

Environmental Management Plan
For
Harbin Cold Weather Smart Public Transportation System Project
(Public Transport Corridors Component)

Restructuring Stage

July 2019

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Attachment: Traffic Management Plan

The public transport corridors component of Harbin Cold Weather Smart Public Transportation System Project will have impacts on the ecological environment, natural environment, social environment and people's life to a certain extent during the construction and operation periods. In order to timely adopt effective environmental protection measures to mitigate or eliminate unfavorable impacts, it's required to implement necessary environmental protection and monitoring plans during the construction and operation periods, which mainly aims to timely and accurately monitor the actual impacts that the project activities will cause to the environment, to monitor the implementation performance of various environmental protection measures, and to examine whether the anticipated and evaluation conclusions of the EIA report are accurate.

1. Purposes

This environmental management plan (EMP) provides detailed descriptions on environmental mitigation measures, environmental management organization and responsibilities, and environmental monitoring etc. It will serve as a guideline for carrying out such activities and play following roles:

(1) Specify measures to mitigate the environmental impacts on receptors. Harbin PMO, EIA agencies and project design agency shall carefully investigate and verify environmental impact receptors, figure out effective measures to mitigate the environmental impacts, and integrate them into project design.

(2) Provide a guideline for environmental protection. After approved by the World Bank, the EMP will be provided to contractors, operators and other project-related parties involved in the construction period and operation period as an environmental protection guideline.

(3) Clarify the responsibilities and roles of project-related parties. It not only clarifies the responsibilities and roles of main project-related parties and authorities, but also suggests the methods and ways of communications among different departments.

(4) Set out a plan on environmental monitoring during construction and operation periods. In order to ensure effective implementation of environmental mitigation measures and timely identification and treatment of unforeseen or unexpected environmental issues, this EMP proposes an environmental monitoring plan for the construction and operation periods.

2. Environmental Management Institutional Arrangements

As the contents of environmental management are different between construction period and operation period of the Project with one after another, respective institutional organizations should be arranged for each period, and environmental management should be carried out phase by phase. Harbin PMO is responsible for implementing overall environmental management during the project implementation; while local EPBs are responsible for supervising the overall environmental management for each period. The environmental management institutions and their responsibilities are shown in Table 2-1.

Table 2-1: Environmental management institutions and their responsibilities

Stages	Responsible parties	Environmental Responsibilities
Design and preparation	Harbin PMO	(1) Responsible for the overall environmental management in project preparation; (2) engaging EIA agencies; (3) coordination between design agency and EIA agency for information exchange; (4) conducting public consultation and information disclosure; (5) supportive in EIA preparation, modification, review and approval procedures; (6) review of the EMP; (7) submitting environmental documents to the World Bank, and responding to the World Bank's comments; and (8) integration of the EMP into bidding process etc.
	Design agency	(1) Providing design schemes and/or adjustments to EIA agency in a timely manner; (2) improving design by taking the constructive suggestions from EIA into account; and (3) intergrating mitigation measures into overall design scheme and including environmental cost into total project cost etc.
	EIA agencies	(1) Preparing EIA report or form in accordance with national and the World Bank's requirements; (2) doing modification or supplementary EIA to match design adjustment; (3) supporting Harbin PMO to carry out public consultation and information disclosure; (4) providing suggestions on safeguards and environmental sustainability for design agency to improve the design scheme; and (5) providing mitigation measures and environmental cost for design agency to include them into the overall design and total project cost respectively etc.

Stages	Responsible parties	Environmental Responsibilities
	HLJ EPB	(1) Review and approval of the first version of EIA outline; and (2) Review and approval of the first version of EIA report etc.
	Harbin EPB	(1) Providing official data and information to support the EIA work; and review and approval of the following version of EIA report to match the project design adjustment etc.
	Other stakeholders	(1) Supporting and participating in public consultation, and providing effective opinions and suggestions; and (2) overseeing the environmental performance and reporting issues as needed etc.
Construction	Harbin PMO	(1) Responsible for the overall environmental management in construction; (2) supervising contractors' preparation of Environmental Codes of Practices (ECOPs); (3) supervising contractors' implementation of the EMP; (4) engaging environmental monitoring agency and overseeing its work; (5) preparing semi-annual reports on implementation of the EMP and submitting them to the World Bank; and (6) coordination of other environmental issues in construction etc.
	Contractor	(1) Preparing ECOPs; (2) engaging environmental supervision engineers; (3) implementing the EMP measures; (4) providing reports on implementation of the EMP to Harbin PMO; and (5) coordinating and handling other environmental issues in construction etc.
	ESE	(1) Instructing and supervising the contractors to implement the EMP measures; (2) preparing weekly and monthly environmental supervision reports to the contractors; and (3) coordinating and handling other environmental issues in construction etc.
	Environmental monitoring agency	(1) Implementing the environmental monitoring plan for construction period, and providing monitoring results in a timely manner ; and (2) reporting any pollution situations identified in monitoring exercises to the contractors and Harbin PMO etc.
	Harbin EPB	(1) Supervising and inspecting the implementation of the EMP in construction period; (2) checking pollution issues and their handling solutions at construction sites; and (3) checking the quality of ambient environment etc.
	Harbin PSTMB	(1) Reviewing and approving the programs of traffic management in construction; and (2) instructing the contractors to divert traffic etc.
	Other stakeholders	(1) Supporting and participating in public consultation, and providing effective opinions and suggestions; and (2) overseeing the environmental performance and reporting issues as needed etc.
Operation	Harbin PMO	(1) Responsible for the overall environmental management in operational period; (2) supervising operators' implementation of the EMP; (3) engaging environmental monitoring agency and overseeing its work; (4) preparing semi-annual reports on implementation of the EMP and submitting them to the World Bank; and (5) coordination of other environmental issues in construction etc.
	Operators	(1) Implementing the EMP measures for operation period; (2) providing reports on implementation of the EMP to Harbin PMO; and (3) coordinating and handling other environmental issues in operation period etc.
	Harbin PSTMB	Responsible for traffic diversion and instruction during the operation period of the public transportation corridor project.
	Environmental monitoring agency	(1) Implementing the environmental monitoring plan for operation period, and providing monitoring results in a timely manner ; and (2) reporting any pollution situations identified in monitoring exercises to the operators and Harbin PMO etc.
	Urban planning authorities	Well planning new buildings along the roads by eliminating sensitive receptors (hospitals, schools and residential areas).
	Harbin EPB	(1) Supervising and inspecting the implementation of the EMP in operation period; (2) conducting annual and sampled inspection of exhaust emission of vehicles; and (3) monitoring the quality of ambient environment etc.
	Other stakeholders	(1) Supporting and participating in public consultation, and providing effective opinions and suggestions; and (2) overseeing the environmental performance and reporting issues as needed etc.

Note: ESE - environmental supervision engineer; HLJ - Heilongjiang; PSTMB - public security traffic management bureau

The environmental management responsibilities throughout the project cycle are shown in the following Table 2-2:

Table 2-2: Responsibilities of Provincial and Municipal EPBs

Stage	Supervision authority	Content of supervision	Objectives of supervision
Feasibility study stage	HLJ EPB	<ol style="list-style-type: none"> 1. Reviewed and approved the EIA Outline 2. Reviewed and approved the original EIA report 	<ol style="list-style-type: none"> 1. Ensure the comprehensiveness of environmental assessment, appropriate subjects and highlighted priorities 2. Ensure reflection of all significant potential problems which may arise from the project 3. Ensure a feasible plan for implementation of measures for mitigation of environmental impacts.
Design and construction stages	Harbin EPB	1. Inspect whether the investment in environmental protection has been secured	1. Ensure investment in environmental protection.
		<ol style="list-style-type: none"> 2. Inspect the stacking and disposal of waste from construction of bridges and tunnels. 3. Inspect the discharge and disposal of domestic waste water and waste oil on the construction sites 	<ol style="list-style-type: none"> 2. Ensure that no soil erosion is caused 3. Ensure that construction wastewater get pretreated and will not block drainage systems
		4. Inspect restoration and treatment of sites where soils are taken or disposed	4. Ensure no serious damage is caused to landscape and land resources along the road and ensure restoration of such
		5. Inspect whether the stock ground, asphalt and Spodosol mixing stations are appropriate	5. Ensure conformity to environmental protection requirements of these sites
		6. Inspect the control of dust and noise pollutions and determine the construction time	6. Implement relevant environmental protection laws, regulations and standards to mitigate the impacts of construction on the environment.
		7. Inspect whether there are plans for environmental management, monitoring and supervision.	7. Ensure the formulation and implementation of the EMP, the monitoring plan, and the supervision plan; ensure adequate investment in environmental protection, so as to ensure the achievement of goals in environmental protection throughout the construction and operation periods of the project.
		HLJ EPB, or Harbin EPB (entrusted by HLJ EPB)	8. Inspect whether environmental protection facilities are designed, constructed and put into use simultaneously with progress of the project and ensure the final time of completion.
	9. Inspect whether environmental protection facilities conform to requirements		9. Inspect environmental protection facilities
	Operation period	Harbin EPB	<ol style="list-style-type: none"> 1. Inspect implementation of monitoring plan 2. Determine whether there is necessity to take further measures of environmental protection (for unexpected environmental problems)
Harbin EPB		3. Inspect whether the environmental quality in	3. Strengthen environmental management and take concrete actions to protect human

Stage	Supervision authority	Content of supervision	Objectives of supervision
		environmental sensitive areas conforms to corresponding quality standards 4. Inspect stacking, transportation and burial of solid waste 5. Inspect and conduct sampled inspection of exhaust emission of vehicles	health.

Note: HLJ - Heilongjiang

3. Environmental Monitoring Plan

(1) Purposes and principles

The purpose of the environmental monitoring plan is to check the implementation performance of environmental mitigation measures and to provide a basis for determining schedule and procedures for implementing proper mitigation measures by adjusting the EMP in accordance with monitoring results. The environmental monitoring plan was prepared based on the main anticipated environmental impacts throughout the construction and operation periods.

(2) Environmental monitoring plan

An environmental monitoring plan was prepared for both construction period and operation period to reflect the characteristics of urban transportation project and against the significant sensitive receptors, which is shown in Table 3-1. Qualified environmental monitoring agency should be engaged to carry out the monitoring exercises. Since the construction activities at Xinyang Road Corridor have been substantially completed while this report is prepared, the environmental monitoring plan doesn't cover Xinyang Road.

Table 3-1: Environmental Monitoring Plan

Factor	Items		Monitoring Arrangements	
			Construction period	Operation period
Air	Source of pollutants		Construction dust	Vehicle exhaust and organic waste gas
	Monitoring parameters		TSP	CO, NO ₂
	Applicable standards	Quality standards	<i>Ambient Air Quality Standards</i> (GB3095-1996)	<i>Ambient Air Quality Standards</i> (GB3095-1996)
		Discharge standards	—	GB18352.1-2001 <i>Limits and Measurement Methods for Emissions from Light-duty Vehicles</i>
	Monitoring locations		Harbin No.38 Middle School, Harbin Industrial Art Design School (Campus 3), Harbin No.87 Middle School, Hongqiao Middle School, Northeast Agricultural University	Harbin No.38 Middle School, Harbin Industrial Art Design School (Campus 3), Harbin No.87 Middle School, Hongqiao Middle School, Northeast Agricultural University
	Frequency of monitoring		Once per month, twice each time (morning and afternoon)	Once every winter and spring, 1-2 days each time (24h continuous monitoring)
	Implementation agency		Harbin PMO	Harbin PMO
	Monitoring agency		Harbin Environmental Monitoring Station (EMS)	Harbin EMS
	Supervision agency		Harbin EPB	Harbin EPB
	Monitoring cost		RMB 80,000	RMB 300,000
Noises	Source of pollutants		Noise of construction machineries, construction vibration	Traffic noise
	Parameters		LAeq(dB)	LAeq(dB)
	Applicable standards	Quality standards	<i>Environmental Quality Standards for Noise</i> (GB3096-2008)	<i>Environmental Quality Standards for Noise</i> (GB3096-2008)
Discharge standards		<i>Noise Limits for Construction Site</i> (GB12523-2011)	—	

Factor	Items	Monitoring Arrangements	
		Construction period	Operation period
	Measurement standards	<i>Measuring Method of Environmental Noise of Urban Area (GB/T14623-93), Standards of Environmental Vibration in Urban Area</i>	<i>Measuring Method of Environmental Noise of Urban Area (GB/T14623-93)</i>
	Monitoring locations	Harbin No.38 Middle School, Harbin Industrial Art Design School (Campus 3), Harbin No.87 Middle School, Hongqiao Middle School, Northeast Agricultural University	Harbin No.38 Middle School, Harbin Industrial Art Design School (Campus 3), Harbin No.87 Middle School, Hongqiao Middle School, Northeast Agricultural University
	Frequency of monitoring	Once per month, one day each time, twice per day (daytime and night time)	Twice per year, 2 days each time, twice per day (daytime and night time)
	Implementation agency	Harbin PMO	Harbin PMO
	Supervision agency	Harbin EPB	Harbin EPB
	Monitoring agency	Harbin EMS	Harbin EMS
	Monitoring cost	RMB 20,000	RMB 150,000

4. Mitigation Measures

Proper mitigation measures have been proposed in accordance with relevant laws, regulations and management measures and by reference to *General Environmental, Health and Safety Guidelines of World Bank* and good practice of similar projects. Various environmental subjects have been concerned in designing specific mitigation measures for each stage of the project implementation such as preparation, construction and operation periods. A summary of the mitigation measures is presented in the following Table 4-1.

5. Environmental Training Plan

The purpose of environmental training is to carry out knowledge dissemination and skill training on environment management to the project personnel at all levels. It would enable them fully understand the environmental impacts of the Project, and the requirements specified in the environmental management plan (EMP), to enhance their skills and management level. The training would ensure them to be able to seriously and accurately implement the environmental mitigation measures, to minimize the negative environmental impacts of the Project. The detailed environmental training plan is shown in the stand-alone EMP.

Table 5-1: Environmental Training Plan

Trainees	Contents of training	Number of Trainees	Time (day)	Cost (RMB 10,000)
Contractors, and their environmental personnel and group leaders on site	Mitigation measures for construction period as specified in EMP; environmental protection and safety trainings	2 persons for each construction stage	2	4
	Simple methods of measuring construction noise and control measures (self-measurement)	2 persons for each construction stage	2	
ESEs	Measures and requirements as specified in the EMP; environmental protection laws, construction planning and detailed supervision rules relating to construction	1-2 persons for each construction stage	3	16
	Ambient air monitoring and control technologies, noise monitoring and control technologies	6	3	
Owners or operators and their environmental personnel	Foregoing trainings, measures for operation period as specified in EMP, operation and maintenance of environmental protection facilities	8	3	10
Total				30

Table 4-1: Mitigation Measures for Each Period of the Project

Subject	Activities	Main Impacts	Mitigation Measures	Implemented by	Supervised by	Cost - 10 ⁴ RMB
Preparation stage						
Urban ecology	Road laying method	Impacts on urban greening	(1) Consider retaining the existing green belt when assessing and design of next stage. (2) The project budget shall include the tree transplanting cost.	Design agency	Harbin PMO	-
Social environment	Land acquisition and resettlement	Impacts on social environment	(1) Prepare each work well before the construction, survey and know the contents involved in the project such as road, power supply and communication in detail, coordinate with the relevant department to confirm the demolition and relocation plan, do the emergency preparedness well, ensure the normal status of social life.	Harbin PMO	HLJ DRC and Harbin DRC	-
			(2) There is no land acquisition and demolition involve in the bus corridor project	Harbin Land Bureau		-
	Layout of public facilities	Impacts on vulnerable people	(1) Strengthen the suggestion of overpass of public traffic corridor: covering, capping and skidding resistance. (2) Adopt level crossing, try to remove the overpass, the bus station shall be close to the red and green light, increasing the convenience of disadvantaged groups.	Harbin PMO	Harbin DRC	-
	Public consultation & information disclosure	Impacts on public benefits	(1) Conduct public consultation in accordance with national and the World Bank's requirements. (2) Disclose project information and the EIA in accordance with national and the World Bank's requirements.	EIA agency	Harbin PMO	-
Environmental management	Design adjustment	Impacts on EIA and environmental management	(1) Harbin PMO engaged proper EIA agencies to carry out supplementary EIA once there are significant changes in project design and the changes would cause significant impacts on the environment. The revised EIA should be submitted to Harbin EPM for review and approval, and also to the World Bank for review. (2) The revised environmental mitigation measures and the updated investment on environmental protection would be included in the project design documents, bidding documents and construction contracts.	EIA agency	Harbin PMO	-
	Bidding and tendering	Impacts on implementation of EMP	Incorporate the EMP in the bidding documents and the contractor contract for implementation	Harbin PMO	Harbin DRC	10
	Environment protection manual	Impacts on EMP implementation	According to the environment management plan, formulate the construction environment protection manual	Contractor	Harbin PMO	
Construction Period						
Social environment	Construction organization	Impacts on urban public transportation	(1) Review and approve traffic management plans. (2) Set special transportation routes during construction, and conduct traffic diversion. (3) Adjust bus stops or routes according to construction arrangements and requirements. (4) Use public media to let the public know the detailed information about traffic control.	Harbin PSTMB, Harbin PTMD	Harbin DRC	In the project cost

Subject	Activities	Main Impacts	Mitigation Measures	Implemented by	Supervised by	Cost - 10 ⁴ RMB
Social environment	Road construction	Impacts on urban public transportation	<p>(1) Prepare construction organization program and specific traffic organization plan.</p> <p>(2) Conduct construction section by section, and avoid all-line construction that might cause large-scale traffic jam.</p> <p>(3) Set up proper traffic management facilities such as barriers, lights, safe guardrails and marks as required within the traffic control zones for the road works.</p> <p>(4) Provide the road for the pedestrian and/or set the proper safe guardrail and mark as needed.</p> <p>(5) Properly arrange the construction personnel, machinery and materials on site to prevent unnecessary traffic congestion.</p> <p>(6) Safety personnel of each construction team should inspect construction sites everyday; and specific personnel should be designated to divert traffic at construction peak hours or traffic jam occurs.</p> <p>(7) Reserve specific walkways near schools, hospitals and kindergartens, and/or designate specific personnel to divert traffic as needed based on specific situations.</p> <p>(8) Once the construction of some section is finished, clean the site immediately, remove the enclosure, and recover the traffic.</p>	Contractor	ESE, Harbin PSTMB, Harbin PMO	Ditto
	Various activities in road construction	Disturbance to social life	<p>(1) Set bulletin boards at construction sites, stating major project information, construction timetable, suggestion feedback and complaint hotlines, and asking the public to understand the inconvenience caused by construction; including the information about the contractor, supervising company and contact information; and provide the environment protection hotline of local EPBs.</p> <p>(2) Conduct further public consultation during construction, provide local residents with the project information, and ask the advice of residents on the project construction;</p> <p>(3) The lamp shall be installed at proper height, and the lighting direction shall ensure not result in any inconvenience for the nearby residents.</p> <p>(4) Limit work scope not expanding construction site without approval.</p> <p>(5) Educate the construction teams to strengthen the code of behavior, and avoid the brutal construction activities.</p>	Contractor	ESE, Harbin PMO	10
		Impacts on public facilities	<p>(1) The construction team shall know the direction and layout of each kind of pipeline before construction, avoid the blind construction.</p> <p>(2) The construction activities need a large number of water and electricity. Therefore, the construction unit shall contact with the relevant department to connect the pipeline and set the temporary pipeline. For the area with less electricity and water, the power and water supply pipeline shall be installed in advance to avoid the temporary water and power supply failure that may influence the normal water and power supply of the resident, business and government agency.</p> <p>(3) During construction, stop earthwork while finding potential cultural relics, and report to relevant authorities immediately. The excavation can't be started before the authorities have completed the investigation, or the necessary protection measures have been taken.</p>	Contractor	ESE, Harbin PMO	5

Subject	Activities	Main Impacts	Mitigation Measures	Implemented by	Supervised by	Cost - 10 ⁴ RMB
		Impacts on public security	The removed lamp poles shall be delivered to the Heilongjiang hazardous waste disposal center (located at No. 6, Hengshan Road, Harbin) for disposal.	Contractor	ESE, Harbin PMO	1
Social environment	Various activities in road construction	Impacts on people's health and safety	<p>(1) Set the enclosure barriers and safe guardrail, safe warning light and guide board on construction site.</p> <p>(2) Special personnel shall be designated for instruction and diversion if the enclosure barriers pose risks to roads or sidewalks.</p> <p>(3) Fully discuss with local traffic management departments, control vehicle speed near construction sites to secure pedestrian's safety. Set bypasses at the intersections and near hospitals and schools, and install the road and warning signs etc.</p> <p>(4) At the place in which the pavement is damaged or there is some other risks, warning sign must be set timely.</p> <p>(5) Pavement shall be provided for the construction of the sidewalk and a separate passage shall be provided for pedestrian; and prohibit pedestrian from entering the construction site.</p> <p>(6) When constructing sidewalks close to sensitive receptors, the contractor shall designate special personnel to conduct traffic diversion and strictly prevent pedestrians, especially the elderly and students, from entering the non-motor vehicle lanes and motor vehicle lanes.</p> <p>(7) Before conducting construction near sensitive receptors such as schools, consultation should be undertaken with them to prepare specific safety measures.</p>	Contractor	ESE, Harbin PMO	10
		Impacts on workers' health and safety	<p>(1) The work time of operator of construction machines and the construction person on site shall comply with the labor health standard, and the construction units shall provide the construction person with protection measures, such as ear plug and helmet.</p> <p>(2) Wear the proper personnel protection tools (such as the sate glass, mask, helmet and safety shoes).</p> <p>(3) Ensure that the person wear the obvious vest when working or passing the heavy machine operation zone to increase the visibility, train the worker and equipment operator to contact by eye, and then they can get close the vehicle in operation.</p> <p>(4) Use the examined and well-maintained hoist equipment that is suit for road moving (such as crane), and then lift the weight to the higher work level and fix the weight.</p>	Contractor	ESE, Harbin PMO	2
	Construction barriers	Disturbance to business of the shops and enterprises along the road corridors	<p>(1) Arrange the construction of each road section reasonably; try to control the construction period.</p> <p>(2) Under the premise of ensuring safety, try not to build the enclosure, once the construction is finished, remove the enclosure immediately.</p> <p>(3) Reserve proper space at the traffic intersection that the enterprise pass when transporting goods to facilitate the travel of enterprise vehicle.</p> <p>(4) Allow the enterprise to indicate the operation information of enterprise s and shop along the road.</p>	Contractor	ESE, Harbin PMO	-

Subject	Activities	Main Impacts	Mitigation Measures	Implemented by	Supervised by	Cost - 10 ⁴ RMB
Ambient Air	Road surface milling, foundation excavation, materials transportation and stocking, destruction of facilities, site cleaning etc.	Impacts of dust and waste gas emissions on air and local people's life	<p>(1) Build enclosure walls about 2.5-3.0m high around construction sites.</p> <p>(2) Watering when removing the enclosure to decrease the dust, stop the construction at the windy weather.</p> <p>(3) Clean and transport the construction waste, watering during the loading and unloading of soil and rock.</p> <p>(4) Select qualified construction equipment and vehicles; and ensure that the exhaust emission complies with relevant national standards. Ensure that the exhaust of motor vehicle on the road complies with the standard. The transportation vehicle and construction machine shall stay in normal operation, the serviceability rate shall be above 90%, use the high-quality fuel, and install exhaust purification device to effectively reduce the exhaust emission.</p> <p>(5) Stock sands by different categories, keep the piling height below 0.7m, and set the sealed enclosure around and cover with fine mesh safety vertical net or other materials.</p> <p>(6) When the vehicle drives away from the site, it must be cleaned to remove the mud and avoid the leakage and dropping out during transportation.</p> <p>(7) The soil truck and vehicle for construction material shall be covered or take other anti-falling measures, the vehicle shall not be over-loaded to protect the material from falling off during transportation; plan the transportation route and time of vehicle well, avoid the driving in sensitive areas such as downtown, heavy-traffic area and residents area.</p>	Contractor	ESE, Harbin PMO	10
Noise	Vehicles, foundation tamping, materials loading and unloading, destruction and installation of facilities etc.	Impacts on acoustic environment	<p>(1) The fixed machine with heavy vibration shall be installed with vibration-reduction base, install noise-abatement devices to high-noise machines, strengthen the maintenance and service of each kind of construction equipment, keep it operate well and try to reduce the noise.</p> <p>(2) Well arrange construction time and sites properly to reduce the construction period. Avoid using high-noise machines such as milling machine, excavator and generators in the same area simultaneously. At the construction sites close to sensitive receptors, barriers should be set to block and screen noise</p> <p>(3) To reduce noise from material transportation and beating, the contractor shall perform civilized construction.</p> <p>(4) The machine with strong noise shall be stopped at night (22:00-8:00). For the point which must be constructed in an continuous way, the construction unit shall contact with the local environment department according to the specific status, and apply for the permit of night construction, and release the notice to get the support of residents and take the anti-noise measure such as portable or temporary screen of resisting to the noise etc.</p> <p>(5) The construction site shall be away from the sensitive point such as resident area, school and hospital etc. If there are many residents within the range of 50m around the construction site, it is forbidden to transport the construction material in this road at night. If the material must be transported at night through this road, the sign board for restricting</p>	Contractor	ESE, Harbin PMO	30

Subject	Activities	Main Impacts	Mitigation Measures	Implemented by	Supervised by	Cost - 10 ⁴ RMB
			the honk and limiting speed shall be set, and the speed of the vehicle at night shall be less than 30km/h. (6) Pay attention to arrange the construction material transportation time reasonably.			
	Construction of roads, pedestrian overpass and installation of traffic facilities	Impacts on significant sensitive receptors such as schools or hospitals.	(1) Sites for loading and unloading materials or for locating machinery should be located far from significant sensitive receptors such as residential areas, schools and hospitals etc. (2) Construction near schools shall be stopped during college entrance examination and middle school entrance exam. (3) Vehicles shall slow down and can't honk when passing hospitals and schools; transportation routes should be selected reasonably to avoid crossing or getting close to these sensitive areas. (4) Noise barriers or sound absorption screens should be established as needed. (5) Construction shall be forbidden near significant sensitive receptors.			
Wastewater	Construction activities and worker's living activities	Impacts of construction wastewater and domestic wastewater on urban environment	(1) Pretreat the wastewater that contains sands and oil by natural sedimentation, and use the supernatant water for dust reduction at the construction sites, or discharge the treated effluent into drainage systems. (2) Cut off surface runoff from earth and sand stacks in rain days, and pretreat it by sedimentation before discharge it into drainage systems. (3) The leakage of machine oil and the waste oil will pollute the water after entering into the water, therefore, strengthen the environment management, launch the environment protection education and prevent the risk. (4) Discharge domestic wastewater into sewer systems.	Contractor	ESE, Harbin PMO	5
Urban ecology and landscape	Various activities in road construction	Impacts on urban ecology and landscape	(1) Avoid occupation of land and roads. (2) Well balance earthwork, and avoid excavation and backfilling during rainy days. (3) For the piling of soil dug temporarily, the measures such as anti-soaking anti-scour and prevention of soil and water loss. (4) Clean construction sites in a timely manner after paying power cables or installing drain inlets, and restore land to original conditions. (5) Pay attention to protect all plants in adjacent areas during construction. (6) Clean and wash construction sites and adjacent areas periodically to remain these places clean and tidy.	Contractor	ESE, Harbin PMO	1
	Solid waste generated in destruction works and facilities removal	Impacts on urban landscape	(1) Establish a good site cleaning mechanism, and forbid disposing any solid waste randomly and casually. (2) Strictly control the material using, try to reduce the remaining material, and store the remaining material properly. (3) Useless construction materials should be transported to designated landfill for disposal in a timely manner.	Contractor	ESE, Harbin PMO	1
	Domestic garbage from workers	Impacts on urban landscape	Domestic garbage should be transported to designated landfill for disposal in a timely manner.	Contractor	ESE, Harbin PMO	-

Subject	Activities	Main Impacts	Mitigation Measures	Implemented by	Supervised by	Cost - 10 ⁴ RMB
Environmental management	Environmental monitoring	Impacts on environmental management	To engage environmental monitoring agency to implement the environmental monitoring plan to measure the project operation's impacts on the environment.	Environmental monitoring agency	Harbin PMO, Harbin EPB	10
	Environmental Codes of Practices		To prepare Environmental Codes of Practices for the civil contracts according to the EMP	Contractor	Harbin PMO	5
	Environmental supervision		To designate specific environmental supervision engineer to inspect the implementation of the EMP measures during construction	ESE, Contractor	Harbin PMO	20
	Environmental training		Provide the training on environment protection measures to environmental personal of contractors, and supervision companies	Harbin PMO	Harbin DRC	20
Operation Period						
Ambient air	Operation of the roads and traffic facilities	Impacts of dust and vehicle exhaust on sensitive receptors	(1) Remove dust particles from road surface to effectively reduce the secondary dust generated by friction with the ground during the driving process of the motor vehicle. (2) Strengthen management, optimize traffic signal indication system, ensure smooth road traffic, and reduce exhaust emissions from idling vehicles. (3) Improve green belts construction, using vegetation to purify air. (4) Support and cooperate with local governments to control air pollution from vehicle exhaust.	Operators	Harbin EPB	10
Acoustic environment	Operation of the roads and traffic facilities	Impacts of traffic noise on sensitive receptors	(1) New buildings on both sides of the road. If it is sensitive to the acoustic environment, it is recommended that the owner adopt the sound insulation treatment measures for the buildings during design and construction, such as installing sound insulation windows to avoid traffic by the project. (2) For the sensitive receptors such as residential areas, schools and hospitals along the road corridors, plastic-plastic windows have been installed, and should be reinforced as needed. (3) Strictly limit the speed of driving on sensitive road sections, especially during night. (4) Strengthen management of vehicles' horns, and ban them to blast horns on the roads close to sensitive receptors. (5) Make good maintenance on the road surface and repair the damaged road surface in time.	Operators	Harbin EPB	5
Urban ecology and landscape	Operation of roads and traffic facilities	Impacts on urban ecology and landscape	Set the green belt at the two sides of road; recommend to set the sculpture, greening sketch at the intersection and open space between the street and building under the possible condition of project construction, which can not only improve the urban environment, make the road landscape beautiful but also can improve the grade of city and increase the affinity of city.	Operators	Municipal construction authority	20
Social environment	Operation of roads and traffic facilities	Impacts on public health and safety	(1) Strengthen the safety awareness education for the citizen during the whole process of project. (2) Enhance maintenance of roads and traffic facilities, and ensure public transportation services.	Operators	Harbin PSTMB	2

Subject	Activities	Main Impacts	Mitigation Measures	Implemented by	Supervised by	Cost - 10 ⁴ RMB
Environmental risks	Accidents on urban roads	Risks to the environment and the health and safety of people	(1) During the operation of the project, if an environmental pollution accident occurs, it shall be handled in accordance with the relevant national regulations and the “Harbin Environmental Protection Bureau's handling of major environmental emergency response plans”. (2) It's suggested to forbid transportation of hazardous substances on the project roads. In case of special circumstance to transport these substances, it's required to report to local public security and environment protection authorities that shall assign the transportation time and routes. The transportation must implement the relevant regulation of Hazardous Goods Transportation Rules (TT3130).	Operators	Harbin PSTMB, Harbin EPB	5
Environmental management	Completion check and acceptance of environmental protection measures and facilities	Impacts on environmental management	An environmental consulting/monitoring agency should be engaged to write an environmental investigation/monitoring report within 3 months prior to the project operation.	Operator	Harbin PMO, HLJ DRC or Harbin DRC, HLJ EPB or Harbin EPB	20
	Environmental monitoring		To engage environmental monitoring agency to implement the environmental monitoring plan to measure the project operation's impacts on the environment.	Monitoring agency, Operator	Harbin PMO, Harbin EPB	45
	Environmental training		Provide the training on environment protection measures to environmental personal of Operator	Harbin PMO	Harbin DRC	10

Note: ESE - environmental supervision engineer; DRC - development reform committee; HLJ - Heilongjiang; PMO - project management office; PSTMB - public security traffic management bureau; PTMD - public transportation management department

6. Completion Acceptance of Environmental Protection Facilities

The project design should take the characteristics of the Project into account and give top priority to preventing potential pollution caused by wastewater, waste gases and noise, so as to ensure they are controlled within the discharge limits after the Project is put into operation.

According to relevant requirements of *Management Regulations for Checking and Accepting Completed Installations of Environmental Protection of Construction Projects*, Harbin PMO shall organize the operators to apply to HLJ or Harbin EPBs for environmental check and acceptance. A monitoring plan for completion acceptance should be prepared and monitoring exercises should be carried out on the environmental protection facilities and their performance once the plan is approved. The EIA reports, environmental monitoring report for acceptance, and progress reports on the EMP implementation should be in place and ready before the environmental check and acceptance is undertaken.

7. Grievance Redress Mechanism (GRM)

A convenient, efficient, open and effective public grievance redress mechanism (GRM) will be established and maintained throughout the Project to deal with any public concerns on the project implementation and related environmental issues and to better protect the interests of affected people along the road corridors. Contractor, operator and Harbin PMO should publicize proper approaches for the public to complain, be responsible for carrying out consultation with the complainant, deal with the grievance or complaint, and make regular records on relevant information. The records may include the background of the complainant, the complaint matters, the feedback and solutions, and the follow-up inspection etc. If the grievance or complaint involves broader issues beyond the handling capacity of the above-mentioned agencies, responses or advices can be sought from other professional personnel or authorities. For the environmental issues or disputes related to the project implementation, the complainant can also appeal to local EPBs directly at the same time.

8. Recording and Reporting Requirements

It's required that contractors, environmental supervision engineers, operators and Harbin PMO record the progress of the Project construction or operation, implementation of the EMP, monitoring activities and results, and environmental grievance and handling, and submit relevant reports to related agencies.

(1) Environmental supervision engineer should make detailed weekly records on the EMP implementation, and prepare and submit monthly reports to the contractor and Harbin PMO with main contents including implementation of the mitigation and monitoring measures etc.

(2) Contractor and operator should make detailed quarterly records on the EMP implementation, and prepare and submit quarterly reports to Harbin PMO with main contents including implementation of the mitigation and monitoring measures etc.

(3) For any environmental grievance occurred, the contractor, supervision engineer, operator and Harbin PMO should report the event to local EPBs and the World Bank in a timely manner, and report to upper level authorities as needed.

(4) After completing monitoring exercises as scheduled, the responsible environmental monitoring agency should submit the monitoring data and/or reports to the contractor, operator and Harbin PMO.

(5) Harbin PMO should prepare semi-annual environmental reports to reflect the implementation of the EMP, and submit the reports to the World Bank in a timely manner.

The report on EMP implementation should include, but not limited to, the following aspects:

- (1) Implementation of the environmental training plan.
- (2) Construction progress or operation and maintenance situation.
- (3) Mitigation measures implementation, and monitoring activities and results etc.

(4) For any grievance/complaint received from the public, brief description of the event, handling solutions/decisions, and public satisfactions should be recorded properly.

(5) EMP implementation action plans for next year etc.

9. Cost Estimates

The total estimated environmental management cost for the public transportation corridor project is RMB 3.41 million. In which, RMB 1.74 million are for construction period and RMB 1.67 million for operation period, which are all included in the total project investment cost. The details are presented in **Table 9-1**.

Table 9-1: Environmental Management Cost Estimate

Item	Cost (RMB)
1. Preparation and Construction Periods	
1.1 EIA	44
1.2 Environmental Codes of Practices	5
1.3 Environmental mitigation measures	75
1.4 Environmental monitoring	10
1.5 Environmental supervision	10
1.6 Environmental training	20
1.7 Contingency	10
Sub-Total	174
2. Operation Period	
2.1 Environmental mitigation measures	42
2.2 Environmental acceptance	20
2.3 Environmental monitoring	45
2.4 Environmental training	10
2.5 Contingency	50
Sub-Total	167
Total	341

Attachment: Traffic Management Plan

1. Objectives

The traffic management plan (TMP) is used to ensure that roads are clear for urban traffic during the construction period of the public transportation corridor works, and prevent traffic accidents from occurring in the project scope in construction.

2. Principles

- (1) National and local regulations on road traffic and safety should be complied with;
- (2) A traffic management mechanism should be established and capacity building should be strengthened on traffic management in construction; and
- (3) Detailed and specific measures on traffic management and emergency response should be prepared and strictly implemented.

3. Traffic management mechanism

- (1) Road Traffic Safety Law of the People's Republic of China, amended on 22 April 2011
- (2) Regulation on the Implementation of the Road Traffic Safety Law of the People's Republic of China, amended on 7 October, 2017
- (3) Heilongjiang Road Traffic Safety Regulation, amended on 17 December 2014
- (4) Harbin Road Traffic Safety Management Methods, executed on 1st May 2006
- (5) Specification of Traffic Organization for Urban Road Work (GAT900-2010)

4. Traffic management organization and responsibilities

The project implementation agency (Harbin PMO), the constructing agencies (contractors), and the line authorities (Harbin PSTMB and Harbin PTMD) would take different responsibilities (as shown below) in traffic management in the construction period, and they should keep dynamic consultation and cooperation according to the construction progress and traffic situations.

Responsible party	Responsibilities
Contractor	(1) Prepare a detailed traffic organization plan TOP based on the construction organization programs and submit it to Harbin PMO for review before construction commissioning; (2) establish clear organizational structure and duties on traffic management in construction; (3) provide specific training to related personnel on traffic management in construction; (4) prepare detailed measures of traffic management within the traffic control zones for the road works based on the approved TOP, and implement these measures; (5) record the implementation of these measures, and report any issues once they are recognized; (6) prepare emergency response plans for traffic accidents in construction; and (7) respond to traffic accident emergency in construction as needed.
Harbin PMO	(1) Review the TOP; (2) submit the improved TOP to Harbin PSTMB for review and approval; (3) conduct supervision and inspection on the implementation of traffic management in construction; (4) review emergency response plans for traffic accidents in construction; and (5) respond to traffic accident emergency in construction as needed.
Harbin PSTMB	(1) Review and approve the TOP; (2) work out and organize to implement traffic management measures along the roads in construction under the Project, by preparing traffic diversion schemes, disclosing information on traffic control to the public and so on; (3) conduct supervision and inspection on the implementation of traffic management in construction; and (4) respond to traffic accident emergency in construction as needed.

Responsible party	Responsibilities
Harbin PTMD	(1) Adjust bus stops or routes in accordance with the TOP, and disclose corresponding information to the public; and (2) respond to traffic accident emergency in construction as needed.
Other authorities in charge of road-related public facilities	(1) Provide cooperation and support in traffic management in construction as needed; and (2) respond to traffic accident emergency in construction as needed.

5. Traffic management measures

Detailed traffic management measures for the construction period will be prepared based on specific situations of the corridor road sections and in accordance with the approved TOP as well as relevant laws and regulations. Harbin PSTMB's approval on these measures should be sought before implementation. Following basic measures, but not be limited to, should be considered:

- (1) Conduct construction section by section, and avoid all-line construction that might cause large-scale traffic jam.
- (2) Set special transportation routes in construction, and conduct traffic diversion.
- (3) Adjust bus stops or routes based on construction arrangements.
- (4) Use public media to let the public know the detailed information about traffic control.
- (5) Set up proper traffic management facilities such as barriers, lights, safe guardrails and marks as required within the traffic control zones for the road works.
- (6) Provide access roads for pedestrian and/or set proper safe guardrails and marks as needed.
- (7) Properly arrange the construction personnel, machinery and materials on site to prevent unnecessary traffic congestion.
- (8) Safety personnel of each construction team should inspect construction sites everyday; and specific personnel should be designated to divert traffic at construction peak hours or traffic jam occurs.
- (9) Reserve specific walkways near schools, hospitals and kindergartens, and/or designate specific personnel to divert traffic as needed based on specific situations.
- (10) Once the construction of a road section is finished, clean the site immediately, remove the enclosure, and recover the traffic.

6. Emergency response plans on traffic accidents

The contractors should prepare a detailed emergency response plan for traffic accidents in construction, and equip with necessary facilities for handling emergency. They should establish a combined emergency response mechanism to traffic accidents with Harbin PMO, Harbin PSTMB and other relevant authorities in charge of road-related public facilities. Preventive measures should be undertaken to avoid accident in construction, and report and take actions in a timely manner once there are any problems.