, thị xã Phổ Yên.

Điều 2. Tổ chức thực hiện

1. Giao Ủy ban nhân dân tỉnh triển khai thực hiện Nghị quyết theo quy định của pháp luật.

2. Giao Thường trực Hội đồng nhân dân, các Ban Hội đồng nhân dân, các Tổ đại biểu Hội đồng nhân dân và đại biểu Hội đồng nhân dân tỉnh giám sát việc thực hiện Nghị quyết.

Nghị quyết này đã được Hội đồng nhân dân tỉnh Thái Nguyên khóa XIII, Kỳ họp bất thường thông qua ngày 27 tháng 3 năm 2019./. *Tho*

Nơi nhận:

- Ủy ban Thường vụ Quốc hội (Báo cáo);
- Chính phủ (Báo cáo);
- Bộ Nông nghiệp và Phát triển nông thôn (Báo cáo);
- Bộ Tài nguyên và Môi trường (Báo cáo);
- Thường trực Tỉnh ủy (Báo cáo);
- Thường trực HĐND tỉnh;
- Ủy ban nhân dân tỉnh;
- Đoàn ĐBQH tỉnh;
- Ủy ban MTTQ tỉnh;
- Các đại biểu HĐND tỉnh khóa XIII;
- Tòa án nhân dân tỉnh;
- Viện kiểm sát nhân dân tỉnh;
- Các sở, ban, ngành, các đoàn thể của tỉnh;
- TT HĐND, UBND các huyện, thành phố, thị xã;
- Văn phòng Tỉnh ủy, Văn phòng UBND tỉnh, Văn phòng Đoàn ĐBQH tỉnh;
- Lãnh đạo VP HĐND tỉnh;
- Báo Thái Nguyên; TTTT tỉnh (dễ đăng);
- Lưu: VT.

CHỦ TỊCH



Bùi Xuân Hòa

No. 03/NQ – HĐND

Thai Nguyen, March 27th, 2019

RESOLUTION

Decision on direction of conversion from forest land use purpose to other purpose to execute project on Thai Nguyen province

PEOPLE'S COUNCIL OF THAI NGUYEN PROVINCE

SESSION X, EXTRAORDINARY MEETING

Based on Law on Local Government Organization issued June 19th, 2015;

Based on Law on Land issued November 29th, 2013;

Based on Law on Forestry issued November 15th, 2017;

Based on Resolution on 156/2018/BĐ-CP issued November 16th, 2018 of detailed regulation on execution of Law on Forestry;

Based on Resolution No. 51/NQ-CP dated May 10th, 2018 of Government of Vietnam on adjustment of land use planning to 2020 and land use plan to final term (2016-2020) of Thai Nguyen province;

Consideration of Statement No.21/TTr-B|UBND dated March 21st, 2019 of People's Committee of request for approval for Decision on direction of conversion from forest land use purpose to other purposes on Thai Nguyen Province; Inspection Report of Board of Economics – Budget; Discussion Contribution of Delegates; Provincial People's Council at Meeting;

RESOLVES:

Article 1: Decision on direction of Conversion from forest land use purpose to other purposes to execute the project on Thai Nguyen Province area with the following contents:

1. Conversion from the protection forest land use purpose to other purposes to execute Thai Nguyen City Water Supply System Development Project with total area of 7.75 ha.
Location: Lot 3 and Lot 5, plot 5, Sub-area 213 in accordance with Planning Map of 03 types of forest in Phuc Triu commune, Thai Nguyen Province.
2. Conversion from protection forest use purpose and protection forest use purpose to other purposes to execute Nui Coc Lake Spiritual Area Project with total area: 19.99 ha (in which: protection forest 12.78 ha, and protection forest 7.21 ha).
Location: Lot 1 and Lot 2, Plot 1, sub area 159 according to Planning Map of 03 types of Forest in Van Tho commune, Dai Tu District, and Lot 1, Lot 3 – Plot 3 in sub area 223 according to the planning map of 03 type of forests in Phuc Tan Commune, Pho Yen Town.

Article 2. Implementation Organization

1. Assign to Provincial People's Committee to execute this Resolution according to the Regulation of Law.

2. Assign to Provincial Standing Committee, Boards of People's Committee, member groups of People's Committee and Delegates of People's Committee in charge of monitoring the execution of this Resolution.

This Resolution has been approved by People's Committee of Thai Nguyen Province, Session XIII, at extraordinary Meeting on 27/03/2019.

Received by:

- Standing Committee of National Assembly (Report)
- The Government of Vietnam
- Ministry of Agriculture and Rural Development (Report)
- Ministry of Natural Resource and Environment (Report)
- Provincial Standing Committee
- People's Committee of Thai Nguyen Province
- Provincial parliamentary delegation
- Committee of Provincial Fatherland Front
- Delegate of Provincial People's Council, Session XIII
- Provincial People's Court
- The People's Procuracy of provinces
- Departments, agencies, unions of the province
- Standing Committee of People's, Standing Committee of Districts, Cities, Towns;
- The Office of Province, The Office of People's Committee, the Office of Provincial parliamentary delegation
- Leaders of The Office of People's Council; The Office of Provincial parliamentary delegation
- Leaders of Office of People's Councils;
- Thai Nguyen Magazine and Report, Live Reporting (to post)
- Save by: VT

CHAIRMAN OF THAI NGUYEN PROVINCE

BUI XUAN HOA