Chinese EIA qualification of Class A
No.4004

Xinjiang Yining urban traffic and environmental improvement project EIA report

Constructor： Yining Municipal Bureau of Housing and Urban Rural Development

EIA unit： Xinjiang Tianhe Environment Technical Consulting Company

Urumqi of Xinjiang in May of 2017

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1. Overview

1.1 The background of project

1.1.1 EIA background

Yining city is the biggest city among those cities that adopt the opening policy in the west area of China. It is the capital city of Ili Kazakh Autonomous Prefecture, as well as the center of economy, politics and culture of Ili Kazakh Autonomous Prefecture. Yining is China's historical gateway to Central Asia and Europe and an important goods distribution center of the ancient "Silk Road".

Following the enlargement of urban area and the continuously increasing population, as well as the living standard's continuous improvement in Yining city, the infrastructure of Yining city has fallen behind the economic development, So Yining city plan to utilize the IBRD Flexible Loan (IFL) to improve the infrastructure of Yining city, which will include the following four components:

Component 1: Traffic Environment Improving Construction.

Component 2: Traffic Management and Road Safety.

Component 3: Institutional Capacity Building.

Component 4: Public Transport Improvement.

The total investment is up to 900,948,900 RMB, with an IBRD loan of US$ 100 million (one hundred million US dollars). Other capital except IBRD loan will be collected by local government.
In May of 2016, according to the World Bank's relevant requirements and Chinese EIA regulating documents, Yining Municipal Bureau of Housing and Urban Rural Development has assigned Xinjiang Tianhe Environment Technical Consulting Company to perform the EIA for the Project.

1.1.2 EIA purpose

（1）Make a survey, monitoring and assessment on the social environment, urban ecology, air, acoustic condition. To have an overall understanding of environmental quality of project area.
（2）Make the quantitative analysis and qualitative analysis on all kinds of environmental impacts aroused during the project construction and operation period. And then make the related description, prediction and assessment for future environmental impacts' scope and intensity.
（3）To confirm whether or not the project is feasible on aspect of environmental protection, to make the environmental protection management plan and environmental monitoring plan, to bring forward a workable environmental protection measures and

suggestions and feedback this to the designing agency to reduce those environmental negative impacts to the lowest level, and finally successfully achieving the goal of project development and environmental protection's coordinating development.

（4）Make the public participate in the assessment to redeem the possible neglect and omit in the EIA process. Then the project planning, design and environmental management can become more complete and reasonable. The EIA work should try to realize the common optimization on environmental benefit, social benefit and economic benefit during project's construction and operation period

1.2 Basis of making EIA

1.2.1 Chinese environmental protection laws and regulations

The domestic and local laws and regulations that are based for this EIA are shown in Table 1.2-1.

Table 1.2-1 The domestic and local related laws and regulations

No.	Title	Brief introduction
1	Environmental Protection law of the People's Republic of China	The law is issued and valid since 26th Dec.1989 with the purpose of protecting and improving the living and ecological environment, prevent and control pollution and hazards, protect the human health and promote the Socialist Modernization development. The law has been modified since 24th Oct. 2014, which adds the penalty and responsibility on the enterprise and government and is called the strictest environmental protection law until now. The law is formed by 6 chapters and 47 rules.
2	The Law of the People's Republic of China on Environmental Impact Assessment	The law was valid since 1st Sep.2003 applied to the construction within Chinese sea. The latest modification of the law in 1st Sep.2016 has the following changes : the FSR approval is not based on the EIA approval anymore; the EIA list registry system become EIA filing system; the approval of conservation plan of water and soil is not the precondition of making EIA, the EIA report and list's preliminary review procedure has been cancelled. The law is formed by 6 chapters and 47 rules.
3	Classified Management Lists for Environmental Protection of Construction Projects	The EIA is categorized in China according to the different impacting level. The difference of environmental points and sensitivity determine the different category in EIA lists applied on the particular project. Based on the EIA lists, the related EIA report, or table, or registry form will be chosen for different projects. The Classified Management Lists for Environmental Protection of Construction Projects was valid in 1st Jun.,2015.
4	Interim Procedure on the Public Participation In Environmental Impact Assessment	In order to encourage and regulate the public participation in EIA, this procedure has been made and be valid on 18th Mar., 2006 with 5 chapter and 40 rules. The reference documents for its making are EIA laws, Administrative Permission Law, The Program for

No.	Title	Brief introduction
		Comprehensively Implementing Government Administration in Accordance with the Law, "Implementing the of Scientific Development and Strengthening Environmental Protection" issued by the State Council, and other regulations for strengthening the environmental information disclosure and public supervising.
5	Environmental Protection Regulations of Xinjiang	For the purpose of environmental protection, pollution prevention and control, avoid other hazards, keep the public health and environmental safety, promote the sustainable development of economy and society, the Environmental Protection Regulations of Xinjiang has been made with 6 chapter and 55 rules, which can be divided into General principles, environmental supervise and management , environmental protection and improvement, pollutant control, legal liability, and supplementary Provisions. The regulation is executed in 1st Feb.,2012. The latest modification is in 1st Jan.,2017.
6	Xinjiang Water Environmental function zoning	In order to control the water pollution, improve the surface water quality, realize the different protection standard for the water body with different function, the Xinjiang Water Environmental function zoning had been made with the new policy document of No. [2002]194, which can benefit the integrated water resource development, proper use, active protection, as well as the development of economy and society.
7	Ecological Zoning of Xinjiang	Based on the individual elements, sensitivity and serving function of ecological environment, the "Ecological Zoning of Xinjiang" divided Xinjiang into 5 ecological zones, 18 sub-ecological regions and 76 ecological functional zones. Then the administrative region, mainly issues, serving function, key target under protection and suitable developing trend for different ecological zone has been confirmed through this document, which was issued with the new policy Document No. [2005]96.
8	Interim Procedure on the Public Participation during EIA for construction in Xinjiang	This Interim Procedure is made for regulate the procedure, working plan, approaches, scope of public participation as well as the information disclosure, etc. Its document Number is new EIA regulation[2013]488.
9	Yili River watershed ecological environment protection regulations	Yili river basin is area that Yili river mainstream and its stream like Tekesi river, gongnaisi river, kasha river flowed by. The related activities performed within Yili river basin must follow these regulations, like resources exploitation, construction and production, ecological protection and supervision, etc. This regulation document has 3 chapter and 19 rules that is valid since 29th Jul., 2011.

1.2.2 The EIA report drafting relevant technical regulations

The relevant technical regulations for drafting all kinds of EIA are issued by the Chinese Environmental Protection Ministry, which is particularly adopted during EIA making. See Table 1.2-2。

Table 1.2-2 EIA Technical Guidelines and Standards

No.	Title	Brief introduction
1	Technical guidelines for environmental impact assessment-General principles	Document No.HJ 2.1-2016, regulates the construction project's EIA basic principles, contents, procedures, methods and requirements. The latest version is valid
2	Technical guidelines for environmental impact assessment- Atmospheric	Document No.HJ 2.2-2008，, regulates the construction project's EIA basic principles, contents, procedures, methods and requirements. The latest version is valid
3	Technical guidelines for environmental impact assessment- Surface water environment	Document No.HJ/T 2.3-93, regulates the surface water's EIA basic principles, methods and requirements. The latest version is valid since 1st April, 1994.
4	Technical guidelines for noise impact assessment	Document No.HJ2.4-2008，regulates the acoustic EIA basic principles, contents, procedures, methods and requirements. The latest version is valid since 1st April, 2009.
5	Technical guidelines for environmental impact assessment- Ecological environment	Document No.HJ19-2011，regulates the ecological EIA basic principles, contents, procedures, methods and requirements. The latest version is valid since 1st September, 2011.
6	Technical guidelines for environmental impact assessment- Underground water	Document No.HJ610-2016，regulates the Underground water's EIA basic principles, contents, procedures, methods and requirements. The latest version is valid since 7th Jul., 2016.
7	Technical Guidelines for Environmental Risk Assessment on Projects	Document No.HJ/T169-2004，regulates the Environmental Risk Assessment basic principles, contents, procedures, methods and requirements. The latest version is valid since 11th Dec., 2004.

1.2.3 Planning document

（1）Outline of 13th five-year plan on national economy and social development in Yining city

（2）Outline of Urban Master Plan of Yining city(2013-2030)；

（3）Detailed regulatory planning for Yining economic park of Huoerguos economic development zone,

（4）Cow diary overall planning for South Bank of Yili River

（5）Plan of Yining integrated traffic system

（6）Yining city as the National Famous Historical and Cultural City development plan

（7）Yining city environment functional zoning

1.2.4 Technical documents

（1）Letter of Authorization，2016.5；

(2) Proposal of XINJIANG YINING URBAN TRAFFIC AND ENVIRONMENTAL IMPROVEMENT PROJECT edited by Xinjiang municipal institute of architectural design Co., Ltd

（3）Project feasibility study report, made by Xinjiang municipal institute of architectural design Co., LTD.

（4）The notification on printing "the interim of Yining rural inhabitants' removal and resettlement management"

1.2.5 Policies of the World Bank

After the compliance comparison with Safeguard Policies of the World Bank, the related rules for the project are as follows:

（1）OP 4.01（Environmental Assessment）;

（2）OP 4.12 （Involuntary Resettlement）;

（3）OP 4.10（Indigenous People）;

（4）OP 4.11（Physical Cultural Resources）;

（5）BP17.50（Information Disclosure）;

（6）Environmental health and safety general guidelines

1.3 Environmental impact factors' identification and assessment factors' selection

In light of no negative impacts from **Institutional Capacity Building and Traffic Management and Road Safety** , this EIA scope only covers the following two components as **Traffic Environment Improving Construction and Public Transport Improvement.**

During the construction and operation of the project, some solid waste, waste water, waste gas and noise pollution will be generated, the EIA will be made for those pollution's negative impacts.

1.3.1 Identification of impacts factors

According to the project type and characteristics of pollutant emission, the environmental elements impacted by project will be identified and be assessed on the impact's intensity and features. The related identification table is as following Table1.3-1 and Table1.3-2.

Table 1.3-1 Identification for the environmental elements under the impact of project

Environment		Natural environment			Ecological resource	Social environment					Quality of life				
Project development period		Surface water quality	Air quality	Acoustic environment	Urban ecology	Land use	Industry development	Agriculture development	Water supply	Traffic	tourism	Health and safety	Social economy	Culture heritage	Living standard
Construction period	Site clearing		-1	-1	-1					-1	-1				
	Excavation		-2	-2	-1					-1	-1				
	Transport		-1	-1						-1	-1				
	Installation			-1						-1					
	Material storage		-1								-1				
operation	Waste water emission	-1			-1					+2	+1				
	Waste gas emission		+2							+2	+2	+2	+2		+2
	Noise		+2	+1						+2	+2	+2	+2		+2
	Solid waste discharge				-1										
	product				+2	+2	+1	-1	+1	+3					

Note：① 3— heavy impact；2—medium impact；1—slight impact；“+”means positive impact；“—” negative impact。

②The positive impacts are much more than the negative impacts during operation period. So in this table only the main impacts during operation are listed.

Table 1.3-2 The property analysis for impacts during operation

Property of impacts		Negative						Positive			
		Long term	Short term	Reversible	irreversible	Part range	Wide range	Long term	Short term	Part range	Wide range
Natural environment	Surface water quality										
	Air quality	√		√		√			√		√
	Acoustic environment	√		√		√			√	√	√
Ecological resource	Urban ecology	√		√		√			√		√
Social	Land use								√		√

environment	Industry development								√		√
	Agriculture development										
	Water supply										
	Traffic	√		√		√			√		√
	Tourism								√		√
	Health and safety	√		√		√			√		√
	Social economy								√		√
	entertainment								√		√
	Living standard								√		√

Note：The long term means the operation period. And the short term means the construction period.

It can be concluded from above table that main negative impacts is produced during construction period. The impacts are mainly on the traffic, acoustic environment, ambient air, cultural heritage and ecological environment near the project site. The impacts property is part region limit, short-term and reversible. During the operation period, there are mainly the positive impacts, which will benefit the natural environment, social environment and quality of life long-term in a wide scope.

1.3.2 Environmental impact assessment factors screening

According to project analysis result and current environmental condition in project site, the Environmental impact assessment factors are screened and listed as following Table 1.3-3.

Table1.3-3 Environmental impact assessment factors for the project

Items	EIA factors	Factors for analysis and prediction
Ambient air	CO、NO_2、PM_{10}、SO_2、	CO、NO_2、PM_{10}、SO_2、Dust
Acoustic environment	equivalent A sound level Leq	equivalent A sound level, vibration
Ecological environment	soil, vegetation and soil erosion	soil, vegetation and soil erosion
Social environment	Transportation, landscape and quality of life	

1.4 EIA category, scope and period

1.4.1 EIA category according to OP4.01 of World Bank

In light of the "Circular about Strengthening the Management of Environmental Impact Assessment for Construction Projects Funded by the International Financial Organizations" (HuanJian[1993]No. 324) and requirements on EIA in OP4.01 of the World Bank Safeguard Policies, combining the consideration that pollutant and pollution resources' intensity, as well as the regional environmental condition, in general speaking, the period of such project is short. Mature and reliable techniques are often applied to such project. The pollutant emissions are easy to control and the affected area is limited. Therefore, Category B of EIA is required for this project.

1.4.2 The domestic EIA category and scope

The domestic EIA category is different from the World Bank's EIA category procedure. In china, there are three Grades for EIA according to characteristics of project and regional environment. According to the Technical guideline for environmental impact assessment, the EIA items and grades for different components of the project are as Table 1.4-1.

In light of no negative impacts from **Institutional Capacity Building and Traffic Management and Road Safety** , this EIA scope only covers the other two components**.**

Table 1.4-1 EIA category for project components

No.	Components	EIA items	Grade	The phenomenon EIA category depends on
1	**Traffic Environment Improving Construction**	Ambient air	III	The dust raised during the construction will make the temporary negative impact, as well as the emission of vehicle tail gas.
		Ecological environment	III	Impact scope＜20km^{2,}， ordinary region
		Surface water	III	The sewage discharge amount is small, mainly is domestic waste water with less intensity, which finally discharge into municipal pipe.
		Acoustic environment	III	Most of project site locate in the urban area with the acoustic standard's requirement of 55-70dB（A）
2	**Public Transport Improvement**	Ambient air	III	The dust raised during the construction will make the temporary negative impact, as well as the emission of vehicle tail gas.
		Ecological environment	III	Impact scope＜20km^{2,}， ordinary region
		Surface water	III	The discharge amount ＜200m^3/d, the content of waste water is simple, after discharging into the municipal pipeline, the sewage will be treated in waste water plant

No.	Components	EIA items	Grade	The phenomenon EIA category depends on
		Acoustic environment	III	The project component locates in the suburb. The noise is mainly due to the construction and operation.

Note： According to HJ610-2016, the underground water environmental grade for road construction should be type IV, which is not concern with EIA.

According the related guidance, the project EIA scope can be determined in Table 1.4-2.

Table 1.4-2 Project components' EIA scope

No.	Components	EIA ITEM	scope	Remark
1	**Traffic Environment Improving Construction**	Ambient air	Within 200m from both sides of central line of road.	
		Ecological environment	Within 300m from both sides of central line of road.	
		Surface water	Merely analysis of qualified discharge, without	
		Acoustic environment	Within 200m from both sides of central line of road.	
		Vibration	Within 50m from both sides of central line of road.	
		landscape	Within 200m from both sides of central line of road.	
2	**Public Transport Improvement**	Ambient air	100m outside of bus service facility stations, 5000m outside of CNG station	
		Ecological environment	10m outside of bus service facility stations	
		Surface water	no scope defined, Merely analysis of qualified discharge	
		Acoustic environment	10m outside of bus service facility stations	

1.4.3 EIA period

EIA period for project construction is from Year 2018 to Year 2022. Year 2023, Year 2029 and Year 2036 are individually chose for EIA as recent period, middle period and forward period during project operation.

1.5 Environmental function zoning and standards

1.5.1 Environmental function zoning

According to Yining municipal function zoning report(2005 revision) and China's

xinjiang water environment function zoning, as well as the Xinjiang ecological function zoning. The environmental function zoning is made like follows:

（1）Ambient air function zoning

Light industry is the main industry and no heavy industry exists in Yining. Yining belong to Category 2 air quality functional area. See Figure1.5-1 Yining Ambient air function zoning map.

（2）Water environment function zoning

In the document of Water environmental function zoning of Xinjiang, the water quality belong to Category Ⅳ for segment of Yili river that pass by the Yining city. There are two control sections. One is Yili River Bridge, the other is Tianxiju fishery. For the surface water of Piliqing River pass by Yining city, the Type Ⅲ water quality standard in Surface Water Environment Quality Standard should be followed, and the main water environmental function is the drinking water sources.

（3）Acoustic environmental function zoning

According to Yining municipal function zoning report, the Acoustic environmental function zoning for this project are focused on the Type 1 area and Type 4 area that regulated in the Environmental quality standards for noise（GB3096-2008）. The details can refer to Figure 1.5.2.

（4）Ecological environmental function zoning

According to Ecological environmental function zoning of Xinjiang, the project site belong to Tianshan mountain region warm grassland, forest ecological zone, western Tianshan mountain grassland animal husbandry, coniferous forest water conservation and Agricultural ecological subregions in river valley and oasis, Yili Agricultural ecological functional zones in river valley, oasis and plain.

According to the notification of key prevention control zone, key supervision zone, key treatment zone for soil erosion issued in the Xinjiang Uygur Autonomous Region, Yining belong to the key supervision zone for soil erosion.

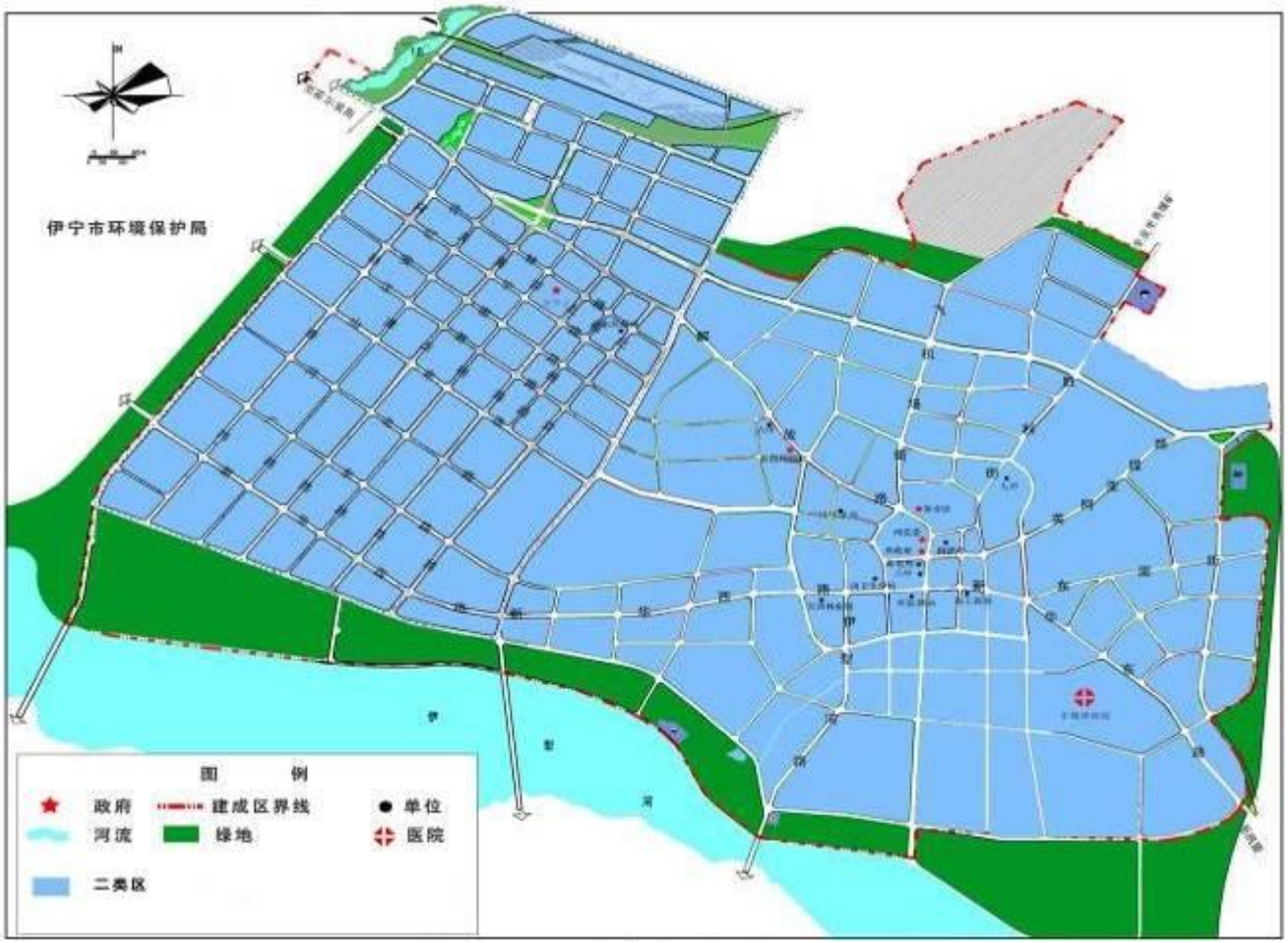

Figure 1.5-1 Yining Ambient air function zone

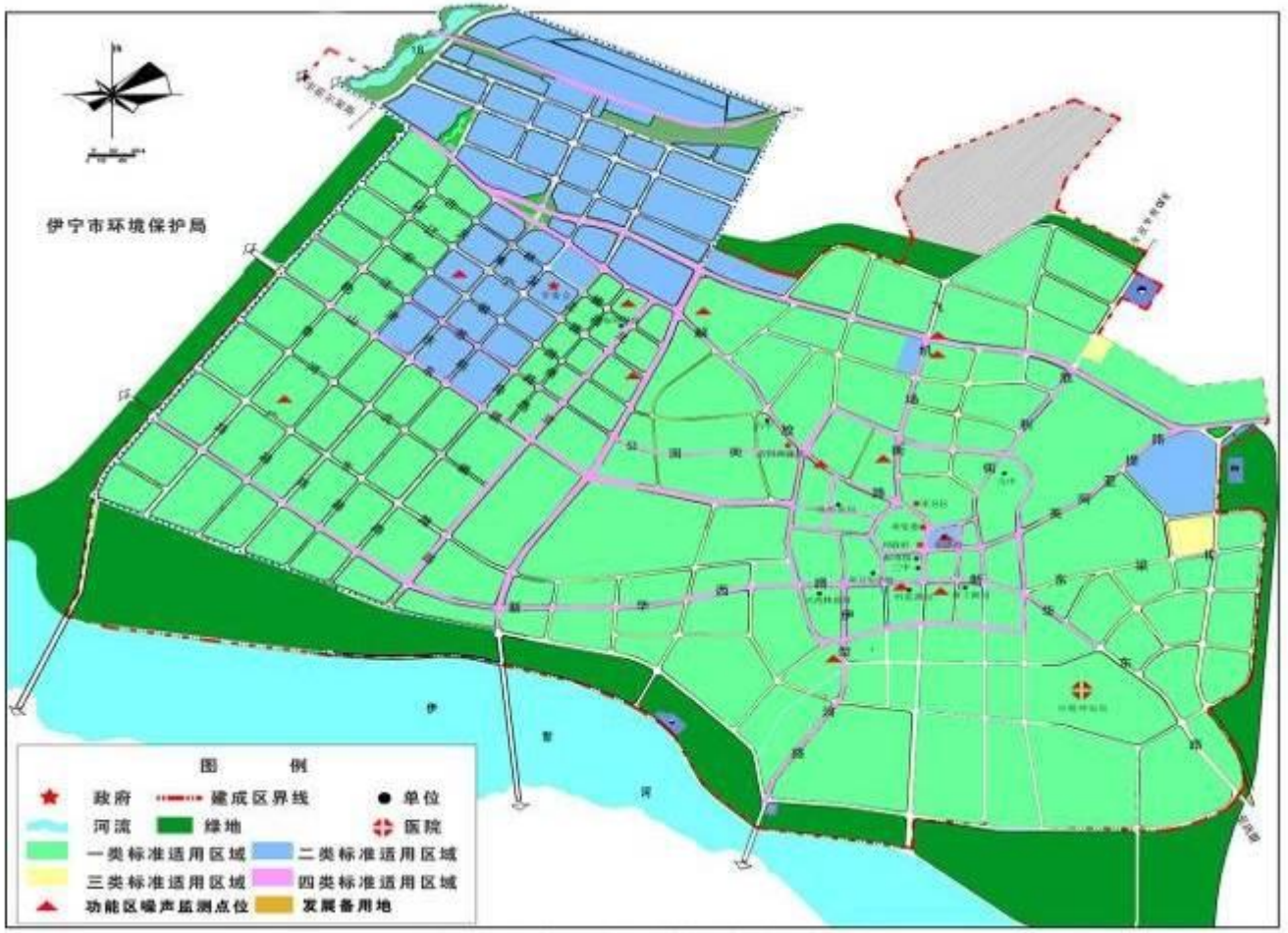

Figure 1.5-2 Yining Acoustic function zone

1.5.2 Environmental quality standard

（1）Acoustic environment

For the objective of environmental protection within 45m on both sides of arterial line, the Type 4a standard will be adopted. For others, Type 2 standard will be adopted;
The schools, hospitals (Nursing homes, geracomium), and other especially sensitive buildings within EIA scope, Type 2 will be adopted.The details can refer to Table 1.5-1.

Table 1.5-1 Acoustic environment standard（GB 3096-2008）（extract）
unit：dB(A)

Type	Day	Night	Application scope
1	50	45	The areas for residential housing, health care, culture and education, scientific research, administrative office, should be maintained a quiet acoustic environment.
2	60	50	For the region's function zoning that need to maintain residential quiet, such region include: commerce, finance or trade, or the combination of residence, commerce and industry.
4a	70	55	Freeway, first-class highway, second-class highway, city express way, arterial road，secondary trunk road，urban rail transit(on the ground), the region on both sides of inland river channel.

（2）Ambient air environment quality standard

For SO_2、NO_2、TSP、PM_{10} during ambient air EIA, the Environmental Ambient Air Quality Standard（GB3095-2012）secondary standard should be carried out. The index is as Table 1.5-2.

Table1.5-2 Environmental Ambient Air Quality

Regular factors			
pollutants	Time	Normal concentration（μg/m^3）	Sources from
SO_2	daily average	150	《Environmental Ambient Air Quality Standard》（GB3095-2012）secondary standard
	hourly average	500	
NO_2	daily average	80	
	hourly average	200	
TSP	daily average	300	
PM_{10}	daily average	150	

（3）Water environment

For the surface water of Yili River pass by Yining city, the Type Ⅳ water quality standard in Surface Water Environment Quality Standard （GB3838-2002）should be followed. For the surface water of Pliliqing River pass by Yining city, the Type Ⅲ

water quality standard in Surface Water Environment Quality Standard （GB3838-2002）should be followed. The details can be seen in Table 1.5-3.

Table 1.5-3 Surface Water Environment Quality Standard Unit：mg/L

Index	Limit value for Type Ⅲ	Limit value for Type Ⅳ	Standards refer to
pH （dimensionless）	6-9	6-9	Surface Water Environment Quality Standard （GB3838-2002）
COD≤	20	30	
BOD_5≤	4	6	
Petro type≤	0.05	0.5	
ammonia nitrogen≤	1.0	1.5	
permanganate≤	6	10	

1.5.3 Pollution emission standard

（1）Noise

During the construction period, the Limit Value Standard For The Boundary Of Building Construction （GB12523-2011）, refer to Table 1.5-4. The public transportation station will adopt the Type Ⅱ limit standard in Emission limit standard of environmental noise within the boundary of industrial enterprise and factory （GB12349-2008）, refer to Table 1.5-5

Table 1.5-4 Noise Standard For The Boundary Of Building Construction （extract） unit：dB（A）

Day	Night
70	55

Table 1.5-5 Environmental noise standard within the boundary of industrial enterprise and factory unit: dB（A）

EIA position	Day	Night	Sources from
Boundary of factory	60	50	《Emission limit standard of environmental noise within the boundary of industrial enterprise and factory》 （GB12348-2008）Type 2 limit standard

（2）vibration standard

The vibration impact will be produced during construction, the regions impacted by vibration mainly locate within the urban area. So the Standard of environmental vibration in urban area （GB10070-88）should be adopted. See Table 1.5-6.

Table 1.5-6 Vertical vibration regional lead Z standard values in city

unit：dB

No.	Application area	Day	Night
1	Special residence	65	65
2	Residence, District of culture and education	70	67
3	Mixed zone, Shopping center	75	72
4	Industrial clusters	75	72
5	Both sides of arterial road	75	72
6	Both sides of railway	80	80

（3）waste gas

The Asphalt gas's emission will follow the Grade 2 standard in Integrated Emission Standard of Air Pollutants（GB16297-1996）. See Table 1.5-7.

Table 1.5-7 Asphalt gas emission standard（extract）

The highest value of Emission concentration permitted Unit: mg/m^3	The highest emission speed ratio permitted, unit: kg/h		Limit the no organized emissions
	stack height Unit: m	Grade 2	
40（smelting, dip-coating）	15	0.18	The obvious of no organized emissions is forbidden.
	20	0.30	
	30	1.3	
	40	2.3	
75（mixing during contraction）	50	3.6	
	60	5.6	
	70	7.4	

Since 1st Jan.,2017, all the light gasoline vehicle and heavy diesel vehicle(bus, garbage truck and postal transport) must meet the requirements of Light car emissions limits and measurement methods（Chinese 5th Phase）（GB18352.1-2013）, the limit value can refer to Table1.5-8.

Table 1.5-8 emission limit value

No.	Standard value
（NO_x）g/km	0.18
（HC+NO_x）g/km	0.23
（PM）g/km	0.0045
（PN）g/km	6.0×10^{11}

（3）Waste water

The waste water is forbidden to discharge into the main channel and river along the project site. The Grade 2 standard in Integrated Wastewater Discharge Standard（GB8978-1996）(modified in some parts in 1999) will be adopted. See Table 1.5-9.

Table 1.5-9 Wastewater Discharge Standard unit：mg/L

Pollutant	Limit value of Grade 2 standard	Remark
pH	6-9	Integrated Wastewater Discharge Standard（GB8978-1996）（modified in some parts in 1999）
COD	150	
BOD_5	30	
SS	150	
ammonia nitrogen	25	

1.6 The compliance analysis with overall plan

1.6.1 The compliance analysis with urban master plan

According to Urban master planning of Yining city(2013 -2030) with new policy Document No.,【2014】22, Yining municipal area is 644.01km^2. The Overall development orientation and goal for Yining city is to make Yining be the Chinese westwards opening city on border, the key city on Silk Road, the strategic support for Xinjiang leaping development, the increasing point for Tianshan north slope western economic development. Yining is the Chinese investment attractive city to Central and West Asia, which is full of activeness. .

The project is planned to use the IBRD loan for improving the Yining urban infrastructures, include 9 roads construction as the Tianshanhou Street(feijichang road to shenglibei road), Shenglinan Road(yingbin road to yili road), Sidalinxi Street（amaitijiang street to xinhuaxi road）, Sidalindong Street（jiefangnan road to shenglinan road）, Beihuanlu(huaguoshan road to yueliangwan building materials market), Huaguoshan Road(nanhua road to G218), Beijing road(jiefangxi road to ahemaitijiang street), Xinhuaxi Road(jiefangnan road to ahemaitijiang street). After above construction, the roads' safety will be improved, the traffic accidents are reduced, and the traffic flowing speed can also be enhanced. The reconstruction of alley among 4 areas as Sidalin Road, Jifang Road, Nanshi area and Kezanqi touring area can create an ecological and livable civic environment. The project can improve and complete the Yining road network, and connect with the current urban road system to form a convenient and quick traffic road system for Yining urban development, as well as forming a strong base for urban sustainable development. The project's position in Urban master planning of Yining city is shown the following Table.3.5-1.

1.6.2 The compliance analysis with traffic system developing plan

According to Yining integrated traffic system developing plan, the integrated traffic system should be open, smooth, environmental friendly, economic and safe to fulfill the requirements of Yining urban development.

The forward traffic structure of Yining city will be that bus taking occupy more than 60% of total vehicle traffic modes, and the private car will be lower that is less than 35% on total vehicle traffic mode. The bus priority and coordinated development traffic approaches will be adopted in Yining's traffic development.

All these result in the low level service of Public Transportation, and unwillingness for public to take bus, the dull traffic management methods and lack of modern traffic management facilities. Now the developing Yining city needs the high efficient, safe and reliable traffic management system to match its ongoing quick development.
。
The project's implementation can improve the municipal overall road net, promote the construction of traffic facilities, quicken the extension towards town area, share the traffic resources and provide the convenient traffic for inhabitants. all these are in consistency with the goal of Integrated Traffic System Developing Plan of Yining city.

1.6.3 The compliance analysis with law and regulations

According to Guiding Catalogue of Industrial Structure Adjustment (2011 Version)，the project is categorized to be 1st type as the encouraged type, the urban infrastructure as Article 22, No.3 the urban public traffic construction and No.4 Urban road and intelligent traffic system building. So the project is consistent with the requirements of national policies.

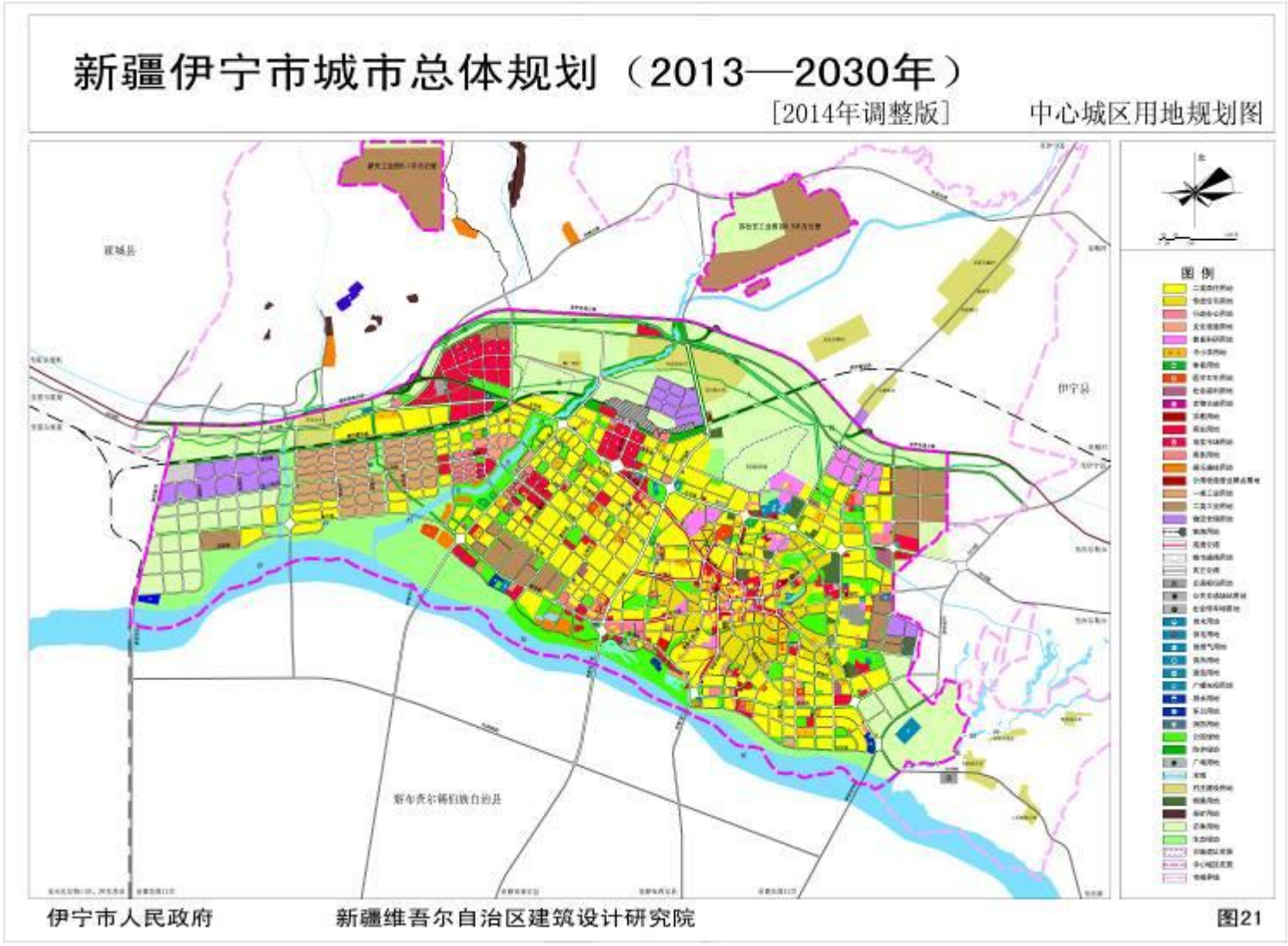

Figure 1.6-1 Project's position on Yining Urban Master Plan

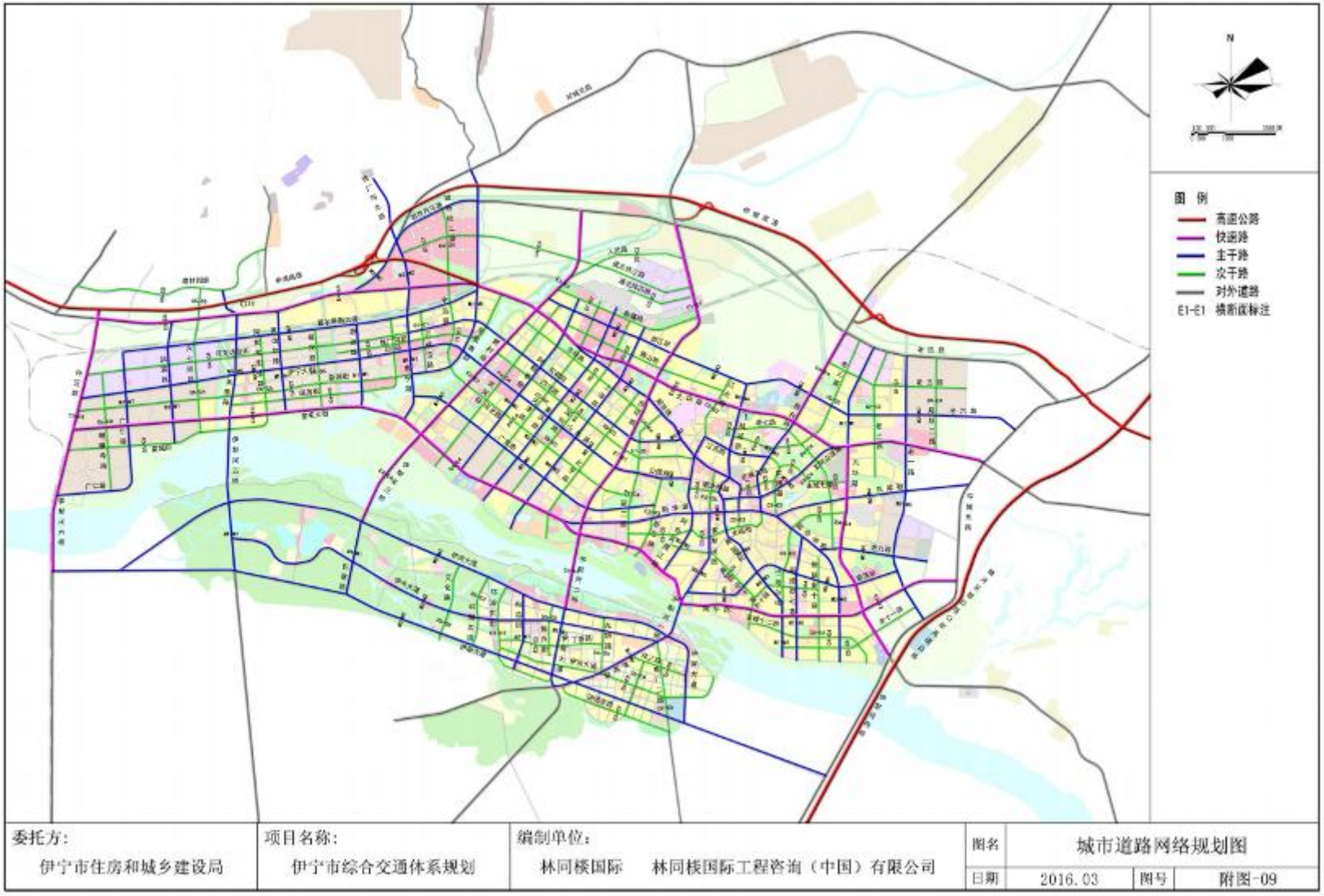

Figure1.6-2 Project's consistency with Yining integrated traffic system developing plan

2.Project description

2.1 Project Basic Information

Project location：Yining city of Yili Kazakh Autonomous Prefecture, Xinjiang Uygur Autonomous Region, North latitude 43°43′21.54″~43°45′25.18″, East longitude 88°29′31.69″~87°34′40.55″. The details can refer to Figure2.1-1.

Construction content：four components as Table2.1-1.

Component 1: Traffic Environment Improving Construction.

Component 2: Traffic Management and Road Safety.

Component 3: Institutional Capacity Building.

Component 4: Public Transport Improvement.

Table 2.1-1 The construction scale for each project component

No.	Component	Construction contents
1	**Traffic Environment Improving Construction**	include 3 parts: traffic road construction, integrated corridor improvement works on traffic safety, and road maintenance machinery system. The traffic road construction can be divided into urban trunk roads and branch roads, and alleys. The trunk and branch roads are 6 roads with total length of 11.44km, which individually are the Tianshanhou Street(feijichang road to shenglibei road), Shenglinan Road(yingbin road to yili road), Sidalinxi Street（amaitijiang street to xinhuaxi road）, Sidalindong Street（jiefangnan road to shenglinan road）, Beihuan road(huaguoshan road to yueliangwan buiding materials market), and Daobeiwei road's extension(tiechanggou village to daoweisan road). The alleys are individually located in Sidalin road, Jiefang road, Nanshi area and kezanqi cultural protection area with total length of 34.5km. The integrated corridor improvement works on traffic safety concerns the Huaguoshan Road(nanhua road to G218), Beijing road(jiefangxi road to ahemaitijiang street), and Xinhuaxi Road(jiefangnan road to ahemaitijiang street) with total length of 10.6km. The road maintenance works need to purchase the related machineries.
2	**Traffic Management and Road Safety**	Include 70 sets of the traffic lights, 89 sets of traffic cameras for shooting the run red lights, and furious driving. 18 sets of monitoring system for monitoring the Retrograde driving, illegal parking，turning right or left or illegal straight forward, and the 4 sets of Traffic guidance screen.
3	**Public Transport Improvement**	。Build 2 integrated bus stations in Yining economic park and South bank new developing area, purchase 150 buses, install 308 electronic bus-stop board, install 150 GPS for buses and IC system, the monitoring devices and one-button-alarm system will be equipped on 600 buses. A new set of the Bus intelligent dispatching system expansion will be purchased, as well as 50 charging piles. The bus lane and its supporting facilities will be newly built in Jiefangxi Road and Beijing road (from Anhui road to Jiefangxi road) with

		the length of 2×7047.80m.
4	**Institutional Capacity Building**	Consulting, training, and thematic studies

Project Cycle and construction period: 4 years project implementation period from 2018 to 2022. In 2022 the project can be completely put into operation.

2.2 Project construction content

The Xinjiang Yining urban traffic and environmental improvement project with support of IBRD loan is taken charge by Yining Housing, Urban and Rural Construction Bureau. The total investment is 8.8 hundred million CNY, and mainly includes the following 4 components.

2.2.1Traffic Environment Improving Construction

Traffic Environment Improving Construction is including 3 parts: traffic road construction, integrated corridor improvement works on traffic safety, and road maintenance machinery system. The details are shown in Table 2.2-1，and the detailed location can refer to Figure2.2-1and Figure2.2-2.

Figure2.2-1 Traffic Environment Improving Construction's content

Item		Construction content
Traffic Environment Improving Construction	Building Scale	、 The reconstruction concerns 6 trunk and branch roads and 4 alley areas. The trunk and branch roads are totally 11.44km length, which individually are the Tianshanhou Street(feijichang road to shenglibei road), Shenglinan Road(yingbin road to yili road), Sidalinxi Street（amaitijiang street to xinhuaxi road）, Sidalindong Street（jiefangnan road to shenglinan road）, Beihuan road(huaguoshan road to yueliangwan buiding materials market), and Daobeiwei road's extension(tiechanggou village to daoweisan road). The alleys are individually located in Sidalin road, Jiefang road, Nanshi area and kezanqi cultural protection area with total length of 34.5km.
	Building Plan	Tianshanhou Street(feijichang road to shenglibei road) has the total length of 1187.81m, which is the trunk road and belong to the reconstruction. The original four carriage ways will be enlarged to the six. And the crossing will be channelization. The carriage way and sideway will be reconstructed the bitumen pavement. The original trees during construction will be kept in greenbelt, under which will be planted the flowers and bushes.
		Shenglinan road(yingbin road to yili road) has the total length of 1075.64m, which is the branch road and belong to the reconstruction. The section from yingbin road to Xinhua road will be reconstructed to with the bitumen pavement on carriage way. The granite panel will be paved from both sides of the carriage way to the front of building. The traffic safety and parking facilities will be enhanced.
		Sidalinxi Street(ahemaitijiang street to xinhuaxi road) has the total length of 1491.61m, which is the branch road and belong to the reconstruction.

		The overlay of pavement will be made on carriage way. The panel will be changed, which will be paved to the front of building. Properly organize the traffic, improve the traffic safe facilities, reconstruct the bus stops, and avoid the traffic conflict. And the crossing will be channelization.
		Sidalindong Street(jiefangnan road to shenglinan road) has the total length of 591.78m, which is the branch road and belong to the reconstruction. The overlay of pavement will be made on carriage way, which has 4 carriage ways on road. The panel will be changed, which will be paved to the front of building. Properly organize the traffic, improve the traffic safe facilities, reconstruct the bus stops, avoid the traffic conflict. And the crossing will be channelization.
		Beihuan road(Huaguoshan road to yueliangwan building material market) has the total length of 4608.6m, which is the branch road and belong to the reconstruction. The overlay of pavement will be made on carriage way. The separation will be made between carriage way and other ways.The panel will be changed, which will be paved to the front of building. Properly organize the traffic, improve the traffic safe facilities, reconstruct the bus stops, avoid the traffic conflict. And the crossing will be channelization.
		Daobeiwei road's extension(tiechanggou village to daoweisan road) has the total length of 2480.83m, which is the branch road with 6 carriage ways and belong to the reconstruction. The new construction include the carriage way, greenbelt, bicycle lane and sideway. It will newly build 2 bridges with area of 11850m^2, which are in Daobeiweisan road's extension. The main bridge's area is 7920m^2 the approach bridge's area is 2400 m^2, and the auxiliary bridge's area is 1530 m^2.
		Alley reconstruction in Sidalin Street has the total length of 6.2km. The overlay of pavement will be made on Youyi road, other carriage ways and alleys will be newly built. The panel on sideways will be changed. Remove the pole and cable on ground, redesign and arrange the parking space, install the new traffic lights in No.2 and No.4 alley of Sidalin street. And redesign and arrange the regional traffic system
		Alley reconstruction in Jiefang road has the total length of 8.3km. The new sideways will be built. The panel on sideways will be changed. Remove the pole and cable on ground, at the same time all the pipes will be embedded and the cables will be placed underground.
		Alley reconstruction in Nanshi area has the total length of 10.8km. The reconstruction mainly will be made on the alleys of Yili street, Ayidun street, Laoyilihe road, Guoyuan street and Xinguang street. The new carriage ways and sideways will be built. The channels will be hardened. Remove the pole and cable on ground, at the same time all the pipes will be embedded and the cables will be placed underground.
		Alley reconstruction in Kazanqi touring area has the total length of 9.24km. The reconstruction mainly will be made on the alleys and auxiliary facilities along tourist route. New ground parking lots will be built. Remove the pole and cable on ground, at the same time all the pipes will be embedded and the cables will be placed underground. Four public bicycle rental places will be set.
Integrated traffic corridor Works	Building Scale	The integrated corridor improvement works on traffic safety concerns the Huaguoshan Road(nanhua road to G218), Beijing road(jiefangxi road to ahemaitijiang street), and Xinhuaxi Road(jiefangnan road to ahemaitijiang street) with total length of 10.6km.
	Building Plan	Huaguoshan Road(nanhua road to G218) has the total length of 4929m, which belong to the reconstruction. The overlay of pavement will be

		made on carriage way with width of 21m. The separation will be made between carriage way and other ways.The new sideways will be built and the bus stop stations will be reconstructed. And the crossing will be channelization.
		Beijing road (jiefangxi road to ahemaitijiang street) has the total length of 4374m, which belong to the reconstruction. For the whole road section, the new sideways and bicycle ways will be built and the bus stop stations will be reconstructed. And the crossing will be channelization. The landscape along the road will be improved. The overlay of pavement will be made on carriage way from Jiefangxi road to Anhui road. The current bicycle ways will be reconstructed to be the mixed road for bus and cars. The carriage way between Anhui road and Xinhuaxi road will be enlarged to be six ways with width of 18m.
		Xinhuaxi Road(jiefangnan road to ahemaitijiang street) has the total length of 1312.01m, which belong to the reconstruction. The overlay of pavement and road width enlargement will be made on carriage way with width of 18m. The separation will be made between carriage way and other ways.The sideways and the bus stop stations will be reconstructed. And the crossing will be channelization.
Road maintenance machinery system		The road maintenance works need to purchase the related machineries.

Figure2.1-1 Yining Geographical Location Map

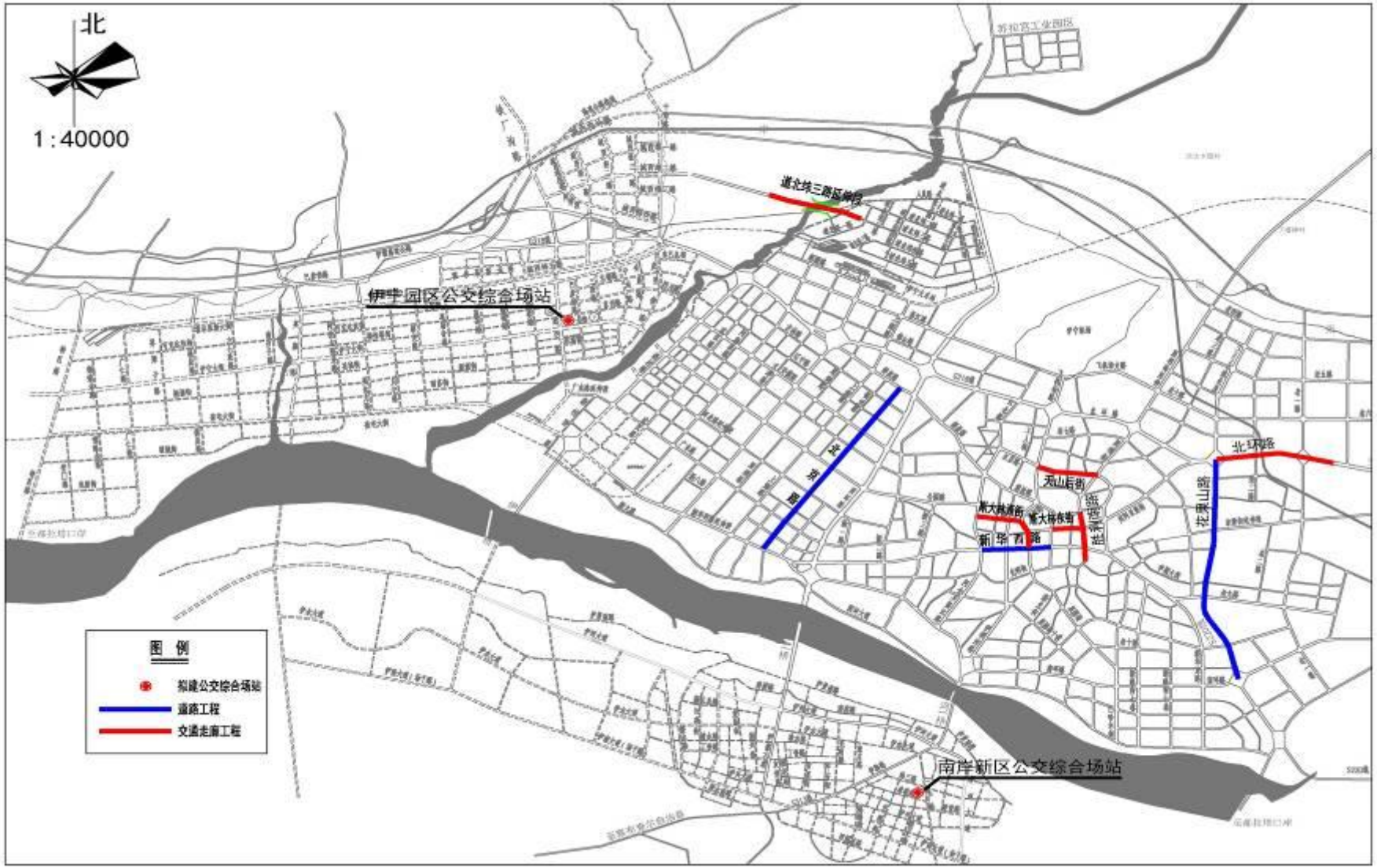

Figure2.2-1 Layout of urban trunk and branch road, integrated corridor improvement works on traffic safety and integrated bus stations

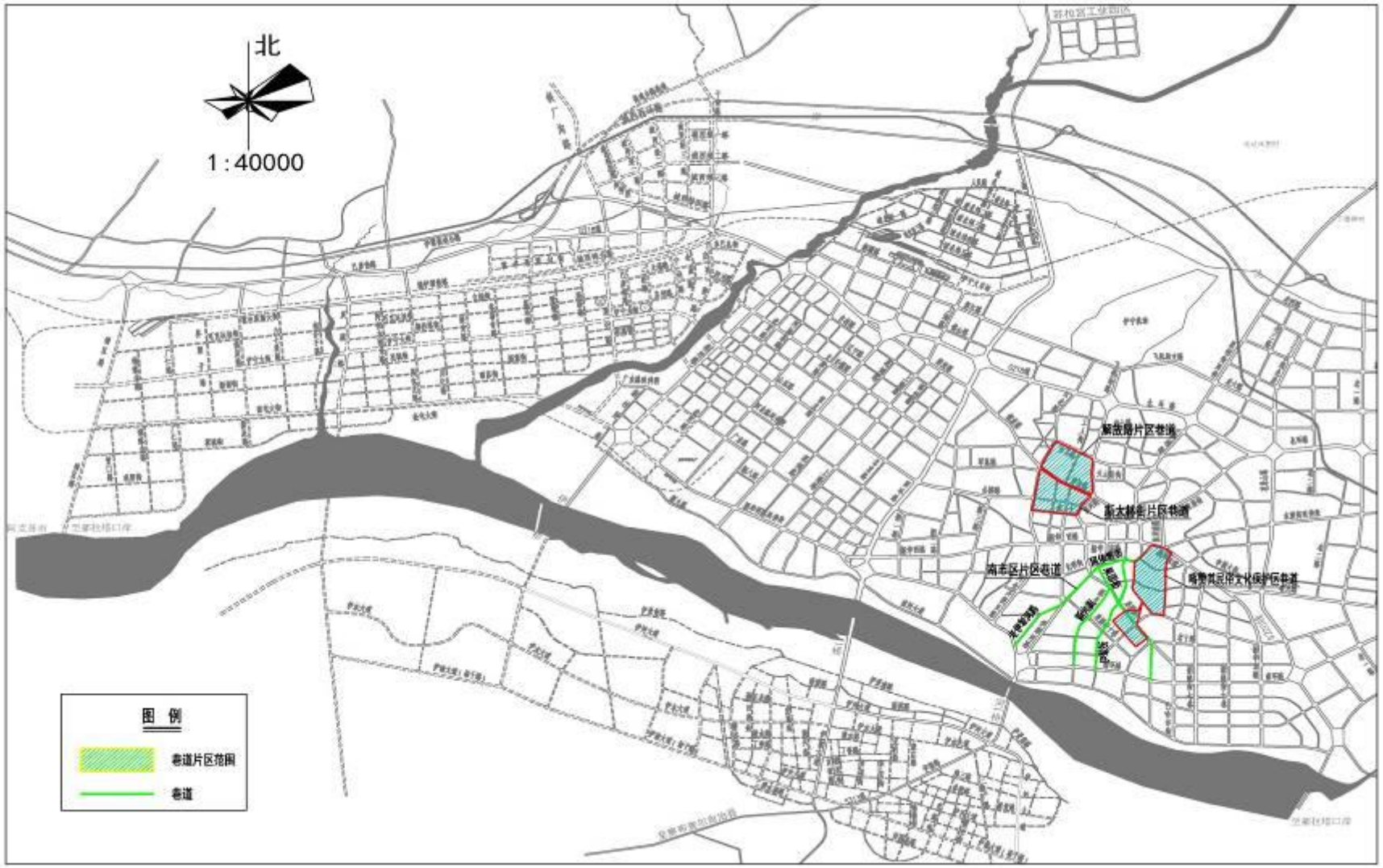

Figure2.2-2 4 Alleys reconstruction layout

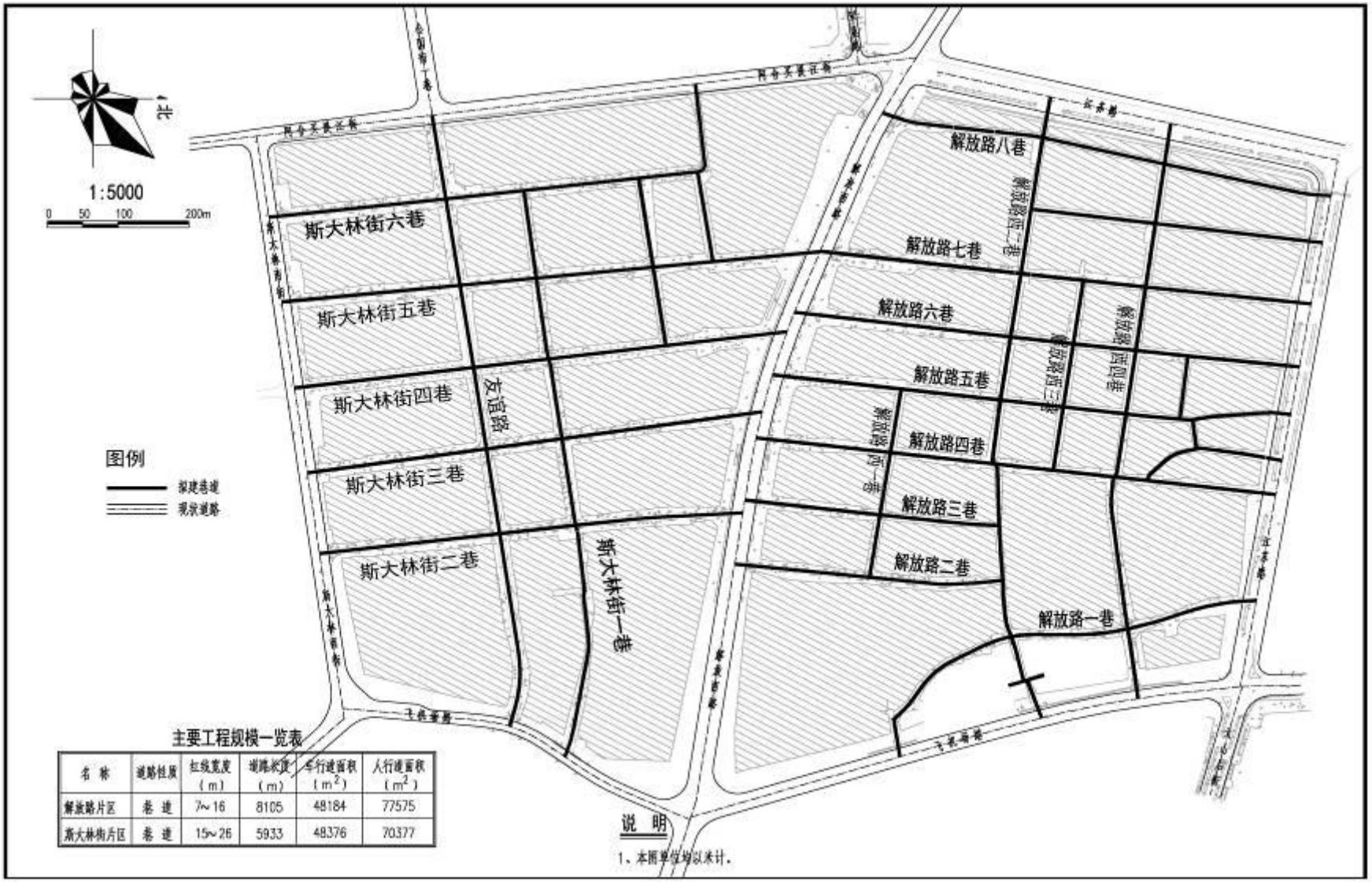

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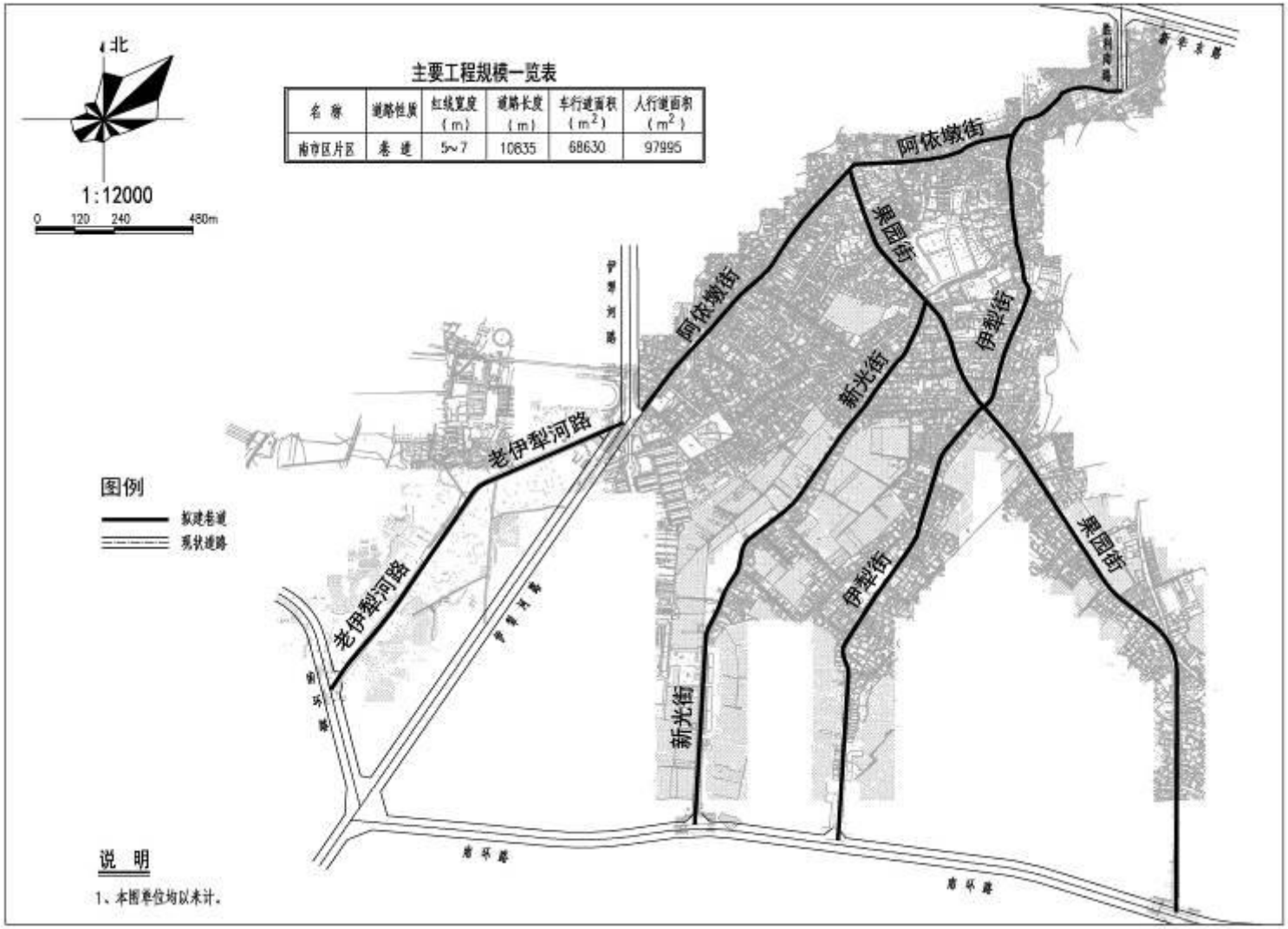
Figure2.2-2（a） Alleys reconstruction general layout in Jiefang road and Sidalin road



Fiture2.2-2（b） Alleys reconstruction general layout in Nanshi area

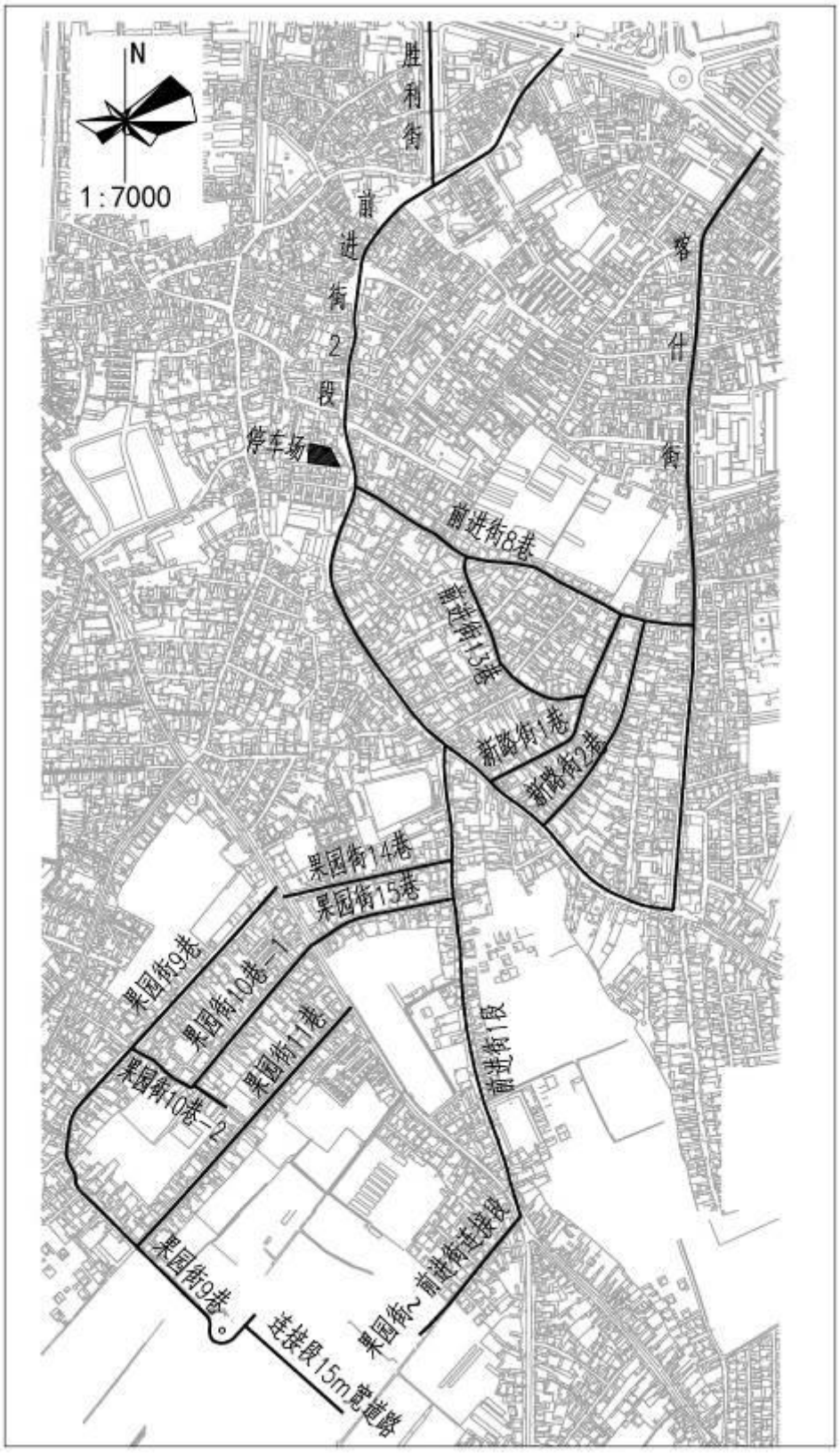


Figure2.2-2（c） Alleys reconstruction general layout in kazanqi area

The Traffic Environment Improving Construction concerns 6 trunk and branch roads, 4 alley areas and 3 integrated corridor improvement project on traffic safety. All those are not concerning with increase of new roads, land occupation, house removal. But the Daobeiweisan road's extension(Tiechanggou village to Daobeiwei road) is the new road for the project, which concerns the land occupation and house removal.

2.2.2 Traffic Management and Road Safety

The component is including 70 sets of the traffic lights, 89 sets of traffic cameras for shooting the run red lights, and furious driving. 18 sets of monitoring system for monitoring the Retrograde driving, illegal parking，turning right or left or illegal straight forward, and the 4 sets of Traffic guidance screen.

2.2.3 Public Transport Improvement

The component mainly concerns the construction of 2 integrated bus stations in Yining economic park and South bank new developing area, the purchasement of buses, and the installation of intelligent bus system.

2.2.3.1 Integrated Bus Stations

The integrated bus stations in Yining economic park locate in the crossing of Muzhaerte street and Sanduan road with 40Mu area, among which the station's area is 30Mu(20000m^2), the reserved land is 10Mu. The building scale is shown in Table2.2-4, and the layout plan can refer to Figure2.2-3.

Table2.2-4 Building scale of integrated bus stations in Yining economic park

No.	Construction item	Unit	Quantity	Structure
1	2 duty rooms	m^2	15	2 brick-concrete structure
2	Integrated business office	m^2	600	2 brick-concrete structure
3	Garage	m^2	1000	1 frame structure
4	Heat exchange station	m^2	100	1 frame structure
5	Maintenance room	m^2	400	steel structure
6	Electric auto door	set	2	2 brick-concrete structure
9	Surrounding wall	m^2	600	

The integrated bus stations in south bank new developing area locate in the crossing of Yinandadao street and No.1 alley of Yinandadao street with 40Mu area(26667m^2). The building scale is shown in Table2.2-5.

Table2.2-5 Building scale of integrated bus stations in South bank new developing area

No.	Construction item	Unit	Quantity	Structure
1	2 duty rooms	m^2	15	2 brick-concrete structure
2	Integrated business office	m^2	800	2 brick-concrete structure
3	Garage	m^2	1200	1 frame structure
4	Heat exchange station	m^2	100	1 frame structure
5	Maintenance room	m^2	400	steel structure
6	Electric auto door	Set	2	2 brick-concrete structure
7	Hardened ground	m^2	14000	
8	Greening area	m^2	6000	
9	Surrounding wall	m^2	6000	

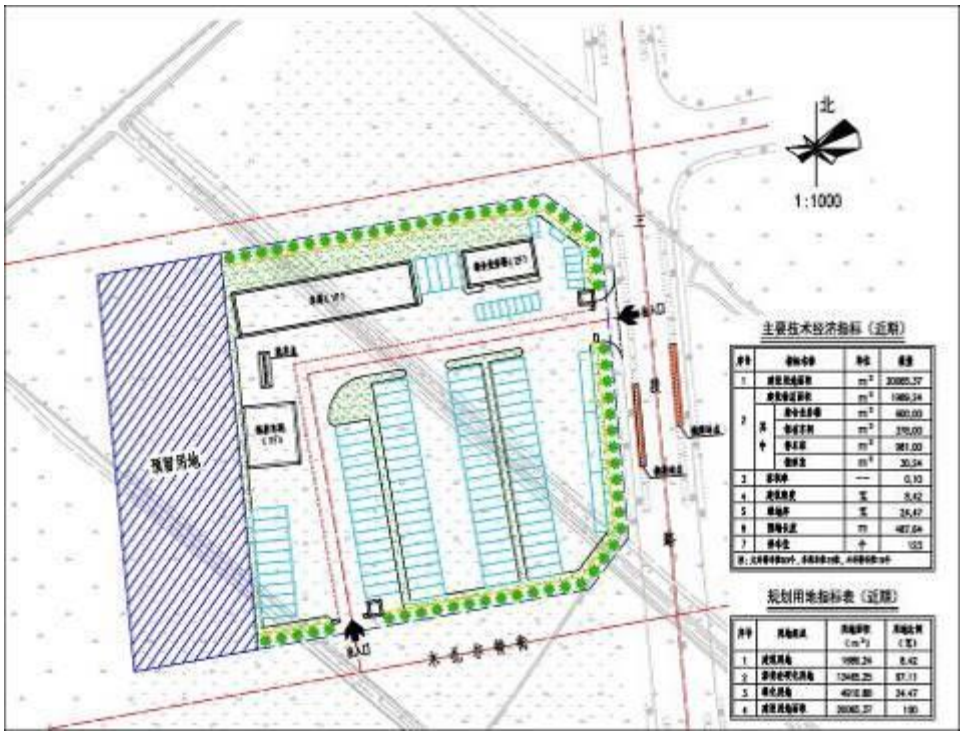


Figure2.2-3 Layout plan of integrated bus stations in Yining economic park

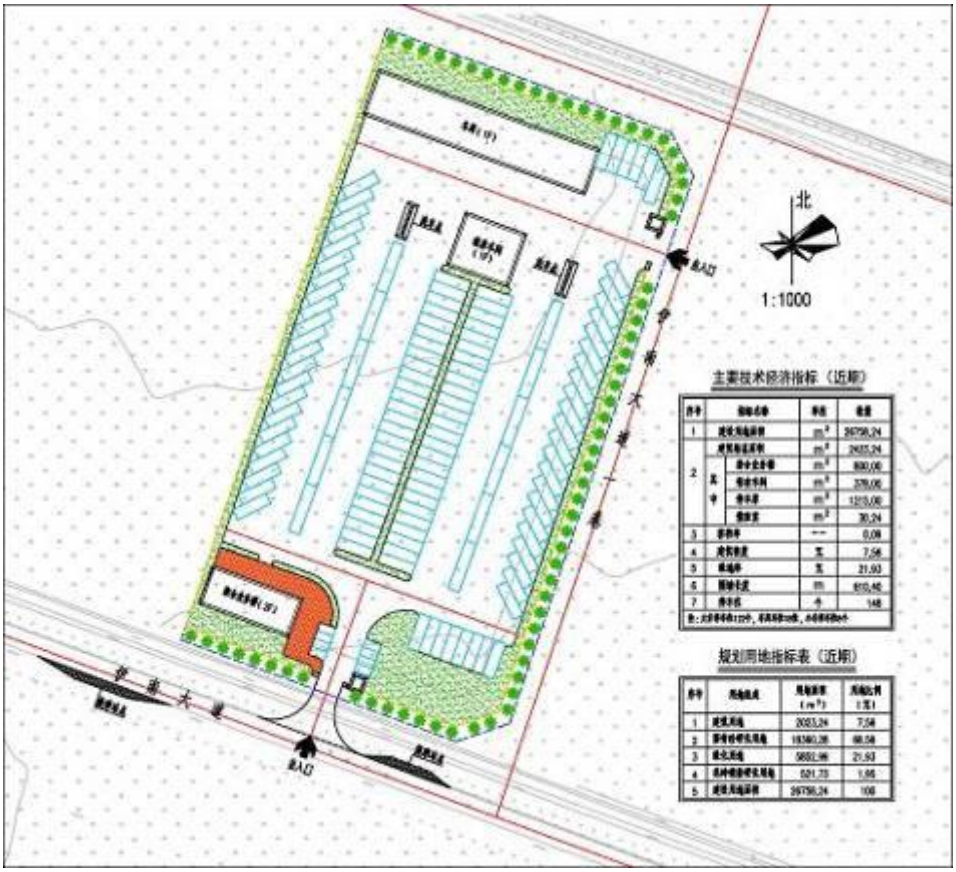


Figure 2.2-4 Layout plan of integrated bus stations in South bank new developing area

2.2.3.2 Procurement of buses

The 150 public buses will be purchased, among which 10.5m long of pure electric buses are 150 units, and 12m long of hybrid buses are 100 units.

2.2.3.3 Intelligent bus system

The intelligent bus system include the following works: install 38 charging piles, 308 electronic bus-stop boards, 150 GPS for buses and IC system; the monitoring devices and one-button-alarm system will be equipped on 600 buses. And a new set of the Bus intelligent dispatching system expansion will be purchased.

2.2.3.4 Supporting facility

The 2 stations' water supply, drainage, heating supply and electricity demand all depends on the public sources.

2.2.4 Institutional Capacity Building

In order to guarantee the good implementation of the project construction and good operation afterwards, as well as the application of IBRD loan, the related training process will be made for improving the management skill, technique level and application skills on particular equipments among staffs.

2.2.3.5 公交车专用道建设

The bus lane and its supporting facilities will be newly built in Jiefangxi Road and Beijing road (from Anhui road to Jiefangxi road) with the length of 2×7047.80m. The bus lane will be arranged on the far right of the road, the special traffic signs and markings should be set up to indicate the location, scope and using time of the bus lane.

2.3 Auxiliary project

2.3.1 Main material of pavement

The gravel yard is a commercial yard that locates in Panjin Town of Yining city. The gravel yard details are as follows: the exploit history is 4～5 years; 8～10km away from urban area. The yard's landform is wide and a little fluctuates. It is a wide gravel cobble Gobi desert land made by alluvial influence. No vegetation on the surface. The stratum distribute stably, with 25～40m thickness. The groundwater level is 30~35m. The gravel is round and slightly humid and the gravel's mud content is less than 5%. So the gravel can fulfill the engineering requirements of subgrade, pavement, bridge culvert, safeguard, drainage project, etc. There is simplest type of road for convenient transportation of gravel with short transport distance.

All bitumen, wood, steel and cement for the project come from the Procurement from market. Within the Autonomous Region that project located, Bayi Steel Group has sufficient capacity and can supply all kinds of steel for the project construction. The cement will be supplied by the local plant. The bitumen comes from Karamay. The wood will be procured by local agency.

The project locates in the nearby area of existed district. The current existed road can lead to all the sites of the project. And the construction material also can be transported to the project site by existed road in urban area.

After confirmation with the Yining municipal environmental protection bureau, the gravel yard has gained the EIA approval and related permission.

2.3.2 Disposal and treating facilities for domestic wastewater and garbage

（1）Domestic waste water treatment facilities

There are two waste water treatment plants individually located in the east and west of Yining city with the capacity of 130,000t/d. The east waste water plant locates in No.174 of ninth alley, xinhuaxi road of Yining city, which is in the south of Nongsishi supply team, and adjoins the north bank of Yili river with total floor area of 121.83Mu.

The east waste water plant is the bigger one comparing with the other plant. The east waste water plant undertakes the waste water collection and treatment for Yining old urban area with the capacity of 80000t/d. The treating process is the Carrousel oxidation ditch process.

The west water treatment plant locates in the south of the Yingmaili village, Hanbin town in Yining city, which adjoin the north bank of Yili river with total floor area of 84.5Mu. The west waste water plant undertakes the treatment for part of domestic waste water and industrial waste water in urban area. The waste water produced from medical treatment, slaughter or small-scale processing plants will be discharge into the municipal pipeline after that water is treatment and reach the discharging standard. The plans processing capacity is 50000t/d. The treating process is the hydrolyzing-update SBR process.

Now the outflow water's quality from 2 plants can both meet the 1B standard for secondary treatment among the Municipal Sewage Treatment Plant Pollutant Discharging Standard.

The 2015 annual waste water treating capacity on both plants is 2472m^3 that is 7.2% more than last year's capacity, among which the domestic waste water is 20,140,000 m^3 and the industrial waste water is 4,570,000 m^3. The daily capacity is 68,700m^3. The total electricity consumption is 1159*10^4kwh with the daily consumption of 3.3*10^4, which have Year-on-year growth of 47%. Two waste water treatment plants realize 11000t of COD reduction, which is the 35% of the Yining's total COD reduction. The COD discharge amount is 1346t with removal rate of 90%. The reduction of NH_3-N is 703t and discharge amount is 193t with the removal rate of 79%. The sludge is disposed for 2t and the solid waste's disposed amount is 14000t.

During the operation of waste water treatment plants, the on-line monitoring devices has been installed, and periodically or occasionally checked by the EPB of district, city, province and country that project locates. The monitoring data showed the qualified rate is 98% that is praised by the related departments from the local to national. The east plant also was honored the Excellent operating plant among the Chinese sewage plants in 2008.

The west and east waste water treatment plants in Yining are capable to treat the domestic waste water produced by the project.

（2）Waste disposal facilities

Yining Municipal domestic garbage landfill locates in the Nataizigou of yingyeer Town, which in the northwest of Yining. The landfill is 19km away from city with 600Mu floor area. The landfill capacity is 5620000 m^3 with 20 years of service life. The current garbage disposal capacity is 400t/d, the forward capacity is 600t/d. The disposal approach is the sanitary landfill, which mainly include the following as waste weighing, access to landfill, waste dam, stage dam, storage pond, trash

embankment, rain and sewage water separating flowing system, anti-seepage bottom, leachate collection-diversion system, landfill gas diversion system, leachate collection-circulation spraying system, waste filling facility, the office buiding for managing production and auxiliary facilities. The landfill is started buiding in May of 2004, and put into operation in Feb.2006, which have the capacity to disposing the domestic garbage from the project.

2.4 The environment sensitive points and protection objectives

In light of no negative impacts from **Institutional Capacity Building and Traffic Management and Road Safety** , this EIA scope only covers the following two components as **Traffic Environment Improving Construction and Public Transport Improvement.**

The objectives' selection principles are as follows:

①Both sides of road concerning with the project

②The first row of building along the road is the main object

③The functional buildings mainly are concern with school, hospital, hotel, dwelling houses, company and governmental public serving branch.

The detailed contents of environmental protection are as follows：

- Avoid the decrease of acoustic environmental quality and ambient air quality impacted by the project's construction and operation.
- Mitigate the negative impact of resettlement arose by the project to the lowest level. Practically protect the public's rights and benefits.
- Protect the vegetation, soil and other ecological environment along the road. Adopt the relevant environmental recover and mitigating measure to lessen the damage level on ecological environment.
- Control the pollution aroused by rain runoff. Protect the surface water from the pollution.
- Pollution control for vehicle vibration. Protect the building along the project from the vibration.

The environmental protection objective can be referred to Figure 2.4-1.

2.4.1 Ambient air and acoustic environmental sensitive points

According to the statistics from site survey, the two stations of the component of Public Transport Improvement both locate in the suburb without the ambient air and acoustic environmental sensitive points.

There are 78 ambient air and acoustic environmental sensitive points along the component of Traffic Environment Improving Construction, include 19 schools, 10 hospitals, 59 residential area. The details can refer to Table2.4-1.

Table2.4-1 Statistic of ambient air and acoustic environmental sensitive points

component	Construction content	Road	Number of	Remark

			sensitive points	
Traffic Environment Improving Construction	The trunk and branch roads are totally 11.44km length, which individually are the Tianshanhou Street, Shenglinan Road, Sidalinxi Street, Sidalindong Street, Beihuan road, and Daobeiwei road's extension.	Tianshanhou Street	7	6 residential area,1 kindergarten
		Shenglinan Road	4	3 residential area, 1 处 hospital
		Sidalinxi Street	1	1 hospital
		Sidalindong Street	1	1 hospital
		Beihuan Road	3	3 residential area
		Daobeiweisan Road's extension	1	1 residential area
		Sub-total	17	
	The 4 alleys are individually located in Sidalin road, Jiefang road, Nanshi area and kezanqi cultural protection area with total length of 34.5km.	Sidalin Road's area	9	self-built house（sayibuyi community）,7 schools,1hospital
		Jiefang Road's area	6	self-built house（Jiefang road community）,3 schools,2 hospital
		Nanshi area	5	self-built house（dulaiti bage community, Yilihe road community）,1 school,1 hospital
		Kazanqi area	5	self-built house（kazanqi）,4 schools
		Sub-total	25	
	3 integrated corridor improvement project on traffic safety concerns the Huaguoshan Road, Beijing road, and Xinhuaxi Road with total length of 10.6km;	Huaguoshan Road	4	5 residential area
		Beijing Road	24	21 residential area, 2 hospitals,1 school
		Xinhuaxi Road	8	6 residential area,1 hospital,1 kindergarten
		Sub-total	36	
Public Transport Improvement	Build 2 integrated bus stations	Yining economic park	0	
		South bank new developing area	0	
	Total		78	

The environmental sensitive points for 6 trunk and branch roads, 4 alleys and the integrated corridor improvement works on traffic safety that belong to the component "Traffic Environment Improving Construction", can individually refer to the Table 2.4-2, Table2.4-3, and Table2.4-4.

Table 2.4-2 The ambient air and acoustic environmental sensitive points for 6 trunk and branch roads

No.	Road or street	Name	Direction	The distance away	No. of hous	floors	households	No.of windows along	Details

				from the central line（m）	**e along the road**			**the road**	
1	Tianshanhou street	Ronghuayuan apartment	North	40	2	6	60	180	multi-storey, building, brick structure, directly face the road with greenbelt
2		Gongluju dormitory	North	30	5	6	156	468	multi-storey, building, brick structure, directly face the road with greenbelt
3		Tiancheng apartment	South	40	1	19	70	30	high-storey, commerce on 1st floor , commerce and residence, face directly
4		Lida apartment	South	30	3	6	120	360	multi-storey, brick structure, face directly the road with greenbelt
5		Miaomiao kindergarten	South	30	1	-	-	-	4 storey, face directly, about 15 teachers, 200 children
6		Shijijiayuan apartment	South	40	3	6	36	108	multi-storey, face directly the

									road with greenbelt
7	Shenglinan road	Yining people hospital	west	50	1				Clinic room, house and patient room
8		Subiyi mansion	west	40	1	20	80	40	commerce and residence, commerce on 1st floor, 20 storey
9		State governmental Housing Project for low-income families	east	30	2	6	36	108	multi-storey, brick structure, directly face the road with greenbelt
10		Hongde hospital	east	20	1	3			multi-storey, clinic room, no patient room
11	Sidalinxi street	Yining sanitary hospital	east	30	1	6			multi-storey, commerce on 1st floor , playground, classroom, no dormitory
12	Sidalindong street	Yili lvzhou hospital	east	20	1	4			4 storey building, face directly
13	Beihuan road	Dongcheng huayuan apartment	South	60	6	6	276	552	multi-storey, face directly, brick structure
15		Hengfu shuxiangyuan apartment	North	180	3	6	120	360	multi-storey on construction, face directly, brick

									structure
16		Gardening yard	Both sides	20	20	1	60	40	bungalow, face directly, two points on south and north
17	Daobeiweisan road's extension	Tiechanggou village	North	30	6	1	40	30	bungalow, face directly

Table 2.4-3 The ambient air and acoustic environmental sensitive points along 4 alleys

No.	Road or street	Name	The distance away from the central line（m）	No. of house along the road	floors	households	No.of windows along the road	Details
1	Alley in Sidalin Street	Yining No.17 elementary school	15	1	4	/	30	brick building，face the road with greenbelt 34 classes, 106 teachers
2		Yili No.1 high school	15	2	5	/	50	brick building，face the road with greenbelt 39 classes, 134 teachers
3		Yining No.27 elementary school	40	1	4	/	20	brick building，face the road with greenbelt 14 classes, 43 teachers
4		Yining No.6 elementary school	10	1	4	/	18	brick building，road's back separated by greenbelt 19 classes, 58 teachers
5		Yining No.7 high school	15	2	6	/	60	brick building，face the road with greenbelt 95 classes, 412 teachers
6		Xiaohaibei kindergarten	10	1	4	/	4	brick building，side towards road
7		Tongxin bilingual kindergarten	20	1	4	/	24	brick building，face the road with greenbelt
8		Bianfang hospital	10	1	1	/	8	Clinic，no inpatient department
9		Sayibuyi	5	/	1	/	/	residents self-built house，

		community residential area						bungalow
10	Alleys in Jiefang road	Yining No.16 elementary school	20	1	4	/	24	brick building，face the road with greenbelt ，14 classes，581 students，52 teachers
11		Yining No.2 elementary school	10	1	3	/	24	brick building，face the road with greenbelt 58 classes, 2740 students, 170 teachers
12		Yining No.2 high school	10	1	6	/	20	brick building，back to the road with surrounding wall, 32 classes, 1433 students, 110 teachers
13		Youhao hospital	10	1	1	/	10	clinic，no inpatient department
14		Yining maternal and child health care hospital	50	1	12	/		brick building, side towards road 400 hospital beds, 567staff
15		Residential area of Jiefanglu community	5					residents self-built house，bungalow
16	Alleys in Nanshi area	Yining No.12 elementary school	15	2	4	/	40	brick building，side towards road with greenbelt 12 classes, 76 teachers, 1230 students
17		Xinguang apartment	15	2	6	264	528	brick building，face the road with greenbelt
18		Dulaitibage community	5	/	1	/	/	residents self-built house，bungalow
19		Yilihelu community	5	/	1	/	/	residents self-built house，bungalow
20	Kaqizan area	Yining uygur hospital	40	/	12	/	/	high-storey，new built，has patitent rooms
21		Yining No.5 high school	100	1	6	/	36	brick building，directly face road，36 classes，1713 students
22		Yining No.4 high school	20	3	6	/	70	brick building，face the road with greenbelt 47 classes, 190 teachers, 2500 students
23		Yining No.15 high school	140	1	6	/	48	brick building，face the road with greenbelt

								12 classes, 61 teachers, 480 students
24		Yining No.31 elementary school	150	1	4	/	32	brick building，face the road with greenbelt 12 classes, 77 teachers, 1200 students
25		Kazanqi community	5	/	1	/	/	residents self-built house，bungalow

Table 2.4-4 The ambient air and acoustic environmental sensitive points along 3 integrated traffic corridor improvement works

No.	Road or street	Name	direction	The distance away from the central line（m）	No. of house along the road	floors	households	No.of windows along the road	Details
1	Huaguoshan road	Huaguoshan village	both sides	30	30	1	30	60	multi-storey，bungalow，both sides
2		Jiligelang village	both sides	20	35	1	35	70	both sides，bungalow，face directly，has stores
3		Dongliang village	both sides	20	20	1	28	40	both sides，bungalow，has stores，face the road with greenbelt
4		Dongcheng apartment	east	70	1	6	18	18	side towards，multi-storey，building
5	Beijing road	Jincheng apartment	both sides	60	3	6	18	18	multi-storey building，directly face the greenbelt，side towards，has stores
6		Hauxia apartment	east	40	8	6	48	48	side towards，6 buildings，has greenbelt

7	Renhe apartment	west	40	8	6	48	48	side towards，6 buildings, has greenbelt
8	Shijijiayuan phase1 apartment	east	40	6	6	36	36	side towards，6 buildings，has greenbelt
9	Houxie apartment	west	80	6	6	36	36	side towards，6 buildings, has greenbelt
10	Shijijiayuan phase2 apartment	east	40	8	6	48	48	side towards，6 buildings，has greenbelt
11	No.3 high school’s apartment	west	40	5	6	30	30	side towards，6 buildings，has greenbelt
12	Yining No.3 high school	west	140	2	6			Playground beside road，2 teaching buildings
13	Jiangnanchuncheng apartment	east	50	10	6	60	60	side towards，has stores，has greenbelt
14	Jiangnanchunxiao apartment	east	50	13	6	78	78	side towards multi-storey，has greenbelt
15	maternal and child health hospital	west	50	1	12	/	/	1buidling，multi-storey，has patient rooms
16	Nangang Group apartment	west	40	1	18	252	756	18-storrey building，face directly，commerce on 1st floor
17	Wutonglijing apartment	east	50	3	6	132	152	side towards，multi-storey，has stores and greenbelt
18	Jiarfengjing apartment	west	40	6	6	36	36	side towards，multi-storey，has greenbelt
19	Jinpingguo Phase 2 apartment	west	60	8	6	48	48	side towards，multi-storey，

								has greenbelt
20		Runfengjiayuan apartment	east	50	7	6	42	42	side towards, multi-storey, commerce on 1st floor , has greenbelt
21		Ningyuanjun apartment	west	60	9	6	54	54	has stores, side towards, multi-storey, has greenbelt
22		Jingyuan apartment	east	40	4	6	24	24	side towards, multi-storey, has greenbelt
23		Jinghejiayuan apartment	east	40	3	6	18	18	side towards, multi-storey, has greenbelt
24		Chuncuijingshe apartment	east	40	2	6	96	288	2 buildings, face directly, multi-storey, side towards, multi-storey, has greenbelt
25		Xiangshuiwan apartment	east	60	10	6	60	60	side towards, has stores, multi-storey, has greenbelt
26		Huijiningjiayuan apartment	west	40	4	6	24	24	side towards, commerce on 1st floor , multi-storey, has greenbelt
27		Yanhe orthopedic hospital	west	40	1	/	/	/	1 building with patient rooms
28		Tianxiacheng apartment	west	40	2	18	108	324	high-storey building on construction, has greenbelt
29	Xinhuaxi road	Hengtonghuayuan apartment	south	30	2	6	60	120	brick building, face directly, has greenbelt
30		Yuguanyuan	north	30	1	6	48	96	brick

		apartment						building，face directly，has greenbelt
31		Baiyanglijign apartment	south	30	1	6	36	72	brick building，face directly，has greenbelt
32		Baodihuayuan apartment	south	40	2	24	160	320	high-storey，face directly，has greenbelt
33		Disishi hospital	north	40	1	8	/	40	high-storey，face directly，has greenbelt
34		Youdian apartment	south	30	3	6	30	60	brick building，face the road with greenbelt
35		Yian baiyingu apartment	north	40	2	16	80	160	concrete，face the road with greenbelt
36		Yining No.3 kindergarten	south	70	1	4	/	4	concrete，face the road with greenbelt

2.4.2 The target of surface water environmental protection

The surface water body concerning with the project are Yili river, Piliqing river, Beian channel and Renmin channel. The details can refer to Table2.4-5.

Table2.4-5 Water environmental protection

No.	Type	Water body	Functional zoning	Actual function of water body	Classification of water	The relationship with and the distance away from project site
1	River	Yili river	Done	Industrial water	IV	Nearby the Yili river with the shortest distance of 700m, the bus terminal of south bank new developing area is 2km away from Yili river.
2		Piliqing river (from the boundary between city and county to the entrance of	Done	Scattered drinking	Ⅲ	The K1+617.6 part on extension of Daobeisan road with 40m cross the river. The bridge width is 40m.

		Yili river）				
3	干渠	Beian channel	None	Farming Irrigation	IV	G218 bridge and culvert cross
4		Remin channel	None	Farming Irrigation	IV	The K1+384.9 part on extension of Daobeisan road cross the river. The bridge width is 51m.

	
Piliqing River	Renmin Channel

2.4.3 The environmental protection target of ecological environment and landscape

The 5 trunk and branch roads, 4 alley areas and 3 integrated corridor improvement project on traffic safety, which is part of the component Traffic Environment Improving Construction, are all not concerned the new road construction and housing removal. The main protection target is the street trees and nearby park. But the extension of Daobeiweisan road(tiechanggou village to daobeiweisan road) is belonging to the new road construction concerning the land occupation and housing removal, for which the main protection targets are the farmland and protection forest.

For component of Public Transport Improvement, the main objective for environmental protection is the farmland.

The main targets of ecological environment protection are shown in Table2.4-6.

Table 2.4-6 The main targets of ecological environment protection

Protection target	Main contents under protection	Impacted construction
Farmland	Farmland and crops	Integrated bus stations in Yining economic park and South Bank New Developing Area, daobeiweisan road’s extension

Vegetation	Street trees	Nearby roads
Greenland of park	Renmin park	

Integrated bus stations in Yining economic park

Integrated bus stations in South Bank New Developing Area

According to the site survey and data collection, there are 11 ancient trees concerning the alleys construction of Sidalin street with the main species of Quercussessilis and Ulmus densa. The details can refer to Table2.5-7.

Table 2.5-7 The ancient tree and rare tree species statistics

Number	Tree name	Position	Planting time (year)	Growth condition	Remark
654101-0001	Quercussessilis	Sidalin street	1918	good	historic city
654101-0002	Quercussessilis	Sidalin street	1918	good	historic city
654101-0003	Quercussessilis	Sidalin street	1918	good	historic city
654101-00	Quercussessi	Sidalin street	1918	good	historic

Number	Tree name	Position	Planting time (year)	Growth condition	Remark
04	lis				city
654101-0005	Quercussessilis	Sidalin street No.6 Alley	1918	good	historic city
654101-0006	Quercussessilis	Sidalin street No.6 Alley	1918	Common	historic city
654101-0007	Quercussessilis	Sidalin street No.6 Alley	1918	good	historic city
654101-0008	Quercussessilis	Sidalin street No.6 Alley	1918	good	historic city
654101-0022	Ulmus densa	Sidalin street（in front of No.7 high school gate）	1913	good	historic city
654101-0023	Ulmus densa	Sidalin street（in front of No.7 high school gate）	1913	good	historic city
654101-0024	Quercussessilis	Sidalin street（in front of No.7 high school gate）	1913	good	historic city

3. Overview Environment in project site

3.1 Natural environment

3.1.1. Geographic location

The proposed project located in Yining city, Yili Ili Kazakh Autonomous Prefecture of Xinjiang Uygur Autonomous Region. Yining city is in the northwest of Xinjiang Uygur Autonomous Region and the central part of Yili River Valley, Yining city is the capital of the Yili Kazak Autonomous Prefecture, as well as the center of economy, politics, culture and traffic of the Yili Kazak Autonomous Prefecture.

Yining city is 697km away from Urumqi. Korgas, China's largest land port in the northwestern region is located 88 km west to Yining. Yining is China's historical gateway to Central Asia and Europe and an important goods distribution center of the ancient "Silk Road".

With a total area of 675.5 km2, there are 1 town, 8 villages, 1 farm and 8 street offices under the control of Yining city. The CBD locate in the southeast of Yining city and the north of Yili River. The planning urban area in Yining city is 57.7km2, with the implementation of 45km2. Following the development of urbanization, part of hanbin village, dashikuleke village, Kaerdun village and bayandai town has been occupied or surrounded by urban construction.

3.1.2 Landform and terrain

The north part of Yining city is higher than the south part, leaning from the northeast to southwest. The low mountain, alluvial-proluvialfan and valley terrace are three main landforms in Yining. The 61% of Yining city is low mountain with the elevation 700～2300m, which mainly located in the north of city. The 39% of Yining city is the alluvial-proluvialfan and valley terrace with the elevation 580～750m, which belong to the agricultural district with ideal climate, plain, fertilized soil and natural irritation condition. The average elevation of Yining city is 1083m, for urban area is 620m

Now the most urban area of Yining city mainly locates in the Second terrace of north bank of Yili River. The terrain is relative flat. To the south of urban area there is the Yili river with big riverbed width and swing range. Due to the erosion suffered, there appears obvious terrace. The north of urban area has been the Third terrace with complicated terrain. The East area is Micro mnadnock, with the broken of Micro landform, and developing flood trench. The west area has flat terrain.

The project site locates in the north and the west of Yining city, which individual belongs to the old urban area and new developing zone. The site is between the terrace Ⅰ and Ⅱ in the right bank of Yili river, with the 45 altitude difference from

north to south. From north to south for a tilt and the average slope is 6.5/1000. The attachments of road surface are farmland, trees, houses and channels, etc. After years of human activities influence, the terrain and landform has been changed to big extent.

3.1.3 Climate

Yining Municipality falls within the mid-temperate zone arid continental climate zone. Due to surrounded by mountains from the east, south and north, the wide west area and the elevating effect of landform, the rainfall can be formed when the stream from west passing through Yining. The climate features include: warm but not stable spring; Hot summer with less rainfall; Cool autumn with usual sunny weather; severe cold winder with heavy snow and shallow frozen earth. The yearly prevailing wind is valley breeze, with less gale. The details of climate index can refer to Table3.1-1.

Table3.1-1 Main Meteorological Parameters in Yining

Items	Index
Annual average temperature (℃)	8.4
Extreme maximum temperature (℃)	38.7
Extreme minimum temperature (℃)	-40.4
Rainfall capacity（mm）	264
evaporation capacity（mm）	1631
The biggest permafrost thickness（m）	0.62
Biggest snow depth（m）	0.89
Annual mean wind speed（m/s）	2.3
predominant wind direction	E、W

3.1.4 Water system

The water system is mainly made by the Yili river, Beishangou water system, spring and urban canal system.

Yili river is the biggest continental river in the world, rooted from tianshan mountain and flow out of national boundary in west direction, finally into the kapuqiaka reservoir in The Republic of Kazakhstan. The Yili River is formed by the afflux of Tekesi River, Gongnaisi River and Kasi River in the location that is 45m to southeast of Yining. Yili River's total length is 601km, with 56,100 km^2 river basin, $116\times10^8m^3$ mean runoff and $367m^3/s$ mean flow. The river is wide and river bank is flat. The flow is smooth with tributary. There are shoals allocated in the river. The river basin that passes through the Yining is 35km with watershed area of $49186m^2$. The riverside avenue for this project will be based on the current riverbank of Yili River, which is 10m away from the water body.

From the east to west, the Beishangou water system includes Piliqing River, nuoaitu canal, tiechang canal, yu canal, nantaizi canal and jieliangzi canal. Piliqing rive never dry for whole year with the $794km^2$ river basin, 16.3km length, $5.52m^3/s$ mean flow

for years. Piliqing River sources from middle mountain area of the Keguqin Mountain with the elevation of 2600m. The Yearly water distribution is from March to May, and more in spring and less in summer, lack in autumn and surplus in winter.

There are more than 10 spring canals in Yining. All sources are located in the south of Renmin canal. The form is made by the afflux of spring on both sides of canal. The average yearly flow is 6.587m^3/s and the yearly runoff is 2.16 million thousand cubic meters.

The project is close to the Yili waterbody with the shortest distance of 700m. The shortest distance between the bus terminal station of Yining Economic Park and Piliqing River is 700m.

Daobeisan Road's extension named K1+617.6 crosses Piliqing River with bridge width of 40m. The Beisan Road's extension named K1+384.9 crosses Renmin Channel with bridge width of 51m.

3.1.5 Earthquake

According to the China the ground motion parameter zoning map（GB18306-2001）, the peak acceleration for project location is 0.15g. The Design earthquake group is the second group. Characteristic period of the seismic response spectrum is 0.4s, the corresponding earthquake basic intensity is Grade Ⅶ. The seismic fortification intensity is Grade Ⅶ.

3.1.6 Soil environment

The soil in the project site are mainly irrigated desert soils, sierozem and moisture soil. The distribution for different type of soil can refer to Figure 6.4-1. The irrigated desert soil is an artificial soil under the effects of human cultivation and irrigation on the Steppe, ariddesert and Desert Steppe. The soil is formed under the natural and artificial conditions, which include the natural flat and deep base soil with good hydrogeologic condition, less sand content, irrigation water source with low mineralization, and the long history of cultivation, long term fertilization or other persons intervene activities. The two conditions interacted with each other. Altogether the human beings activities play the dominant role for the form of the soil. The sierozem's parent soil material is the loess shape sediments of quaternary; the lower layer in some parts is bed rock (in mountain) or gravel(alluvial fan). The sierozem covers most of area in this region

3.1.7 Vegetation and animals

3.1.7.1 The current vegetation environment

（1）**Natural vegetation**

The vegetation type in Yili River Valley has been defined as xinjiang desert region,

beijiang desert subregion, Zungaria desert province, tacheng-Yili desert subregion, and Yili Prefecture. Most of the natural vegetation in the project area are the accompanying vegetation of crops. According to the site survey of EA, the vegetation are all the ordinary species in Xinjiang province, such as xylophyta and herbaceous plant. The xylophyta include elm, poplar, willow and ash,etc; The herbaceous plants exist as the weed among crops, including the bulrush, annual bluegrass and green bristlegrass, etc. There are no endangered or rare species discovered in this region.

（2）**Artificial vegetation**

The artificial vegetation existing in the project area are mainly the crops, agricultural protection forest and green belt.

The crops mainly include wheat, corn, and vegetation for edible oil, beet and other vegetables. The trees are mainly the elm and poplars distributed intensively. The details can refer to Figure 3.1-2.

Figure 3.1-2 Current Artificial vegetation in planned project area

Wheat field of integrated bus stations in the southeast of city	Greenbelt in Beijing road
	

3.1.7.2 Wild animals in project area

According to China animal geographical divisions, Yili River valley belong to the palaearctic, central Asia, Kazakhstan region, Ita subregion, Barr kashgar small region.

Based on site survey and data collection, the region has large population, long history of cultivation and urbanization with high intensity and severe intervene of human activities. So there is less big animals in this region, only some birds and small animals living there. In farmland area, there are mainly rodents and ordinary birds, such as cuckoo, magpie, starling and barn swallow, etc. The reptile in the region include Eremias arguta, lizard, Vipera ursinii, etc. The batrachians animals in the region include Bufo viridis. Within the region, there are no endangered wild animal or rare species that listed in the CITIES.

3.2 Current Environmental Quality Survey and Assessment

3.2.1 Present situation of air environmental quality

According to the Yili Environmental quality report（2010-2015 年）, the annual TSP , PM10, SO2, and NO2 in Yining have reached the Ⅱ standard of Ambient Air Quality Standard during the 12th five year plan. There are 346 days that the ambient air quality has been better than Ⅱstandard for Yining in 2015, which means the 95.5% of ambient air good quality in the year. The days with air quality of Ⅰ, Ⅱ, Ⅲ and Ⅳ in Yining are individually 95 days, 251days, 15 days and 1 day, which individually occupy 26.2%, 69.3%, 4.1%, and 0.3% of the total monitoring days. All these prove the Yining's ambient air quality is good.

3.2.1.1 Monitoring points

The 6^{th}-12^{th} in May ambient air monitoring data of Yining municipal environmental protection bureau (EPB) in 2015 has been introduced for this project's EIA, which are sources from 3 auto monitoring stations. The 3 monitoring stations are youyi hotel station and Yining municipal environmental protection bureau station and Sanshui factory station. See Figure3.2-1.

3.2.1.2 Monitoring result

According to the monitoring result, the ambient air quality statistics and assessment along the project site in Yining city are shown in Table3.2-1.

Table3.2-1 2015 Yining routine air quality monitoring data statistics and assessment daily average value

No.	Monitoring points	SO_2				NO_2			
		concentration range（μg/Nm^3）	Pi rate（%）	exceeding rate（%）	maximum exceeding times	concentration range（μg/Nm^3）	Pi rate（%）	exceeding rate（%）	maximum exceeding times
1	Youyi hotel	9-14	0.06-0.09	0	0	8-24	0.1-0.3	0	0
2	Yining EPB	7-14	0.05-0.09	0	0	12-38	0.15-0.48	0	0
3	No.3 water supply plant	3-8	0.02-0.05	0	0	11-22	0.14-0.28	0	0
N	Monitor	PM_{10}				CO			

o	ing points	concentration range（μg/Nm^3）	Pi rate（%）	exceeding rate（%）	maximum exceeding times	concentration range（mg/Nm^3）	Pi rate（%）	exceeding rate（%）	maximum exceeding times
1	Youyi hotel	17-33	0.11-0.22	0	0	0.9-1.2	0.23-0.3	0	0
2	Yining EPB	17-52	0.11-0.37	0	0	1.0-1.5	0.25-0.38	0	0
3	No.3 water supply plant	30-74	0.2-0.49	0	0	0.7-1.0	0.18-0.25	0	0
No	Monitoring points	$PM_{2.5}$							
		concentration range（μg/Nm^3）	Pi rate（%）	exceeding rate（%）	maximum exceeding times				
1	Youyi hotel	7-17	0.09-0.23	0	0				
2	Yining EPB	8-25	0.11-0.33	0	0				
3	No.3 water supply plant	7-16	0.09-0.21	0	0				

It can be judged from Table3.2-1 that all the indexes meet the requirements for type 2 area in Ambient air quality standard（GB3095-2012）.

3.2.2 The surface water environment quality status and assessment

The surface water in project site mainly comes from Yili River and Piliqing River. The bus terminal station of Nananxinqu district is 2.0km from Yili River. The shortest distance from Xinhuaxi Road to Yili river is 700m. The bus terminal station of Yining economic park is 700m away from Piliqing River. The Daobeiweisan Road's extension is across the Piliqing River.

The EIA collect the routine monitoring data of Yili River Bridge section, and assigned the Yining environmental monitoring station to make the timely monitoring for Qinghebayandai section. The related assessment for the data collected has been made. The monitoring points can refer to Figure 1.2-1.

3.2.2.1 Monitoring date

The monitoring date in bridge sections of Yili River is 8th , Agu. 2016.
The monitoring date in Bayandai Bridge of Piliqing river is 8th Oct. 2016

3.2.2.2 Monitoring items and analysis

For the Yili River, the monitoring items include five indexes as PH, COD, DO, permanganate Index, NH3-N.
For the Piliqing River, the monitoring items include 11 indexes as PH, COD, DO, permanganate Index, NH3-N, BODS, TN(total nitrogen), TP(total phosphorus), cyanide, Volatile phenol, and petroleum.

The sampling and analysis approach should follow two standards that issued by the National EPB, which are the water quality monitoring environment quality assurance manual, and water and wastewater monitoring method.

3.2.2.3 Assessment of current surface water environment quality

（1）**Yili River**

The Yili river's water quality assessment result can refer to Table 3.2-2.

Table 3.2-2 Yili river's water quality assessment result （unit：mg/L except pH）

Items	Type IV limit value as reference	Yili river bridge	
		Monitoring data	Pi value
PH	6~9	8.2	0.6
DO(mg/l)	3	7.4	0.2
Permanganate Index(mg/l)	10	1.6	0.16
COD(mg/l)	30	11	0.37
BODS(mg/l)	6	2.2	0.37
NH_3-N(mg/l)	1.5	0.098	0.07
TP(mg/l)	0.3	0.1	0.33
TN(mg/l)	1.5	2.38	1.59
fluorid (mg/l)	1.5	0.33	0.22
cyanide (mg/l)	0.2	0.004L	0.02
Petroleum (mg/l)	0.5	0.01L	0.02
anionic surfactant (mg/l)	0.3	0.05L	0.17
sulfide (mg/l)	0.5	0.005L	0.01
nitrate (mg/l)	10	0.89	0.09
sulfate (mg/l)	250	49.5	0.2
chloride (mg/l)	250	10.6	0.04

It can be judged from above Table3.2-2 that all monitoring indexes in Yili River bridge section meet the requirements for Type IV in Surface water environment quality standard. The water quality is good.

（2）**Piliqing River**

The assessment result for Piliqing River's water quality can refer to Table 3.2-3.

Table3.2-3 Pliliqing river's water quality assessment result （unit：mg/L except pH）

Items	Type III limit value	Piliqing River（Bayandai Bridge）	
		Monitoring value	Si,j
pH	6~9	7.42	0.47
Permanganate Index	≤6	2.59	0.43
COD	≤20	14.1	0.705
BODS	≤4	8.96	2.24
NH3-N	≤1.0	0.562	0.56
Petroleum	≤0.05	0.024	0.48

It can be conclude from Table3.2-3, except the BODS, other indexes meet the standard of Type Ⅲ Surface water environment quality standard（GB3838-2002）.

3.2.3 Acoustic environmental quality's present situation investigation and assessment

3.2.3.1 Current monitoring points

The 33 acoustic environment sensitive points along the project site and 2 background noise value in two planning stations has been monitored in this EIA. See Figure 3.2-1.

3.2.3.2 Monitoring approach and date

Comply with the Environmental quality standards for noise（GB3096-2008）, the monitoring at the acoustic environmental sensitive points has been made in August and October of 2016 by Yining monitoring station.

The monitoring requirements include: ：①equivalent continuous A sound level LAeq；②Monitoring last two days，once in day and once at night，the monitoring should be not less than 20min every time；③The outdoors monitoring points in village residence should be set 1m away the window of bedroom with the height about 1.2m.

3.2.3.3 Monitoring result

The acoustic environment monitoring results can refer to Table3.2-4,Table 3.2-5 and Table 3.2-6

Table 3.2-4 Traffic Environment Improving Construction acoustic environment quality monitoring results

No.	Road name	Acoustic sensitive points	Distance from monitoring point to road border（m）	Monitoring points	Sampling time		Total traffic flow	Monitoring result dB(A)	Monitoring result's analysis
1	Sidalin street	No.7 high school	8	front of teaching building	8.25	Day	591	60.1	over Type 2 limit value for 0.1dB(A)
					8.26	Day	660	59.8	meet Type 2 standard
						Night	603	53.2	over Type 2 limit value for 3.2dB(A)
					8.23	Night	201	54.1	over Type 2 limit value for 4.1dB(A)
2	Sidalin street	No.6 elementary school	6	front of teaching building	8.25	Day	996	70.0	over Type 2 limit value for 10dB(A)
					8.26	Day	1266	62.7	over Type 2 limit value for 2.7dB(A)
					8.23	Night	210	50.7	over Type 2 limit value for 0.7dB(A)
					8.29	Night	45	49.9	meet Type 2 standard
3	Sidalin street	No.27 elementary school	11	front of teaching building	8.25	Day	1005	63.5	over Type 2 limit value for 3.5dB(A)
					8.26	Day	924	71.2	over Type 2 limit value for 11.2dB(A)
						Night	366	59.3	over Type 2 limit value for 9.3dB(A)
					8.29	Night	264	59.7	over Type 2 limit value for 9.7dB(A)
4	Sidalin street	State No.1 high school	10	front of teaching building	8.25	Day	168	57.8	meet Type 2 standard
					8.23	Day	213	56.9	meet Type 2 standard
						Night	255	52.1	over Type 2 limit value for 2.1dB(A)
					8.29	Night	6	47.5	meet Type 2 standard
5	Sidalin street	No.17 elementary school	7	front of teaching building	8.25	Day	264	60.0	meet Type 2 standard
					8.26	Day	195	61.9	over Type 2 limit value for 1.9dB(A)
					8.23	Night	102	56.4	over Type 2 limit value for 6.4dB(A)
					8.29	Night	36	47.1	meet Type 2 standard
6	Sidalin street	Bianfang hospital	8	front of inpatient building	8.25	Day	924	67.9	over Type 2 limit value for 7.9dB(A)
					8.26	Day	1299	68.4	over Type 2 limit value for 8.4dB(A)
					8.23	Night	744	65.6	over Type 2 limit value for 15.6dB(A)
					8.29	Night	324	64.1	over Type 2 limit value for 14.1dB(A)

7	Jiefang road	No.2 high school	10	Front of teaching building	8.25	Day	1575	65.9	over Type 2 limit value for 5.9dB(A)
					8.29	Day	2523	62.5	over Type 2 limit value for 2.5dB(A)
						Night	831	53.2	over Type 2 limit value for 3.2dB(A)
					8.23	Night	768	54.6	over Type 2 limit value for 4.6dB(A)
8	Jiefang road	No.2 elementary school	100	Front of teaching building	8.22	Day	369	56.3	meet Type 2 standard
					8.24	Day	660	54.5	meet Type 2 standard
					8.23	Night	111	48.5	meet Type 2 standard
					8.30	Night	48	46.4	meet Type 2 standard
9	Jiefang road	Youhao hospital	6	front of inpatient building	8.19	Day	186	65.3	over Type 2 limit value for 5.3dB(A)
					8.24	Day	237	67.7	over Type 2 limit value for 7.7dB(A)
						Night	63	54.1	over Type 2 limit value for 4.1dB(A)
					8.29	Night	24	53.2	over Type 2 limit value for 3.2dB(A)
10	Jiefang road	No.16elementary school	16	Front of teaching building	8.19	Day	192	56.8	meet Type 2 standard
					8.29	Day	243	54.7	meet Type 2 standard
					8.24	Night	24	56.4	over Type 2 limit value for 6.4dB(A)
					8.29	Night	36	47.1	meet Type 2 standard
11	斯大林东街	Yining Sanitory school	50	Front of teaching building	8.25	Day	3540	58.1	meet Type 2 standard
					8.26	Day	3999	59.1	meet Type 2 standard
						Night	636	54.8	over Type 2 limit value for 4.8dB(A)
					8.30	Night	537	54.2	over Type 2 limit value for 4.2dB(A)
12	天山路	Lida apartment	18	front of the first tow of building along street	8.19	Day	2463	67.3	meet Type 4a standard
					8.24	Day	2817	68.2	meet Type 4a standard
					8.25	Night	642	57.3	over Type 4a limit value for 2.3dB(A)
					8.31	Night	882	60	over Type 4a limit value for 5dB(A)
				back of the first tow of building along street	8.19	Day	2463	51.4	meet Type 2 standard
					8.24	Day	2817	51.1	meet Type 2 standard
					8.29	Night	642	46.1	meet Type 2 standard
					8.31	Night	882	47.5	meet Type 2 standard
13	shenglinan road	Hongde hospital	3	Front of inpatient building	8.22	Day	1632	72.1	over Type 2 limit value for 12.1dB(A)
					8.26	Day	1944	70.4	over Type 2 limit value for 10.4dB(A)
					8.25	Night	312	61.6	over Type 2 limit value for 11.6dB(A)
					8.31	Night	888	64.6	over Type 2 limit value for 14.6dB(A)

14	shenglinan road	State governmental apartment	18	Front of the first tow of building along street	8.23	Day	996	65.8	meet Type 4a standard
					8.26	Day	1269	67.8	meet Type 4a standard
						Night	753	64.1	over Type 4a limit value for 9.1dB(A)
					8.31	Night	495	62.5	over Type 4a limit value for 7.5dB(A)
				back of the first tow of building along street	8.23	Day	996	53.9	meet Type 2 standard
					8.26	Day	1269	50.5	meet Type 2 standard
					8.25	Night	753	49.2	meet Type 2 standard
					8.31	Night	495	47.8	meet Type 2 standard
15	shenglinan road	Renmin hospital	130	Front of inpatient building	8.19	Day	2007	61.4	over Type 2 limit value for 1.4dB(A)
					8.29	Day	2292	62.5	over Type 2 limit value for 2.5dB(A)
						Night	564	51.0	over Type 2 limit value for 1dB(A)
					8.24	Night	294	63.3	over Type 2 limit value for 13.3dB(A)
16	Beihuan road	Dongchenghuayuan apartment	70	Front of the first tow of building along street	8.19	Day	2763	62.8	over Type 2 limit value for 2.8dB(A)
					8.24	Day	2505	61.3	over Type 2 limit value for 1.3dB(A)
						Night	1434	63.1	over Type 2 limit value for 13.1dB(A)
					8.30	Night	1584	62.9	over Type 2 limit value for 12.9dB(A)
				Back of the first tow of building along street	8.19	Day	2763	50.1	meet Type 2 standard
					8.24	Day	2505	53.9	meet Type 2 standard
						Night	1434	53.4	over Type 2 limit value for 3.4dB(A)
					8.30	Night	549	52.0	over Type 2 limit value for 2.0dB(A)
17	Beihuan road	Agricultural science institute	18	Front of the first tow of building along street	8.22	Day	2538	72.7	over Type 4a limit value for 2.7dB(A)
					8.26	Day	2634	70.3	over Type 4a limit value for 0.3dB(A)
					8.25	Night	1032	59.5	over Type 4a limit value for 4.5dB(A)
					8.29	Night	863	58.0	over Type 4a limit value for 3dB(A)
				back of the first tow of building along street	8.22	Day	2538	50.3	meet Type 2 standard
					8.26	Day	2634	52.2	meet Type 2 standard
					8.25	Night	1032	46.0	meet Type 2 standard
					8.30	Night	863	45.6	meet Type 2 standard
18	Kazanqi area	No.4high school	110	Front of teaching	8.22	Day	168	56.5	meet Type 2 standard
					8.26	Day	213	48.0	meet Type 2 standard
					8.24	Night	87	51.2	over Type 4a limit value for 1.2dB(A)

				buildin g	8.30	Night	96	49.5	meet Type 2 standard
19	Kazan qi area	No.31 elemen tary school	110	Front of teachin g buildin g	8.19	Day	189	50.2	meet Type 2 standard
					8.26	Day	270	55.5	meet Type 2 standard
					8.24	Night	69	47.6	meet Type 2 standard
					8.30	Night	105	52.7	over Type 2 limit value for 2.7dB(A)
20	Kazan qi area	Self-bu ilt house	7	Front of the first tow of buildin g along street	8.23	Day	225	50.2	meet Type 4a standard
					8.26	Day	270	55.5	meet Type 4a standard
					8.24	Night	69	47.6	meet Type 4a standard
					8.30	Night	105	52.7	meet Type 4a standard
21	Nanshi area	Minan apartm ent	8	Front of the first tow of buildin g along street	8.23	Day	390	62.4	meet Type 4a standard
					8.29	Day	692	65.9	meet Type 4a standard
					8.24	Night	264	59.8	over Type 4a limit value for 4.8dB(A)
					8.30	Night	219	59.1	over Type 4a limit value for 4.1dB(A)
22	Nanshi area	Uygur hospita l	80	Front of inpatie nt buildin g	8.22	Day	90	57.5	meet Type 2 standard
					8.30	Day	136	59.1	meet Type 2 standard
					8.24	Night	15	45.9	meet Type 2 standard
					8.30	Night	24	44.9	meet Type 2 standard
23	Daobei weisan road	Tiecha nggou village	-	Front of residen tial house	11.16	Day	-	41.3	meet Type 2 standard
					11.17	Day	-	42.9	meet Type 2 standard
					11.16	Night	-	39.6	meet Type 2 standard
					11.17	Night	-	41.8	meet Type 2 standard
24	Daobei weisan road	Start point	-	Empty area	11.16	Day	-	42.5	meet Type 2 standard
					11.17	Day	-	43.7	meet Type 2 standard
					11.16	Night	-	40.7	meet Type 2 standard
					11.17	Night	-	40.1	meet Type 2 standard

Table3.2-5 Acoustic environment quality monitoring results of the component Traffic Management and Road Safety unit：dB(A)

No.	Road name	Acoustic sensitive points	Distance from monitoring point to road border（m）	Monitoring points	Sampling time		Total traffic flow	Monitoring result dB(A)	Monitoring result's analysis
1	Beijing road	No.3 high school	120	front of teaching building	8.25	Day	1635	51.9	meet Type 1 standard
					8.26	Day	1486	48	meet Type 1 standard
					8.26	Night	468	52.5	over Type 1 limit value for 7.5dB(A)
					8.29	Night	660	48.8	over Type 1 limit value for 3.8dB(A)
2	Beijing road	Jiananchuncheng apartment	30	front of the first tow of building along street	8.19	Day	1347	64.3	meet Type 4a standard
					8.30	Day	1359	67.6	meet Type 4a standard
					8.22	Night	963	58.6	over Type 4a limit value for 3.6dB(A)
					8.29	Night	1035	58.9	over Type 4a limit value for 3.9dB(A)
				back of the first tow of building along street	8.19	Day	1347	51.2	meet Type 1 standard
					8.30	Day	1359	51.8	meet Type 1 standard
					8.22	Night	963	48.1	over Type 1 limit value for 3.1dB(A)
					8.29	Night	1035	46.7	over Type 1 limit value for 1.7dB(A)
3	Beijing road	Yili maternal and child health hospital	30	front of inpatient building	8.22	Day	1353	62.9	over Type 2 limit value for 2.9dB(A)
						Night	1086	55.1	over Type 2 limit value for 5.1dB(A)
					8.24	Day	1254	63.4	over Type 2 limit value for 3.4dB(A)
					8.29	Night	879	56.3	over Type 2 limit value for 6.3dB(A)
4	Beijing road	East area of Xiangshuiwan apartment	35	Front of the first tow of building along street	8.19	Day	813	60.4	meet Type 4a standard
					8.26	Day	996	61.8	meet Type 4a standard
					8.22	Night	324	60.2	over Type 4a limit value for 5.2dB(A)
					8.29	Night	378	60.8	over Type 4a limit value for 5.8dB(A)
				back of the first tow of	8.19	Day	813	52.2	meet Type 1 standard
					8.24	Day	996	51.7	meet Type 1 standard
					8.22	Night	324	48.4	over Type 1 limit value for 3.4dB(A)

				buildin g along street	8.29	Night	378	46.6	over Type 1 limit value for 1.6dB(A)
5	Xinhua xi road	Hengto nghuay uan apartm ent	30	front of the first tow of buildin g along street	8.19	Day	2382	61.4	meet Type 4a standard
					8.26	Day	2031	63.4	meet Type 4a standard
					8.22	Night	854	59.2	over Type 4a limit value for 4.2dB(A)
					8.30	Night	468	59.8	over Type 4a limit value for 4.8dB(A)
				back of the first tow of buildin g along street	8.19	Day	2382	54.1	meet Type 1 standard
					8.24	Day	2031	52.3	meet Type 1 standard
					8.22	Night	854	44.3	meet Type 1 standard
					8.30	Night	468	46.8	meet Type 1 standard
6	Xinhua xi road	Sishi hospita l	20	front of inpatie nt buildin g	8.22	Day	3144	69.7	over Type 2 limit value for 9.7dB(A)
						Night	990	60.9	over Type 2 limit value for 10.9dB(A)
					8.24	Day	3171	67.8	over Type 2 limit value for 7.8dB(A)
					8.29	Night	207	52.5	over Type 2 limit value for 2.5dB(A)
7	Xinhua xi road	Yining No.3 kinder garten （form er no.3 elemen tary school ）	55	front of teachin g buildin g	8.25	Day	2712	61.4	over Type 1 limit value for 6.4dB(A)
					8.26	Day	2514	60.5	over Type 1 limit value for 5.5dB(A)
					8.24	Night	6	50.8	over Type 1 limit value for 5.8dB(A)
					8.29	Night	9	50.9	over Type 1 limit value for 5.9dB(A)
8	Huagu oshan road	Dongc henghu ayuan apartm ent	70	Front of the first tow of buildin g along street	8.19	Day	2595	67.4	meet Type 4a standard
					8.26	Day	2247	66.9	meet Type 4a standard
					8.25	Night	555	59.5	over Type 4a limit value for 4.5dB(A)
					8.30	Night	378	51.1	meet Type 4a standard
				back of the first tow of buildin g along street	8.19	Day	2595	53.6	meet Type 1 standard
					8.26	Day	2247	49.5	meet Type 1 standard
					8.25	Night	555	50.2	over Type 1 limit value for 5.2dB(A)
					8.30	Night	378	44.1	meet Type 1 standard
9	Huagu oshan road	Huagu oshan village	30	Front of the first tow of buildin g along	8.19	Day	1488	68.2	meet Type 4a standard
					8.24	Day	1890	69.0	meet Type 4a standard
					8.25	Night	165	54.5	meet Type 4a standard
					8.30	Night	153	56.3	over Type 4a limit

				street					value for 1.3dB(A)
				back of the first tow of buildin g along street	8.19	Day	1488	49.2	meet Type 1 standard
					8.24	Day	1890	48.4	meet Type 1 standard
						Night	165	50.1	over Type 1 limit value for 5.1dB(A)
					8.30	Night	153	51.6	over Type 1 limit value for 6.6dB(A)

Table3.2-6 Public Transport Improvement acoustic environment quality monitoring results unit：dB(A)

No.	Name	geographical coordinates	Sampling time		Monitoring result dB（A）	检测结果评价
1	Bus terminal of Yining economi c park	43°57′7.23″N；81°12′43.34″E	8.25	Day	46.9	meet Type 2 standard
			8.29	Day	48.1	meet Type 2 standard
			8.24	Night	46.5	meet Type 2 standard
			8.30	Night	45.3	meet Type 2 standard
2	Bus transit hub of South Bank New Developi ng Area	43°51′34.05″N；81°17′19.52″E	8.23	Day	46.3	meet Type 2 standard
			8.29	Day	49.3	meet Type 2 standard
				Night	46.2	meet Type 2 standard
			8.24	Night	45.8	meet Type 2 standard

3.2.3.4 EIA for current Acoustic environmental quality

According to Table 3.2-4, Table 3.2-5 and Table 3.2-6, the EIA for acoustic environmental quality is as follows:

Among the acoustic environmental sensitive points in component of Traffic Environment Improving Construction, the noise in school and hospitals within the 45m scope on both side of the road is seriously exceed the standard value. The noise level near Hongde hospital of Shengli road is over Type 2 limit value for 12.1dB(A) on day, and at night exceed above the Type 2 limit value maximally for 14.6dB(A). The noise level impacted the residential area that is applied Type 4a standard can maximally exceed the Type 4a limit value for 2.7dB(A) on the day , and for 9.1dB(A) at night. The noise level impacted the residential area that is applied Type 1 standard can maximally exceed the Type 1 limit value for 7.4dB(A) on the day , and for 7.7dB(A) at night. The reason for exceeding the standard is the close distance between buildings and roads and then impacted by current traffic noise.

Among the acoustic environmental sensitive points in component of Traffic Management and Road Safety, the noise in school and hospitals within the 45m scope

on both side of the road is seriously exceed the standard value. The noise level near Sishi hospital of Xinhua road is over Type 2 limit value for 9.7dB(A) on day, and at night exceed above the Type 2 limit value maximally for 10.9dB(A). The noise level impacted the residential area that is applied Type 4a standard can meet Type 4a standard on the day, but exceed Type 4a standard for 5.8dB(A) maximally at night. The noise level impacted the residential area along the road that is applied Type 1 standard can maximally exceed the Type 1 limit value for 6.4dB(A) on the day , and for 7.5dB(A) at night. The reason for exceeding the standard is the close distance between buildings and roads and then impacted by current traffic noise.

The acoustic environment along the component of Public Transport Improvement is relatively good. There is no significant noise sources, which can meet the Type 2 standard of Acoustic environmental quality standard（GB3096-2008）.

3.2.4 Current Ecological Environment

The four components of this project are all located in the urban area and suburb of Yining. So the ecological environment for this project includes urban ecological system, and oasis ecological system.

3.2.4.1 Oasis ecological system assessment

The oasis ecological system for the project is mainly the farmland ecological system, which is an artificial ecological system. The human beings actively interferes the natural system according their willingness and demands for crops, forests, livestock or husbandry. The artificial ecological system is made by those production activities. There are less species and simple trophic level and self-adjusting capacity in this system. So the open system is vulnerable under the negative impacts. In addition, much output and input exists in this system, such as the irrigation, fertilization, livestock's production and timber production, etc. The system has big dependence on the natural system. Currently there are wheat, grape, tomato, vegetable and alfafa in this region. In system the dominant species is commercial crop, and the accompanying species is the weeds.

The Daobeiweisan Road's extension, Beihuan road among the component of Traffic Environment Improving Construction belong to the oasis ecological system, and 2 bus service facility stations in the project component of Public Transport Improvement locate in the suburb of Yining, which also belong to the oasis ecological system.

3.2.4.2 The urban ecological environment and landscape

The city is the human settlement place with the high intensity of population and advanced economic development, which is the complicated artificial ecological system combining society, economy and nature together. The landscape is the integrated feeling and description on the shape, color and structure of building and natural landscape through the human's vision. Several roads of Traffic Environment Improving Construction are belong to the reconstruction, on which the region has certain urban scale and belong to the typical urban landscape.

The urban ecological system is formed to be a functional net structure, under the interaction of surrounding creatures and a biotic environment. It is also an artificial system, due to the human beings keep changing and adapting the natural environment. So the ecological system is made up by natural system, economic system and social system. In the region that project locate, there are less wild animals due to the activities of human beings. So the pollution is easy to be produced due to the weakness of automatically adjusting capacity in natural system. Several urban road concerning with the Project belong the typical urban ecological system.

The following areas located in the old urban area, like Tianshanhou street, Shenglinan street, Sidalindong street, Sidalinxi street, alley works in the component of Traffic Environment Improving Construction, as well as the Xinhuaxi road related with integrated corridor improvement works on traffic safety. Due to the big traffic flow, old street, and serious mix of traffic mode, the urban landscape looked crowded, poor , less green and single tree species. Some real estate were developed in recent ten years along the Huaguoshan road and Beijing road, which locate in the rural-urban continuum and belong to the integrated corridor improvement works on traffic safety. So the landscape renovation on project site should be strengthened the Landscape diversity for regional transition and continuity.

3.2.4.3 The current land utilization

According to the design and site survey, except Daobeiweisan road’s extension related with Traffic Environment Improving Construction , and two integrated bus stations of Public Transport Improvement, other road construction are all not concerned with new land occupation, which belong to the road reconstruction. The current land concerning with the land occupation is farmland. For the land used for integrated bus station of Yining economic park, it belong to the planning land for the economic park, Other works among the components will not concern the new land occupation and he land utilization type along the project belong to the urban land. The land utilization for the project can refer to Table 3.3-1.

3.3 Current social economic survey

3.3.1 Historical evolution

Yining historically is named old kuldja, it mean "big sheep" in Mongolian. In the 14th year under Guangxu emperor rule, Ningyuan county was set up, and In 1913 the county of Yining is set, the name is from the combination of Yili and Ningyuan's first character. Yining became a city in 1952 from county.

For the Han Dynasty, Yining belong to the Huns and Wusun. During Sui and Tang Dynasties, Yining belong to the Western Turkic and Uighur under the rule of Beiting Protectorate General. During Yuan Dynasty, Yining is the fief for the kings of Mongolia. In the Ming Dynasty Yining is the land of the East Chagatai Khanate. In 27th year of Qianlong emperor (1762), Yili general was assigned to build Ningyuan

city. In 14th year of Guangxu emperor (1888), the Ningyuan was the County under the rule of Yili government. In 3rd year (1914) during republican period, Yining was renamed Yining county due to its name is same with Hunan provincial Ningyuan county at that time.

In 1952 five districts of Yining County were formed the Yining city , and became provincial municipality in 1953, in 1955 it is changed to be the Kazak Autonomous Prefecture of Yili municipality. In 1957, Yining county government moved to Jiliyuzi that is in the northeast of former place with 18 km distance, then Yining city and county was divided. In 1975, Yili state and Yili area were set up individually. In 2001 the Yili area is not exist, Yining City was renamed the Yili.

This project mainly involves 5 Street offices of the 3 towns, see table 3.3-1.

Table3.3-1 Towns and suburbs related with the project

Country, town/district	Related construction
Kaerdun country	Huaguoshan road （Nanhuan road-G218）
Bayandai town	Daobeiweisan road's extension（tiechanggou village ~daobeiweisan road）
Kebokeyuzi country	Beihuan road（huaguoshan road ~yueliangwan building material market）
Kazanqi district	alley works in kazanqi touring area
Dunmaili district	alley works in Jiefang road
Yilihe district	alley works in Nanshi area
Ailanmubage district	Tianshanhou street（feijichang road~shenglibei road）
Sanyibuyi district	Sidalin street, sidalinxi street（ajiang street to qingnain road）, Sidalin dong street（jiefangnan road –shenglinan road）

3.3.2 Economic development

Since the reform and opening up, especially in twenty-first Century, Yining established the "industrial city" and "the establishment of medium-sized cities," the two goals, then the national economy got the stable development From 1978 to 2014, the city's GDP increased from 102 million Yuan to 13680 million Yuan, local fiscal revenue reached 3,870 million Yuan, per capita disposable income of urban residents reached 16955 Yuan, and farmers and herdsmen's per capita net income reached 10157 Yuan, retail sales of consumer goods reached 5,447 million Yuan, the fixed assets investment amounted to 16 76 million Yuan.

In 2015, Yining is expected to achieve GDP of 20,990 million Yuan, with the increase of 7.6% over the previous year. Among those, the first industrial contribute the added value of 690 million Yuan, which is less than previous year's increasing rate for 3.1%; the Second industry with added value of 4,290 million Yuan, which is less than

previous year's increasing rate for 3.1%, among which 3.5%, the industrial added value of 1,640 million Yuan, which is less than previous year's increasing rate for 10.9%; the third industrial contribute the added value of 1,610 million Yuan, which is more than previous year's increasing rate for 12.9%. The contribution of the three industries to economic growth were individually the 1.1%, -14.4%, and 113.3%.

At the end of year 2015, the total population of the city (the permanent residential population) is 547507 people with an increase of 2.5% than last year. Yining city has 38 ethnic groups, including 264534 Uygur and 195567 Han people, 26863 Kazak people, 39844 Hui people, 2209 Mongolian, 5318 people of Xibe, 4666 Uzbek people, 2177 Manchu, and 2574 Dongxiang people. The proportion of Uygur, Han, Kazak, Hui people among the total population were 48.3%, 35.7%, 4.9% and 7.3% respectively.

According to the sampling data for survey, it showed that in 2015 the per capita disposable income of urban residents is expected to be 24550RMB in Yining with an increase of 11.8%. The per capita net income of farmers and herdsmen reached 13639 RMB with an increase of 1061RMB. According to the labor and social security department statistics, In 2015 the people in Yining, who participate pay the old-age pension insurance are 63107 with an increase of 9.2%, and the pension insurance revenue is 477.42 million RMB with an increase of 22.6%. The participants of medical insurance are 57152 people with an increase of 5.4% and the received medical insurance fee reached 200.51 RMB with an increase of 17%. The participants who paid the unemployment insurance are 27115 people with an increase of 6.4%, due to lower unemployment insurance rates, in 2015 the unemployment insurance revenue was 29.14RMB with the decrease of 10.1% on year-on-year basis. There are 5805 people completed various types of vocational skills training, and 10 thousand people obtained the employment, transfer the surplus labor force of more than 60000 people with the created revenue of 412 million RMB. The urban unemployment rate at the end of the year is controlled under 3.8%.

3.4 Cultural resources

According to the site survey and data collection, the project does not involve environmental sensitive areas such as nature reserves, scenic spots, water source protection areas, but involves historical block and other cultural resources.

3.4.1 Cultrual relics

According to the initial Cultural relics survey results by EIA team within 200m scope along the road of the project, there are 10 cultural relics on the list of protection, which include 1 relics under national protection, 3 relics under autonomous prefecture's protection, 6 relics under municipal protection. The related distribution and statistics can refer to Figure3.4-1 and Table3.4-1.

Table 3.4-1 Cultural relics statistics

No.	Construction	Name	Protection level	Category	Built in (Year)	Position related with the project
1	Traffic road construction	The political and cultural center of the three District revolutionary government	National	Important modern historic buildings	1944	200m away from the south of sidalindong road
2		Yining Shaanxi Hui Temple	autonomous prefecture	historic building	1751	70m away from the east of shenglinan road
3		Cemetery of martyrs in Ahemaitijiang	autonomous prefecture	Important modern historic buildings	1959	50m away from the south of sidalindong road
4		Tielieke Mazar	municipal	Ancient tombs		100m away from west of Guoyuan street
5		Tasi Maimaiti Bayi former residence	municipal	Important modern historic buildings	1932	30m away from west of shengli road
6		Tataer school	municipal	Important modern historic buildings	1925	20m away from east of 5th alley in Sidalin street
7		The former residence of Cashenmuaji	municipal	Important modern historic buildings	1918	90m away from east of qianjin street 2nd section
8		A former residence of Sulitang ahong	municipal	Important modern historic buildings	1920	70m away from east of qianjin street 2nd section
9		Uzbekistan Mosque	municipal	Important modern historic buildings	1879	40m away from west of kasi street
10	integrated corridor improvement project on traffic safety	Baitula mosque minarets	autonomous prefecture	historic building	1773	40m away from south of Xinhuaxi road

Baitula mosque

Shaanxi Hui Temple

3.4.2 Ethnic cultural resources

The mosques on both sides of the road are mainly the cultural resources under the EIA scope. Those mosques potentially impacted by the project locate in the alleys. The 9 mosques are targeted during EIA,whose position related with the project site is shown in Table 3.4-2.

Table 3.4-2 Cultural resources related with the project

No.	Name	Road section	Distance from the central line of the road（unit: m）	Classification of protection	Type of agency
1	Huaguoshan mosque	Huaguoshan road	West 60m	General protection	National cultural institutions
2	Gardening yard's mosque	Beihuan road	North 50m	General protection	National cultural institutions
3	Mosque in Jiefang community	Jiefang road	East 30m	General protection	National cultural institutions
4	mosque of sayibuyi community	Sidalin street	20m east of 5th alley of Sidalin street	General protection	National cultural institutions
5	mosque in dulaitibage community	Nanshi area	35m east of Yili street	General protection	National cultural institutions
6	Mosque in kazanqi community	Kazanqi area	20m east of Kashi street	General protection	National cultural institutions
7	Shanxi Hui Temple	Shenglinan road	East 70m	Cultural relics protection	Cultural relics, National cultural institutions
8	Uzbekistan mosque	Kasha street	West 40m	Cultural relics protection	Cultural relics, National cultural institutions
9	Baitla mosque	Xinhuaxi road	South 40m	Cultural relics protection	Cultural relics, National cultural institutions

Huaguoshan mosque

Mosque in gardening yard

3.4.3 Historic city

In July 2009, Yining was approved as "the historical and cultural city of the autonomous region". According to the Yining protection plan for the historical and cultural city, Yining city has many cultural resources, including the Huining city historical area, Xiqu city historical city, and Ningyuan city Historical district.

The Huining historical area has 177.45 hectares under protection:, and the protecting requirements are mainly to protect the Huining city's ancient city wall, and keep its natural terrain and landform. It should be confirmed that the relics of Huining city will not be used for urban construction land, and will be the ecological green land. On the area, the development of characteristic agriculture is encouraged. Provided that the safety of the relic can be guaranteed , the appropriate cultural tourism can be made.

Ningyuan City Historical District: the area of protection is 971.72 hectares, the protection requirements: strictly control of the height of the building within the scope of Ning City original walls, the new building height cannot exceed 6 storey with the building color of elegant gray. The greenbelt will be made around the Ningyuan city to form an overall harmonious urban scene.

Xichun City Historical District: the area of protection of this historical district is 32.60 hectares, the protection requirements: the current power plant will be relocated outside of the relic's area in the future. And the relics park will be built, which is mainly opened as the greening space under protection

This project site is mainly located in the Ningyan City historical district. Daobeiweisan road is near the city of Huining Historical District, integrated traffic safety corridor will be built in Beijing Road that is close to the Xqiqun City Historical District. The position's relationship between project and above historical districts can refer to figure 3.4-2.

3.4.4 Historical and cultural blocks

According to the "Yining protection plan for the historical and cultural city, it is designated 4 historical and cultural blocks in Yining as Liuxing Street, Yili street, Ayidun street, and Qianjin street. Some alley constructions in Nanshi area and Kazanqi area of the project locate in the protection scope of the Yili street, Ayidun street, and Qianjin street. The distribution and location of the cultural blocks related with the project is shown in Figure3.4-3.

Yili Street Historic District core scope of protection: North to Yili ten Lane Street on the north side of 30 to 55 meters along the east courtyard border, South to Yili street, thirteen Lane Street, Orchard Street eight Lane within about 35 meters south of the courtyard border, West to Orchard Street, an area of 14.99 hectares.

The core protection scope of Yili Historical and cultural blocks is as the following: the north to the courtyard border with a 30m to 55m width that is on the north of Yili Street 10th alley, the east to qianjin street, the south to the 35m width of courtyard, which is in the south of the 13th alley of Yili street and 8th alley of Guoyuan street. The total area is 14.99 hectares.

The core protection scope of Ayidun Historical and cultural blocks is as the following: the north to Ayidun Street, the east to Yili street, the south to the 80m-100m width of courtyard that is in the south of the 4th alley of Ayidun street, and the courtyard of 20m in the south of 6th Alley of Yining street. The west is to the Guoyuan street. The total area is 7.75 hectares.

The core protection scope of Qianjin Historical and cultural blocks is as the following: the north reach the 3th alley of Shengli street, xinhuadong road, the 5th alley of kasha street, the 3rd and 2nd alley of qianjing street, the east to hashi street, the south to the courtyard border with 20m width and planning Xinguang street's east section in the south of 5th Alley of Yining street. The west is to the Hongqi street and Yili street. The total area is 38.21 hectares.

The construction is forbidden in the following area of above historic and cultural blocks: the north is to hongqi street, xinhuadong road; the east is to 15m width border of courtyard and buildings in the east of hashi street, the south is to the 7th alley of kasha street, the 13th alley of qianjin street, 25m width border of courtyard and buildings in the south of 13th alley Yili street, the 25m to 60m width border of courtyard and buildings in the south of 8th alley guoyuan street. The total area is 68.43 hectares.

3.4.5 Protection requirements

3.4.5.1 Cultural relics

(1) Implementation of the policy of "key protection, first save, rational use and strengthening management". We should take effective measures to strengthen the protection of cultural relics and historic sites, in particular, to pay attention to the save and protection of endangered cultural relics. The infrastructure's construction and tourism development must comply with the policy of cultural relics protection, and those activities shall not cause damage to cultural relics.

(2) For the cultural relics, its original sites should be protected. The repair, maintenance and move for the immovable cultural relics shall comply with the principle of not changing its original state of cultural relics.

(3) Strengthen the overall protection of cultural relics and related environment. Not only to protect cultural relics themselves, but also to protect the historical environment around the cultural relics.

(4) During the display, the value and the historical meaning of the cultural relics should be fully and correctly indicated to the public. .

(5) On the basis of effective protection for the relics, strengthen rational use and promote cultural tourism.

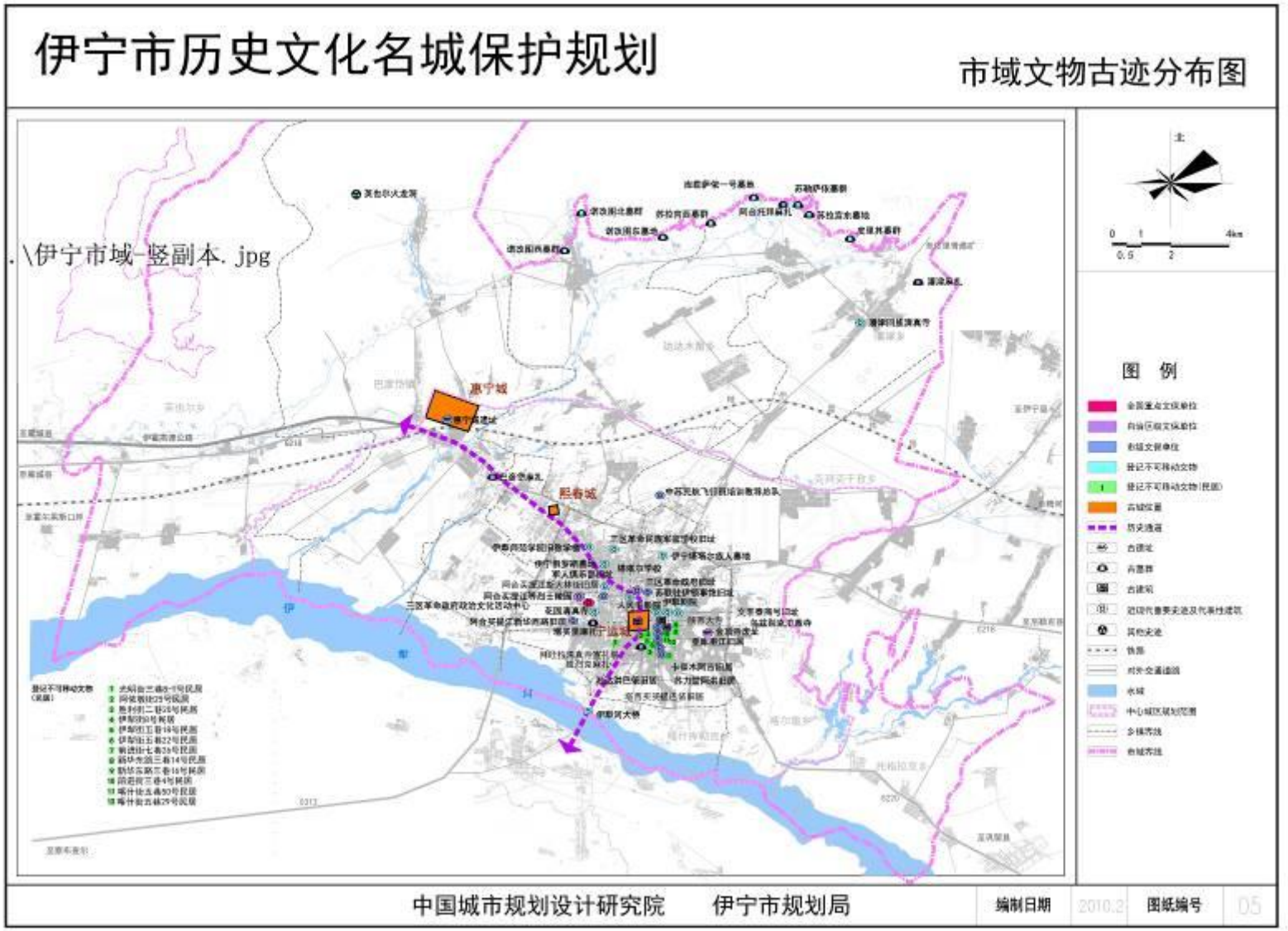


Figure3.4-1 Distribution of cultural relics in Yining

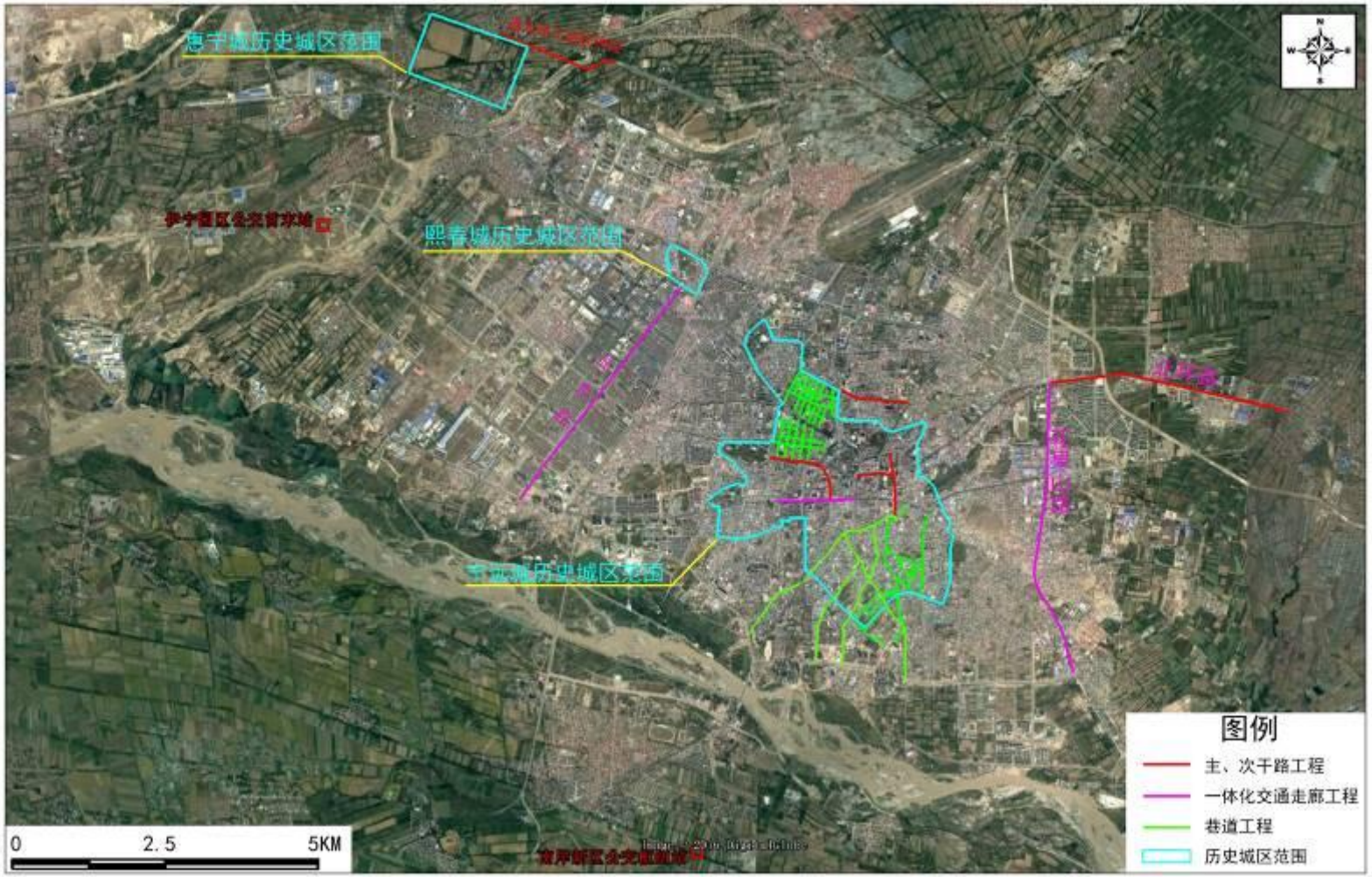


Figure 3.4-2 Position relations between the project and historical cities

3.4.5.2 Historical and cultural blocks

According to the Yining historical and cultural city protection plan, the main requirements for the protection of historical and cultural blocks are as follows:

Article 33 to the Plan as the protection and management for the core scope of historical and cultural blocks has regulated:

Protect and continue the traditional architectural forms, and implement the classified protection for ancient buildings. The Cultural relics, immovable Cultural relics, and the historic buildings should be protected in accordance with the relevant requirements, and the immovable Cultural relics should be recorded and filed. For other historic architectures, 6 categories for protection will be applied, which are repair, consolidate, keep, updating, reconstruction, and demolition of non-architectural buildings.

In addition to the necessary infrastructure and public service facilities, any new construction and expansion within the scope of core protection is forbidden. Renovation and reconstruction should be carried out in one or more of the existing courtyards as land utilization in order to maintain the historical style.

Within the scope of Historical and cultural blocks, it should strictly control the height of the building. For the Historic building, buildings on repair, building on consolidation, those should be kept the original height. For the other building's height during renovation or reconstruction, it cannot be more than 2 floors.

Protect of water systems, greening area and other historical elements. Except for the changes to channel's direction for planning road, the existing channels' direction should be maintained to ensure the smooth flow. Protect of ancient and rare trees within the blocks, and continue the local characteristic of courtyard greening and road greening in Yining.

Protect the ethnic customs and festivals ceremony and other excellent traditional cultural heritage in the blocks, such as the Uzbek Buick ice cream, sand painting and flower hat making in Shengli Street, iron craftsmanship in Hongqi Street. Those cultural heritage's history should be spread.

Keep and continue the social structure of multi-ethnic groups and the good neighborhood atmosphere.

Article 34: the construction control within the historical and cultural blocks

Keep the original name of the historical streets and protect the channel and water system.

All kinds of construction activities within the area should guarantee the safety of the core protection area within the historical and cultural blocks. The construction should not affect the historical features, make the noise or air pollution, and other environmental pollution.

The building height within the scope of the historical and cultural blocks cannot exceed 4 floors. Especially for the east of Jiangshu road within the protection scope of Liuxing historic district, the building height cannot be more than 6 floors.

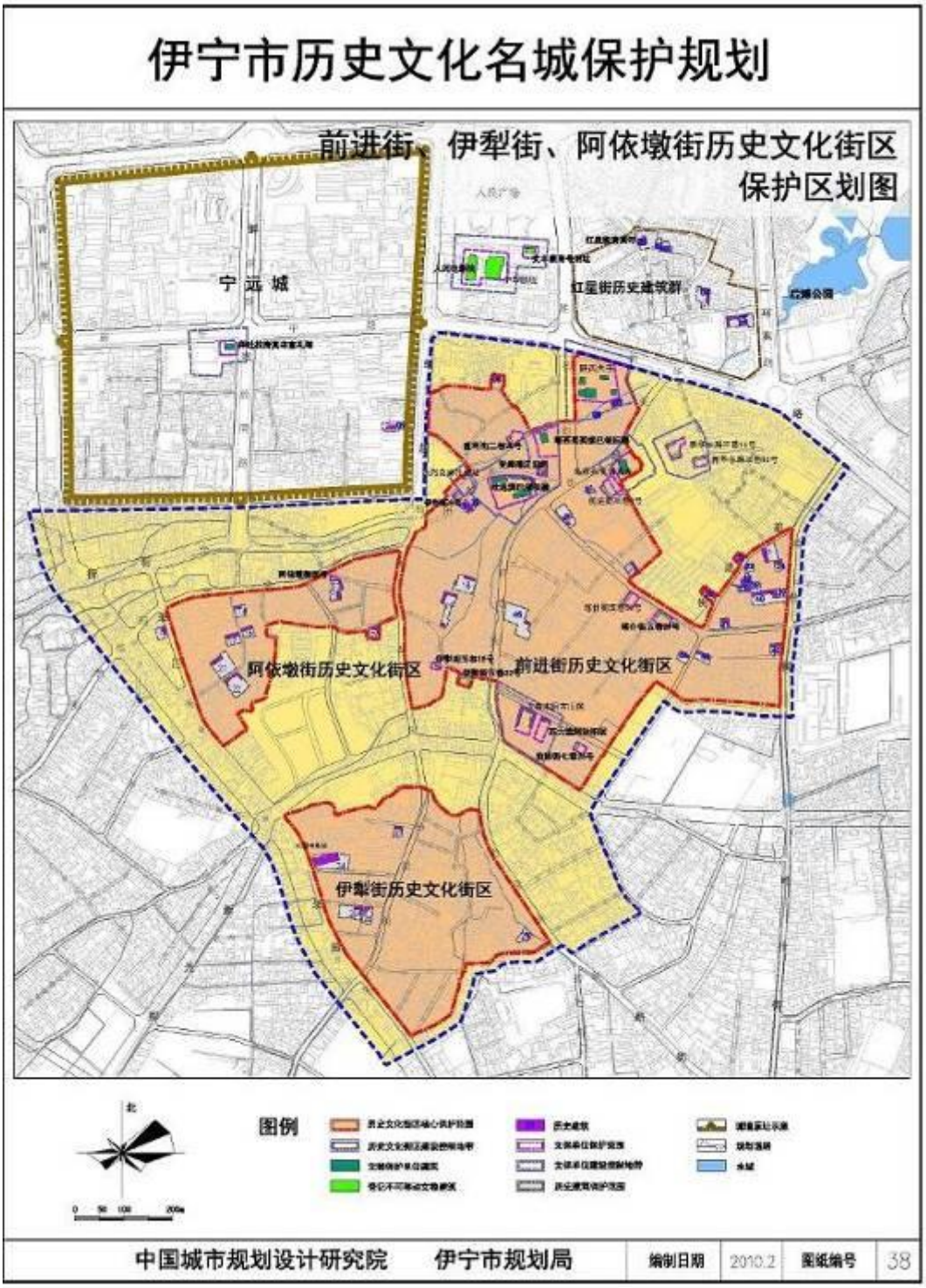


Figure3.4-3 Position relations between the project and historical blocks

4. Environmental impact prediction and assessment during construction period

4.1 Impact analysis on urban ecological landscape

The project construction's potential impacts on ecological environment are mainly from 2 components as Traffic Environment Improving Construction and Public Transport Improvement. The project component "Traffic Environment Improving Construction" consists 6 roads construction, 4 alleys reconstruction and 3 integrated corridor improvement works on traffic safety. The road construction's total length is 11.44km, the total length of alley works is 34.5km, and the total length of integrated corridor improvement works is 10.6km. The two integrated bus stations in component "Public Transport Improvement "are new construction. Except for Daobeiweisan road's extension, the other roads are all the reconstruction works that is not concerning the new land occupation. So those construction has less impacts on ecological environment. The main impacts are from the land occupation of integrated bus stations and Daobeiweisan road's extension works.

（1）Impacts analysis on farmland and vegetation from the construction of new integrated bus stations and road.

The Comprehensive public transport stations locate in the south bank of Yili River and northeast of Yining city, which belong to the South Bank new developing zone of Yining. The current land use is farmland(non-basic farmland), the stations' land occupation for the farmland is 2.67hm^2, which is used for plant wheat and corn. The related loss for the production of crops is 14.02t due to the stations' construction. The Daobeiwei Road's extension construction, which belong to the component of Traffic Environment Improving Construction, locate in Tiechanggou village of Bayandai Town in the north of Yining city. The current land use is farmland(non-basic farmland), the stations' land occupation for the farmland is 10.72 hm^2. The related loss for the production of crops is 56.28t due to the roads' construction. In general, the project construction will make the direct loss for the local agricultural economy.

Although the project construction will make the direct loss for the local agricultural economy, the project will benefit for the urban development, which benefit the agricultural products' sale and create new job opportunities in retailing. And the project finally can change the slow economic development as current situation. In other words, the loss of the local first industry aroused by the project construction can be redeemed from the positive impacts on the local 2nd and 3rd industries generated by the project's development. In general, after the project's implementation the local agricultural economy will be promoted.

（2）Impacts analysis on greening area and vegetation from the construction of alleys and roads

Road reconstruction and Alley works will expand, redesign and reallocate the road

section, the existing greenbelt on both sides or in the middle of the road will be affected by the construction, especially in the area of Sidalin street and Sidalin alley works' area, there distributed 11 ancient quercus and elm trees with the age of 98-103 years and about 10m height. The trees average diameter is about 1m, currently growing well,. During the construction, if the machinery is improperly operated, it will cause harm to the old trees. The elm, poplar, willow, ash, or other species grows on both sides of road. The dust raised in the construction will influence the grow up of the nearby natural vegetation. The dust blocks the pore on the surface of the leaves that influence the breath, photosynthesis and transpiration of plants. So the vegetation area will be reduced due to the construction, and the cover rate of plant will be reduced, as well as the ecological system adjusting capacity. But all those impacts on vegetation is temporary, and will disappear after implementation of construction. During the construction, the frequent watering on site should be done to improve the humidity and reduce the dust pollution. For the temporary land occupation, the recovery and rebuild of ecological environment for that must be realized in time after implementation of construction.

After the implementation of project, the new green belts on both sides of the road will be made, and recover the ecological environment as before. So only the temporary impacts on vegetations during construction, those impacts can disappear after the implementation of project. But the damage on current trees, sanitation and landscape will be impacted and damaged to a certain extent by waste water discharge, construction waste, the wheel crushes and tread on foot during the road and other components' construction.

（3）Impact analysis from borrowing earth

Except for Daobeiweisan road's extension, the other roads are all the reconstruction works that is concerning less borrowing earth. The reason is the urban road subgrade is lower and the road's earth filling amount is less. The borrowed earth are all from the commercial material field, where locate in the Panjin town of Yining city with the exploiting history of 4 to 5 years and 8 -10km away from the urban area. The field's stock are abundant, which is a wide gravel cobble Gobi desert land made by alluvial influence without vegetation on the surface. The exploitation of field's earth will not affect the road's landscape and the amount of borrowed earth for the project is small.

（4）Analysis of impacts on ambient environment from soil erosion and raised dust

The project is planned to be built in urban area with flat landform. Due to the higher fill of earth and less deep excavation, there is basically no soil erosion. But during the construction, the construction material such as earth, gravel, cement and clay, and the abandoned earth and material are stacked. In this process, there will be potential impacts on urban ecological environment due to the improper stacks under the flushing of rainfall. That will result in the drainage pipeline block that influences the traffic and city appearances.

During construction period, if no prevention measures in the transportation of earth,

gravel and cement, etc, the raised dust can be produced. The dust and dreg left by the transport vehicles will raise the dust pollution on road, greenbelt and residences along the project, as well as negative impacts on the urban sanitation.

（5）Analysis of impacts on wild animals during construction

The Reconstruction Project mainly locate in the urban built-up area, except the common birds, there are no other wild animals. For the area of new stations located in farmlands, the original animal species are mainly the rodents with relatively intensive distribution. There are mainly two species of animals in the project area, one is small rodents, such as Mus musculus and Gray Dwarf Hamster,etc, the other is birds as tree sparrow, barn swallow and lark. The project construction may have impacts on their habitat. But due to the large number of these two kinds of animals and the high adaptability to the environmental change for both of them, the project impact for them is limit.

（6）Analysis of impacts on urban landscape during construction

The impacts from the project are mainly from the road and alley construction.

①The removal and replacement of public facilities is needed in this project, such as the part of pipeline for water supply, gas supply, heating supply and communication, etc. The old road pavement in the reconstruction works is also replaced. All these will have negative impacts on urban landscape.

②The excavation, stacking of earth and construction material, especially the stacking of abandoned earth, construction waste will influence the urban sanitation and landscape.

③The temporary building or the irregular parking of machinery for construction will have negative impacts on the ambient landscape.

④The protective guard and surround cloth for construction area will have negative impacts on the ambient landscape.

⑤The noise, dust, waste gas, construction waste or sewage discharge will pollute the ambient environment. The daily routine work in the companies, governments, and stores will be influenced by the construction activity. The related landscape will be impacted negatively.

4.2 The noise impacts analysis

According to the FSR of the project, the noise impacts will be aroused in the construction of component of Traffic Environment Improving Construction，Traffic management and road safety component, as well as the Public Transport Improvement. Due to the noise impacts of Public Transport Improvement will not concern the acoustic environmental sensitive points. So the noise impacts of Public Transport Improvement will not be concerned in this EIA. The noise impacts of Traffic Environment Improving Construction，Traffic management and road safety will be assessed mainly in this EIA.

4.2.1 Noise sources during construction

The noise sources during construction mainly from the construction machinery and transport vehicles. Take the similar project as reference, the main construction machinery that the project concerned include Bulldozer, excavator, loading machine, land leveller, Concrete-mixer, roller, paver, etc. For the testing value of noise intensity of common construction machinery during construction, see Table 4.2-1.

Table4.2-1 Testing value of noise intensity of main construction machineries unit：dB（A）

No.	machinery	model	Monitoring distance from noise source（m）	Maximum dB(A)
1	wheel loader	ZL40type	5	90
2	land leveller	PY160Atype	5	90
3	vibrating roller	YZJ10Btype	5	86
4	The double vibration roller	CC21type	5	81
5	three wheeled roller		5	81
6	rubber-tyred roller	ZL16type	5	76
7	Bulldozer	T140type	5	86
8	hydraulic wheel excavator	W4-60Ctype	5	84
9	paver（made in Britain）	Fifond311 ABG CO	5	82
10	paver（made in Germany）	VOGELE	5	87
11	Power engine（2 sets）	FKV-75	1	98
12	Impact drilling	22type	1	87
13	conical drum reversing Concrete-mixer,	JZC350type	1	79

Note: The monitoring data is collected on site during the construction machinery running with full load. Data from the Highway construction environment impact assessment standard

4.2.2 Analysis and prediction of noise impacts during construction

According the analogy comparison, the noise intensity of domestic usual machineries for road construction, which is tested from different distance during the machineries running with full capacity, is as following Table4.2-2.

Table 4.2-2 Noise intensity of main construction machineries tested in different distance unit：dB(A)

Machinery	measured value	10m	20m	30m	40m	50m
wheel loader	90	84	78	72	70	64
land leveller	90	84	78	72	70	64
vibrating roller	86	80	74	68	66	60
The double vibration roller	81	75	69	63	61	55
three wheeled roller	81	75	69	63	61	55
rubber-tyred roller	76	70	64	58	56	50
Bulldozer	86	80	74	68	66	60
hydraulic wheel excavator	84	78	72	66	64	58
paver（made in Britain）	87	81	75	69	67	61
Power engine	98	92	86	80	78	72
Impact drilling	87	81	75	69	67	61
truck	92	86	80	74	72	66
Concrete-mixer	91	85	79	73	71	65
concrete pump	85	76	70	64	62	56
vibrator	84	78	72	66	64	58

The noise intensity will be different among different machineries and different construction work. In the actual construction, the possible situation of many machineries working the same location can happen. The noise impact scope will be bigger than normal in such situation. There are acoustic environmental sensitive points within the 200m scope on both sides of road, such as schools, hospitals and residences, etc. Altogether the construction noise has negative impacts on the ambient environment.

It can be judged from Table4.2-2that the noise can meet Noise limits for construction site at day time in the location that is 40m distance away from the construction site, and that is 200m distance way from the construction site at night.

4.3 Air impact analysis

The air pollution during construction period mainly includes the raised dust, suspended matters caused by load and unload and the gas produced in the process of bitumen mixing and heating. These pollutants possibly have negative impacts on the ambient air environment along the project road, alley and construction site.

4.3.1 Raised dust analysis

During the construction, the dust was raised during the process of land leveling, subgrade excavation, pavement works, construction material transportation, load and unload, mixing, etc. Especially during the transportation of construction material and

the process of construction works, such as concrete mixing, cement load, unload and feeding procedure, there are more dust pollution aroused.

①During the process of the subgrade excavation, land leveling and subgrade filling, large amount of earth and gravel are concerned. The big excavation area result in the demolishment of vegetation and loose soil. Once there is a windy day, the dust pollution will be aroused.

②The dust pollution can also be aroused by the leakage. Due to the improper way on transport, load and unload, storage of earth, gravel and cement, as well as the construction waste, such as abandoned earth, etc, the leak of those material can happen and make the dust pollution.

③The dust leakage can be aroused during the processing of construction, such as the concrete mixing process. Especially during the process of lime soil mix, there is severe dust pollution. For this project, the related mix process will be taken charge by commercial mixing station.

④The dust left during the process of transportation will produce the secondary pollution under the effect of wind or pass by of other vehicles. Those left dust exist on the construction site or nearby. The dust caused by the transportation occupies 50% of the total dust amount. Especially the lime transport lorry can arouse obvious dust pollution for the ambient environment on both sides of road.

The project road and alley construction locate in the build-up area of the city, there distributed many environmental sensitive points, such as stores, restaurants, governments and residences. The dust caused by the construction in this section can interrupt the daily life of local inhabitants. So the necessary environmental protection measures should be adopt, such as the dust guard board or periodically watering. To reduce the dust pollution in local area.

4.3.2 Gas impact prediction and analysis for bitumen mixing place

During the bitumen paving on the road, bitumen gas and other pollutant come out that has the negative impacts on ambient air quality. The toxic and harmful substances in the gas include THC, phenol and benzopyrene. Due to the bitumen for the project is purchased outside and the construction on site are not concerned bitumen mixing process. So the mixed bitumen's harmful gas amount is low, which can meet the relevant limit in Integrated Emission Standard of Air Pollutants（GB16297-1996）. The impact on environment is very low.

4.4 Water environmental impacts analysis

The Daobeiwei road's extension will concern building a bridge across the Piliqing river, during the construction period, the impacts on surface water environment are mainly the increase of water silt content due to the bridge pier construction.

4.4.1 Increase the silt content of water during the bridge pier construction

When the bridge pier start construction, the piling, grouting and other works may

cause the change of partial hydrological conditions, form the water turbulent state, and then stir up the bottom sediment. According to geological survey results, the surface material on river bed are mainly fine sand that is easy to be stirred up. But Piliqing river is a typical shallow and wide river, the silt sedimentation time is short. In addition, due to the slow water flowing speed following the river flow direction, the impacts from the sediment on the water environment last for a short distance, so the pier construction will bring short-term increase of silt and make smaller impact on the water quality of Piliqing river.

4.4.2 Other Impacts

The main impacts are from the flushing water for machineries and construction materials, and domestic sewage within construction site.

（1）The oil that runs, spilled, dropped or leaked from the construction machinery or the outdoor machines are flushed by rain water, all those can make the oil water pollution.

（2）The rainwater is mixed with grout, domestic sewage under the effect of surface runoff.

（3）The construction waste, abandoned earth and dreg contain large amount of pollutant and suspended particles, which will flow into the nearby water body under the effect of storm flushing or normal drainage of waste water during construction,

Above-mentioned waste water will flow into the nearby water body, and impacts on the water body. So during the construction period, the environmental management must be strengthened, and reduce the emission of oil or other material, as well as the pollution for rive. Once the pollution control and prevention measures in this EIA are adopted during project construction, the impacts from waste water on surface water environment will be mitigated and reduced efficiently.

4.5 Solid waste impact analysis

The project construction’s potential impacts on environment are mainly from 2 components as Traffic Environment Improving Construction and Public Transport Improvement. The project component “Traffic Environment Improving Construction” consists 6 roads construction with 11.44km long, 4 alleys reconstruction with 34.5km long and 3 integrated corridor improvement works on traffic safety with total length of 10.6km. The two integrated bus stations in component“Public Transport Improvement”are new constructions, which individually are integrated bus station in Yining economic park and South Bank New Developing Area.

The solid waste mainly comes from the construction waste and working staff’s domestic waste during construction. During reconstruction, the solid waste are from demolish of buildings and road pavement, including the gravel, lime or abandoned earth. So the improper dispose for these solid waste will result in the traffic jam and environmental pollution. During the transportation, the vehicles left the earth or slag along the road that will pollute the environment and influent the urban appearance and traffic.

The abandoned earth are mainly from excavations and fill of road and alley construction. The earth fill are mainly from the subgrade earth fill. The earthwork includes the 690270m³ earth excavations and 191371m³ earth fill that is borrowed outside. The abandoned earth produced during construction is 690270 m^3. Those abandoned earth should be properly arranged to avoid the potential negative impacts of cultivated land occupation aroused by it. Following the continuous increase of population and consumption capacity, the per capita area of cultivated land is reducing and undertaking more pressure than before. Once the improper arrangement for those abandoned earth happened, the local conflict between land capacity and population will be stimulated, as well as the ecological environmental issues. So for the abandoned earth of this project, the landfill for construction material in southwest suburb will be unitized. There will be not negative impacts of abandoned earth in project area. On opposite, the positive impacts on local ecological environment will be produced by the project.

The abandoned earth without improper dispose will block the traffic and pollute the environment during the process of transport and stack. If the transport vehicles loading abandoned earth move in the urban road, that can result the big increase of traffic volume and traffic jam. The earth or slag left on roads will have negative impacts on urban environment and sanitation. The abandoned earth stacking without order and cover will result in the soil erosion once raining, as well as the block to municipal drainage pipeline. In addition the muddy water may contain some oil or construction material, which can pollute the water body.

Yining construction waste landfill located in the north of urban area with 5km distance away from the city center among Panjin town, Dadamutu town and Yingyeer town. The landfill originally is abandoned gravel farm. Now the landfill is taken charge by Yining municipal sanitation management department. At the access there is a guard’s room for enroll the accessed transport vehicles.

The domestic waste produced in each construction camp is estimated to be 9.6t based on the statistics of 1kg/person, 80 total staffs and 4month construction period. It can be judged from that the domestic waste amount is small. But without care and related management, this small amount of domestic waste also can attract the flies, etc. and result in the environmental pollution. So garbage bin should be temporarily placed on construction site for periodically waste transport to Yining domestic garbage landfill.

Yining Municipal domestic garbage landfill locates in the Nataizigou of yingyeer Town, which in the northwest of Yining. The landfill is 19km away from city with 600Mu floor area. The landfill capacity is 5620000 m^3 with 20 years of service life. The current garbage disposal capacity is 400t/d, the forward capacity is 600t/d. The disposal approach is the sanitary landfill, which mainly include the following as waste weighing, access to landfill, waste dam, stage dam, storage pond, trash embankment, rain and sewage water separating flowing system, anti-seepage bottom, leachate collection-diversion system, landfill gas diversion system, leachate

collection-circulation spraying system, waste filling facility, the office buiding for managing production and auxiliary facilities. The landfill is started buiding in May of 2004, and put into operation in Feb.2006, which have the capacity to disposing the domestic garbage from the project.

4.6 Analysis of vibration impacts during construction

The vibration mainly comes from piling works, subgrade engineering, compacting backfill works or truck moving.

The constructions for this project include the new road construction, road reconstruction, and public transportation components. The subgrade improving works mainly include the compacting of sand and earth. The machinery for that is Vibratory Hammer. The vibration from truck moving mainly come from the roller or diesel fuel vehicles. According statistic data from Japan's environment impact assessment manual, the vibration index for construction machineries are as following Table 4.6-1

Table 4.6-1 vibration index for construction machineries unit：dB

Machinery	5m distance	10m distance	20m distance	30m distance
Vibratory Hammer	75	67	48	44
Roller	58	53	50	48
Diesel fuel vehicle	62	58	54	51

For the Component of Public Transport Improvement, the related construction are only concerned two stations. The construction works is small with less number of machineries. So there will no intense vibration for nearby inhabitants. As shown in Table4.6-1, the intensity of vibration from above machineries can meet the limit value for education and culture zone’s requirements in 10m away from the vibration sources, which regulated in Standard of environmental vibration in urban area. They can also meet the standard for ambient environment on both sides of road.

4.7 Social impacts analysis

4.7.1 Impacts from the Traffic Environment Improving Construction

The project construction will adopt the fully enclosed traffic or side open traffic side enclosed for construction. Altogether the project construction is inconvenient for public traffic.

（1）Residences along project site

The project consists 4 components covering wide area and with intensive residents along the site. According to the site survey, there are 59 residential areas along the project site. The impacts are obvious among the following area: the 5 trunk and branch roads as Tianshanhou street, shenglinan road, sidalixi street, sidalindong street and beihuan road, 4 alley areas in sidali street, jiefang road, nanshi area and kaanqi touring area. It will arouse the traffic jam or crowded situation during the construction.

So the traffic diverging, detour or other temporary measure will be adopted. The bus route will be reallocated. All these bring inconvenience to inhabitants on aspects of public traffic, daily work and life. The inhabitants along the road have to make a detour to the reserved road or other crossings to destination.

（2）Schools ,hospitals, and kindergartens along the site

There are 19 schools and 10 hospitals impacted by the project construction. The construction will bring the inconvenience for the students during the process of going school and afterschool, especially for the students who live in kindergarten or the opposite houses towards school. At the same time, the inconvenience will be brought to the inhabitants going to hospitals during the construction. The traffic diversion and dispersion should be made in advance.

（3）Shops along site

It is necessary for running mechanical machinery and transporting building materials during the construction period, and the related noise will affect customer's access to store , the regular rest of the store owners and the nearby residents, and the normal trading activities; Due to road construction, the material transport of factory and store delivery vehicles have not a smooth traffic, the merchants outside of Yining city cannot enter the city smoothly due to the construction , resulting in a negative impact on product sales and transportation. After the factory and shop transaction activities are affected, the related income may be affected.

（4）Impacts on traffic safety

After the completion of the project, there will be the newly built roads, better traffic infrastructure, and smooth traffic. All these will improve the efficiency of travel in the city, but the rapid traffic speed increase the potential traffic accidents and risk. Especially after the establishment of a dedicated bus lanes, the smooth traffic increase the buses 'traffic speed, which will lead to instability for some passengers, like the elderly, pregnant women, children and other special groups.

（5）During the construction, the dust, noise, garbage, and sludge temporary stacking will bring temporary impacts on the environment, and give the residents 'daily life of a negative impact. During the construction, the construction vehicles, the waste residue, waste earth, waste water and other waste disposal problems are likely to make the potential threats for the safety of the local residents, especially for the elderly, children, pregnant women.

Through the communication with the project owner, the project owner said that during the project construction they will pay more attention to such problems, and make the construction safety education and publicity, and take relevant mitigating measures to reduce the negative impact.

4.7.2 Impacts on public traffic

（1）Impacts on traffic bus system

The impacts on bus firstly will result in the passengers loss, then directly reduce the bus operation revenue and bus staff's income, secondly, the passenger's inconvenient and delay aroused by the change of route and bus stops.

（2）During the construction the traffic is not smooth and the traffic lights guiding capacity is limited.

During the construction, for installing part of traffic lights and monitoring devices, the power supply is needed to be cut off, which will affect the existing traffic lights and monitoring devices' normal work; After the installation those facilities still need to be make commissioning. So during this period, the vehicle and pedestrian flow both need to be adjusted and rearranged. The extra traffic polices will be sent to carry out traffic control work. All these not only increase the workload of traffic managing department, but also arouse the traffic issues out of the traffic management's control, like the conflict between the pedestrian and vehicles that lower down the traffic efficiency.

（3）Inconsistency of traffic information between previous and new traffic facilities at the beginning

Before installing the traffic safety facilities, pedestrian has been used to the original transport infrastructure's guidance. In addition, both the construction unit and traffic management departments need to make commissioning for those devices in a short term after installation. So the nearby residents have the inconsistency on the traffic information compared with the old one when they go out, cross the street, or drive the vehicle, especially for the elderly, the disabled and other special groups. The alternative on the old traffic signal or the new may confuse the residents temporally.

（4）Alert of residents' safety of crossing street is reduced

After the completion of the project, the nearby residents all knew the traffic lights, monitoring systems and other equipment has been installed, and then the related traffic violations will be controlled in a certain extent, and form a traffic warning and discipline for the pedestrians and vehicle drivers. With the protection of those facilities, alerts of residents on safety of crossing street or driving are reduced. The traffic corridor project will not only improve the traffic accessibility, but also the traffic flowing efficient. So the vehicle speed will be improved, the hidden safety threats for pedestrian area increased during crossing the street.

4.8 Impacts on cultural resources

4.8.1 Cultural relics

According to the initial Cultural relics survey results by EIA team within 200m scope

along the road of the project, there are 10 cultural relics on the list of protection, which include 1 relics under national protection, 3 relics under autonomous prefecture's protection, 6 relics under municipal protection. There is no disturbance or removal for those cultrual relics from the project. The excavaton of road and vibration of the construction machinery have the potential impacts on the relics along the site.

The roads works for this project are all belong to the reconstruction, which will be made on the existing road with less working amount and machinery quantity. The vibration impacts are relatively low for the relics. According to the vibration impacts prediction during construction, The transmission of vibration from construction machineries can meet the limit value for education and culture zone's requirements in 10m away from the vibration sources, They can also meet the standard for ambient environment on both sides of road. The distance between the construction site and cultural relics position is 20-200m which basically have no vibration impacts on the relics. In order to mitigate the potential vibration impacts on relics, the construction unit should get to know the vibration impacts from this project before the start of construction, and choose the machineries or manual operation approaches with low-level vibration intensity. At the same time take consideration on the adoption of vibration isolation device. Train the working staffs on the vibration and shorten the working time of construction machineries. Make the proper schedule for running the machineries.

Some part of road concerning with this construction locate in old urban area of Yining, it is still hard to predict if there is any finding during the excavation works. So once finding the relics during construction, all the construction activities should be stopped at once and report to the environmental staff on site. The staff should organize the protection for the relics on site and notice the related relic's management departments for further action.

4.8.2 Impacts on historical and cultural cities and blocks

In July 2009, Yining was approved as "the historical and cultural city of the autonomous region". According to the Yining protection plan for the historical and cultural city, Yining city has many cultural resources, including the Huining city historical area, Xiqu city historical city, and Ningyuan city Historical district that are all within the EIA scope of the project. Yining historically city and blocks mainly show the Yili Uygur folk customs, and maximally kept the original residence, local folk customs, and traditions, which belong to the original humanistic block. Historical and cultural city and block is a whole section, there are a large number of residents living in it to form a living cultural heritage, which has its own unique community culture. The road construction will produce temporary effects for separating the existing whole blocks , and may demolish the green belt and canals on both sides of the roads within the historical city and the cultural blocks. The construction may damage the houses on both sides of the alleys. But the impacts will disappear after the

construction and implementation of the recovery on site. In addition, the man-made destruction will happen if the construction personnel training is not made properly.

The excavation, stacking of earth and construction material, especially the stacking of abandoned earth, construction waste will influence the landscape in the historical city and the cultural blocks. And the daily activities of residents and tourists within blocks will also be interrupted and impacted.

Therefore the protection of the historical city and the cultural blocks during the construction must be paid attention. Any the social entities and individual has the duty to protect the historical city and cultural blocks in accordance with the law, and have the right to report, accuse and stop the destructing behavior on historic city and the cultural blocks.

4.8.3 Religious site

In some roads along the project there are mosques and other cultural resources, the mosque belong to the common religious place. During this construction, there is no demolishment on the mosque. During the construction, the related culture should be respected in avoidance of any impacts on local culture. The 9 existing mosques will be normally used during construction.

The prayer in mosque is not only the Islamic faith, but also a kind of spiritual support and a habit. In addition to Eid al AdhA (EID al AdhA)) and Eid (EID), most people go to the mosque every Friday of Jumah, religious people will preach the "expostulation" (that is in the ceremony or before the ceremony, Imam preach the doctrine.).
According to Islamic norms, Muslims should go to mosque for worship five times a day, the main times are as follows:

Morning ritual: the time is from dawn to sunrise.
ZUHR: the time is from noon just past to sun’s declining to west.
ASR: time is from until the sunset.
MAGHRIB: time is from sunset to fading of sunset glow.
ISHA: time is from the sunset until dawn of the next day.

But only the elderly actually adhere to the rule. The road construction may have impacts on those elderly prayer who go to mosque frequently. .

The suggestions from EIA for the project are mainly the following:

（1）Civilized construction: the project owner should train the Han or other people who are not the Muslim to respect the local custom.

（2）Try to finish the ancillary works during the road construction at the same time.

（3）During the construction, the sidewalk should be left to facilitate the residents’ convenient access and pray on time.

（4）The caution sign should be written in simple words or signal. The notification of project construction should be written in Chinese and Uygur language.

5. Environmental impact analysis during operation period

5.1 The noise impacts analysis during operation period

During the operation period, the noise f mainly come from the vehicles' moving on the road。

Based on the Environmental impact assessment technical guideline for acoustic environment（HJ 2.4-2009）， the prediction and assessment of the noise impacts on acoustic environment sensitive points will be made in this EIA for recent period, middle term and long term. So as to propose the proper measures for reducing the noise and provide the scientific proof as the reference for regional development plan.

5.1.1 Traffic volume prediction and comparison, motor vehicle type

（1）Traffic volume prediction of EA

According to the Highway construction projects environmental impact assessment standard, the assessment for noise impacts should be performed in the 1st year, 7th year and 15th year during operation period. Based on the traffic flow increasing rate in year 2018 as "γ_1=6.51%", the traffic volume prediction can be made as Table 5.1-1.

Table5.1-1 traffic volume prediction Unit：Pcu/d

No.	Road	1st year	7th year	15th year
1	Tianshanhou street	49219	71860	119012
2	Shenglinan road	22292	32546	53902
3	Sidalinxi street	29010	42355	70146
4	Sidalindong street	10631	15521	25706
5	Beihuan road	26168	38205	63274
6	Daobeiweisan road's extension	20469	32766	52449
7	Hauguoshan road（nanhuan road -G218）	18472	26969	44665
8	Beijing road（xinhuaxi road-jiefangxi road）	21316	31121	51542
9	Xinhuaxi road（jiefangnan road-ahemaitijiang road）	21714	31702	52504

（2）Motor vehicle type

Based on the survey of OD, large vehicle occupy 5%, middle vehicle occupy 15% and small vehicle occupy 80% in the total vehicles'.

（3）Hourly traffic volume

The traffic volume is predicted based on the above table5.1-1. And then the hourly traffic volume on sampled year's day and night traffic volume statistics is calculated and listed in the following Table 5.1-2.

Table5.1-2 Hourly traffic flow in Typical year unit： Pcu/h

No.	Road	1st year		7th year		15th year	
		Day	Night	Day	Night	Day	Night
1	Tianshanhou street	2461	1230	3593	1797	5951	2975
2	Shenglinan road	1115	557	1627	814	2695	1348
3	Sidalinxi street	1451	725	2118	1059	3507	1754
4	Sidalindong street	532	266	776	388	1285	643
5	Beihuan road	1308	654	1910	955	3164	1582
6	Daobeiweisan road's extension	1023	512	1638	819	2622	1311
7	Hauguoshan road（nanhuan road -G218）	924	462	1348	674	2233	1117
8	Beijing road（xinhuaxi road-jiefangxi road）	1066	533	1556	778	2577	1289
9	Xinhuaxi road（jiefangnan road-ahemaitijiang road）	1086	543	1585	793	2625	1313

5.1.2 Prediction model

The noise prediction model in Environmental impact assessment technical guideline for acoustic environment（HJ 2.4-2009）is chosen in this EIA for predicting the noise in highway.

（1）basic prediction model

The prediction model for Type i equivalent sound level

$$Leq(h)_i = (\bar{L}_{0E})_i + 10\lg\left(\frac{N_i}{V_i T}\right) + 10\lg\left(\frac{7.5}{r}\right) + 10\lg\left[\frac{\Psi_1 + \Psi_2}{\pi}\right] + \Delta L - 16$$

In above equation：Leq(h)i——Type i motor vehicle's hourly equivalent sound level,dB(A)

$(L_{OE})i$——Type i motor vehicle's speed is Vikm/h；energy average A sound level in horizon distance of 7.5m, dB(A)；

Ni——The average traffic volume in one prediction points in day or at night, vehicles/h；

r——The distance from central line of road to predicting point, m. apply to the noise prediction with r ＞7.5m for prediction point.

Vi——Type i motor vehicle's average speed, km/h；

T——the calculation time of equivalent sound level,1h；

Ψ_1、Ψ_2——The field angel from prediction point to road ends, radian, see Figure A.1.

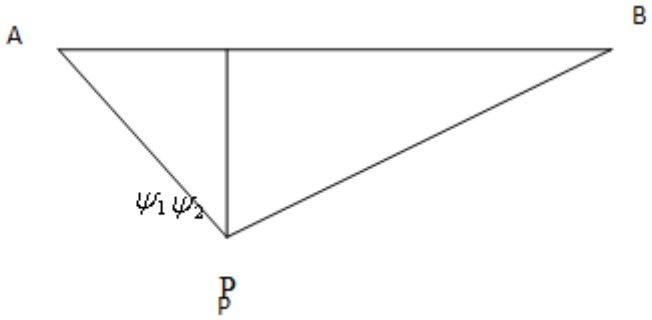


Figure A.1 Modification function for road section with limit length，road sectionA andB，P: prediction points

ΔL——correction caused by other factors，dB（A），calculated as follows:

$\Delta L = \Delta L_1 - \Delta L_2 + \Delta L_3$ （A.13）

$\Delta L_1 = \Delta L_{坡度} + \Delta L_{路面}$ （A.14）

$\Delta L_2 = A_{atm} + A_{gr} + Abar + A_{misc}$ （A.15）

Among the equation：

ΔL_1——correction caused by routes，dB（A）;

$\Delta L_{坡度}$——correction caused by gradient，dB（A）;

$\Delta L_{路面}$——correction caused by pavement material，dB（A）;

ΔL_2——the reduction during the sound wave transmission，dB（A）;

ΔL_3——correction caused by reflection，dB（A）;

Total traffic volume equivalent sound level is:

$$Leq(T) = 10Lg[10^{0.1Leq(h)大} + 10^{0.1Leq(h)中} + 10^{0.1Leq(h)小}]$$

Among the equation，$L_{Aeq（h）大}$——noise prediction for big vehicles，dB（A）;

$L_{Aeq（h）中}$——noise prediction for middle vehicles，dB（A）;

$L_{Aeq（h）小}$——noise prediction for small vehicles，dB（A）;

（2）parameter selection

①Speed of motor vehicles

According to FSR, the designed speed for main road is 100km/h as calculated reference, the connecting road is 80km/h as calculated reference.

②motor vehicle type

The motor vehicle type is divided into three types, see Table 8.2-3.

Table 8.2-3 Motor vehicle type

Type	Total weight of vehicle
Small vehicle(s)	≤3.5t
Middle vehicle (m)	3.5t～12t
Large vehicle (L)	＞12t

Note： Small vehicle generally include small van, car, station wagon for 7 passengers.

Large vehicle generally include container truck, tow truck, machineshop car; motor bus with more than 40 seats and heavy truck etc.

Middle vehicle generally include middle van, middle bus(7seats~40seats), agricultural three wheel transporter or four wheels and other vehicles out the scope of small and large vehicle, etc.

③single vehicle radiation noise level L_{oi}

The radiation noise level for vehicle with 7.5m distance away from lane is calculated as follows:

Small vehicle L_{0s}=12.6+34.73lgVs

Middle vehicle L_{0m}=8.8+40.48lgVm

Large vehicle L_{0L}=22+36.32lgVl

④correction caused by routes（ΔL1）

a）correction caused by longitudinal gradient（ΔL gradient）

correction caused by longitudinal gradient ΔL gradient can be calculated as follows：

Large vehicle：$\Delta L_{坡度}$=98×β dB（A）

Middle vehicle：$\Delta L_{坡度}$=73×β dB（A）

Small vehicle：$\Delta L_{坡度}$=50×β dB（A）

Among the equation：β——longitudinal gradient，%。

b）correction of pavement（$\Delta L_{路面}$）

For different road pavement, the correction is as Table8.2-4。

Table8.2-4 Normal noise correction on road surface

Pavement	Correction under different motor speed km/h		
	30	40	≥50
Bitumen concrete	0	0	0
Cement concrete	1.0	1.5	2.0

⑤the reduction during the sound wave transmission（ΔL_2）

a）the sound level reduction in acoustic shadows on both sides of high embankment or low cutting

The A_{bar} is the sound level reduction in acoustic shadows on both sides of high embankment or low cutting that is the additional reduction caused by predicting point in acoustic shadows.

when predicting points in insonified zone，A_{bar}=0；

when predicting points in acoustic shadow，A_{bar} is determined by δ, that is the acoustic path difference.

Make a calculation δ from Figure A.2 asδ=a+b+c, and look up the attached Figure A.5 in guide for $A_{bar.}$

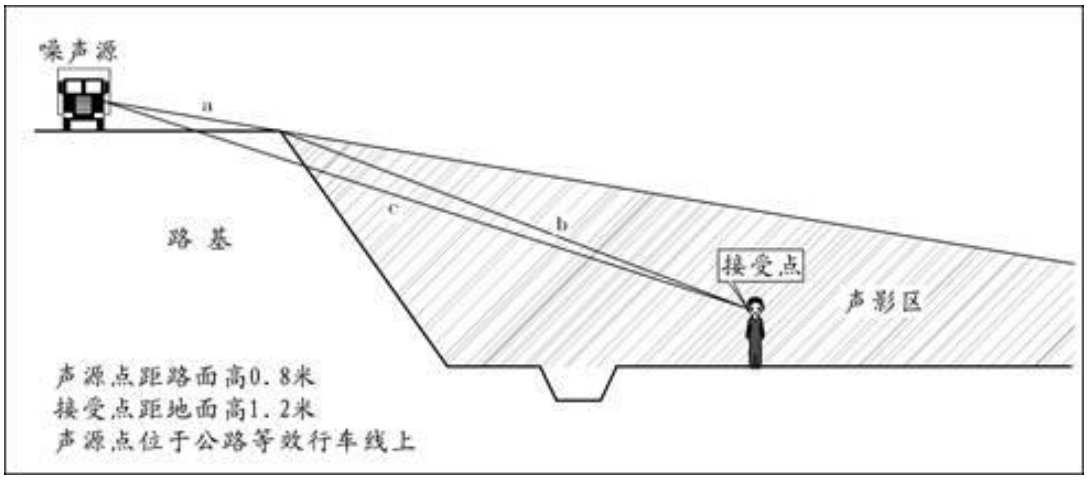


Figure A.2 Acoustic path difference δ calculation indication

b）Addition sound level reduction estimation for village house

Addition sound level reduction estimation for village house can be calculated according to annex A of GB/T17247.2. within the scope of acoustic shadows in the first row of house along the highway, the approximate calculation can refer to Figure A.3 and Table8.2-5.

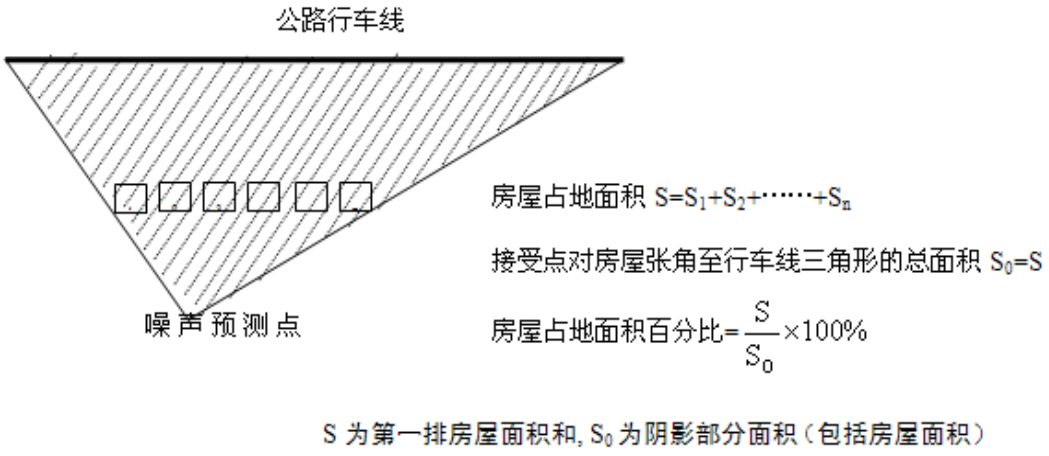


Figure A.3 Sound level reduction estimated calculation for village house

Table8.2-5 Addition sound level reduction estimation for village house

S/S_0	A_{bar}
40～60%	3 dB
70～90%	5 dB
Every increase of a row of house	1.5 dB, maximum reduction≤10dB

（3）environmental noise calculation model

$$L_{Aeq环} = 10\lg[10^{0.1L_{Aeq交}} + 10^{0.1L_{Aeq背}}]$$

Among the equation：$L_{Aeq\,环}$——Ambient noise value of prediction point，dB（A）;

$L_{Aeq\,交}$——Highway traffic noise value of prediction point，dB（A）;

$L_{Aeq\,背}$——Background noise value of prediction point，dB（A）

5.1.3 Noise prediction in acoustic environment sensitive points

The noise prediction value in acoustic environment sensitive points along the project sites is as the following Table 5.1-6。

Table5.1-6 Noise prediction in acoustic environment sensitive points along the project **unit：dB(A)**

No.	Name	Road	The distance away from the central line of road（m）	time	1st year		7th year	
					Prediction value	Value exceeded	Prediction value	Valu exceed
1	Gongluju and lida apartment	tianshanhou street	30	Day	62.3	-	63.3	-
				Night	59.6	4.6	61.1	6.1
2	Ronghua apartment, tiancheng apartment, shijijiayuan apartment	tianshanhou street	40	Day	60.6	-	61.6	-
				Night	57.9	2.9	59.4	4.4
3	Miaomiao kindergarten	tianshanhou street	30	Day	62.3	2.3	63.3	3.3
				Night	59.6	9.6	61.1	11.1
4	Yining renmin hospital	shenglinan street	50	Day	56.3	-	57.9	-
				Night	53.3	3.3	55.0	5.0
5	Subiyi mansion	shenglinan street	40	Day	57.5	-	59.1	-
				Night	54.5	-	56.2	1.2
6	State government apartment	shenglinan street	30	Day	59.2	-	60.8	-
				Night	56.2	1.2	57.9	2.9
7	Hongde hospital	shenglinan street	20	Day	63.5	3.5	65.0	5.0
				Night	60.5	10.5	62.1	12.1
8	Yining weiheng hospital	Sidalinxi street	30	Day	60.3	0.3	61.7	1.7
				Night	57.4	7.4	59.0	9.0
9	Yili lvzhou hospital	Sidalindong street	20	Day	60.3	0.3	61.9	1.9
				Night	57.2	7.2	58.9	8.9
10	Dongcheng huayuan apartment	Beihuan road	60	Day	56.1	-	57.6	-
				Night	53.1	3.1	54.8	4.8
11	Hengfu shuxiangyuan apartment	Beihuan road	180	Day	50.8	-	52.3	-
				Night	47.8	-	49.5	-
12	Gardening yard	Beihuan road	20	Day	64.1	-	65.6	-
				Night	61.1	6.1	62.8	7.8
13	Huaguoshan village	Huaguoshan road	30	Day	58.4	-	59.9	-
				Night	55.4	0.4	57.0	2.0
14	jiligelang village, dongliiang village	Huaguoshan road	20	Day	62.7	-	64.1	-
				Night	59.6	4.6	61.2	6.2
15	Dongcheng huayuan apartment	Huaguoshan road	70	Day	53.9	-	55.3	-
				Night	50.8	0.8	52.4	2.4

16	Huaxia apartment, renhe apartment, shijijiayuan 1st phase apartment, shijijiayuan 2nd phase apartment, No.3 high school apartment, jiarfengjing apartment, jingyuan apartment, jinghejiayuan apartment, huiningjiayuan apartment, tianxiacheng apartment	Beijing road	40	Day	57.3	-	58.9	-
				Night	54.3	-	56.0	1.0
17	Apartments:Jianan chuncheng, jiangnanchunxiao,wutonglijing, runfengjiayuan.	Beijing road	50	Day	56.1	-	57.7	-
				Night	53.1	-	54.8	-
18	Apartments: jinchengjiayua, jinpingguo 2nd phase, ningyuanjun, xiangshuiwan.	Beijing road	60	Day	55.2	-	56.8	-
				Night	52.2	-	53.9	-
19	Yining No.3 high school	Beijing road	140	Day	51.1	-	52.7	-
				Night	48.2	-	49.8	-
20	maternal and child health hospital	Beijing road	50	Day	56.1	-	57.7	-
				Night	53.1	3.1	54.8	4.8
21	Yanbian orthopedic hospital	Beijing road	40	Day	57.3	-	58.9	-
				Night	54.3	4.3	56.0	6.0
22	Apartments:hengtonghuayuan, yuguanyuan, baiyanglijign,youdian	Xinhuaxi road	30	Day	59.1	-	60.6	-
				Night	56.1	1.1	57.8	2.8
23	baodihauyuan apartment, yianbaiyingu apartment	Xinhuaxi road	40	Day	57.4	-	58.9	-
				Night	54.4	-	56.1	1.1
24	Disishi hospital	Xinhuaxi road	40	Day	57.4	-	58.9	-
				Night	54.4	4.4	56.1	6.1
25	Tiechanggou village	Daobeiweisan road	30	Day	59.7	–	63.6	–
				Night	56.1	1.1	58.6	3.6

It can be seen from Table5.1-6, the phenomenon of noise exceeding standard is serious for the schools and hospitals in the middle of operation period, which belong to the Type 4a area. The noise level on the day for hongde hospital of Shengli road is over Type 2 limit value for 5.0dB(A)，and at night over Type 2 limit value for 12.1dB(A). The residential area applied for Type 4a noise standard, the noise level meet the standard on the day, and exceed at night seriously that is over Type 4a limit value for 7.8dB(A). Hengfu Shuxiangyuan apartment belongs to the 1st district within the scope of 45m on both sides of the road red line. The noise level impacted on Hengxiangshuyuan apartment meets the standard on the day, but it is 4.5dB(A) over the standard. The reason is the big urban traffic flow and the short distance between the apartment building and the road.

5.1.4 运营期噪声预测结果分析

Based on the prediction of noise level for operation period and current acoustic environmental analysis described in section 3.2, it can be seen the phenomenon of noise level exceeding the standard still exists after the implementation of Traffic Environment Improving Construction, and the other component as Traffic Management and Road Safety. The noise level in schools and hospitals within the

scope of Type 4 noise limit standard seriously exceed the standard value both day and night, which maximally exceed the standard for 10-15dB. The points within the Type 1 noise limit scope basically meet the standard on the day and exceed the standard for 5dB at night.

Yining belong to the north city in China, the windows on building are all adopted the double-glazing with acoustic good efficiency of more than 25dB. The project has taken the acoustic window's cost into budget for one million RMB. After the project is implemented, the actual noise monitoring result will be made for deciding if it is necessary to install the acoustic window.

5.2 Ambient air impacts analysis

The project's impacts on ambient air environment during operation period are mainly caused by the dust pollution raised by transport vehicles and tail gas. This project is also the traffic project, which has the same climate, machinery, road condition and construction level with the XINJIANG YINING URBAN TRANSPORT (Phase one)PROJECT with IBRD loan. The analogy analysis can be made between the two project.

5.2.1 Basic information of xinjiang yining urban transport (phase one)project with IBRD loan

The Phase 1 project concerns the construction of 25 roads with totaling 72.39km, include the improvement of selected urban roads in the existing road network, totaling 30.38 km; and construction of 15 new urban roads, totaling 42.01 km, and the auxiliary drainage, greening and lighting works,etc; as well as the construction of 7 public transportation facility stations, including 2 bus depots, 2 public transport hubs, 3 bus terminals. The Phase 1 project start construction in 2012 and still on the construction until now.

5.2.2 Dust impacts aroused by the transport vehicles

In August 2015, the monitoring station of Yining make the site monitoring for the raised dust along Ahemaitijiang Street and Jiefangxi Street, which belong to Xinjiang IBRD supporting Yining Urban Transport Project (first phase project) and has already put into use. The monitoring result can refer to Table5.2-1。

Table5.2-1 Dust pollution monitoring result along IBRD supporting Yining Urban Transport first phase Project (project) unit: mg/m3

Monitoring place	Monitoring date Y-M-D	TSP value
Jiangnan apartment in ahemaitijiang street	2015-8-5	0.11
Miaomiao kindergarten in	2015-8-7	0.11

ahemaitijiang street		
Yili evening paper office in ahemaitijiang street	2015-8-9	0.12
Saiwai pearl hotel in Jiefangxi road	2015-8-10	0.12
Traffic police office in Jiefangxi road	2015-8-12	0.12
Haiyang mansion in Jiefangxi road	2015-8-13	0.12
Renheyiju apartment in Jiefangxi road	2015-8-17	0.12

The monitoring results in Table5.2-1 shows that the TSP value in air environmental sensitive points along above-mentioned street of Yining, which has put into use, meet the Grade 2 standard of Ambient air quality standard（GB3095-2012）. Then make the analogy for this project, the TSP valued can also meet the Grade 2 standard of Ambient air quality standard（GB3095-2012）.

5.2.3 Impacts analysis for tail gas

In August 2010, the monitoring station of Yining make the site monitoring for the NO_2 intensity along Shengli street, which is one component of ADB funded Yining road and infrastructure improvement project and has already put into use. The monitoring result can refer to Table5.2-2。

Table5.2-2 NO_2 intensity monitoring result along ADB funded Yining road and infrastructure improvement project unit: mg/m3

Monitoring place	Monitoring date Y-M-D	NO2 value
Bayiku community in 14th alley of shengli street	2010-8-16	0.098
	2010-8-17	0.113
	2010-8-18	0.092
No. 152, 14th alley of shengli street	2010-8-16	0.106
	2010-8-17	0.108
	2010-8-18	0.087
No. 206, 14th alley of shengli street	2010-8-16	0.111
	2010-8-17	0.103
	2010-8-18	0.090
No. 30, 14th alley of shengli street	2010-8-16	0.098
	2010-8-17	0.108
	2010-8-18	0.092

The monitoring results in Table5.2-2 shows that the daily average NO2 intensity in air environmental sensitive points along the Shengli street, which has put into use, meet the Grade 2 standard of Ambient air quality standard（GB3095-2012）. Then make the analogy for this project, the daily average NO_2 density can also meet the Grade 2 standard of Ambient air quality standard（GB3095-2012）.

5.3 Impacts analysis on landscape during operation period

The urban landscape is the combination of natural landscape, building landscape and cultural landscape. The coordination among the natural landscape, building, resources exploitation, economic development and ecological environment protection should be made for the orderly urban development. Then ecological system can be recycled in good manner. The soil erosion, traffic dust and noise can be reduced. After the implementation of the project, the related greening ratio along the bus depots and roads will be increased, and properly arranged. The greening work can improve the landscape along the project, and create a beautiful road appearance for public.

（1）People always judge a city's appearance from the first sight of the view along the road. Due to this project mainly concern the construction of arterial road and secondary trunk road, and all those roads mainly locate in the urban area. On both sides of road, there are cold high buildings and the street looked like narrowly under such background. People will feel depressed when walking on the seemed like narrow street surrounded by so many high buildings. The green belt or vegetation can reduce such potential depression for the people. The green color with the blue sky as the background can make people have a good mood. So it is important for the greening works to improve views and the feelings of local inhabitants.

（2）The vegetation is the key factor for good appearance of the city. A good landscape can be made by different color, shape and species of trees matching with the road lights, flower beds and garbage bins.

（3）The green land in the city is a perfect decoration for the building along the road and the whole cities as well. At the same time, it fulfill the eager of the inhabitants on the demanding of green land.

In generalized, the proper allocation of green works after the implementation of the project will improve the appearance and beauty of city, as well as the good feelings for citizens.

5.4Analysis of impacts on water environment

The impacts on water environment from this project mainly due to the sewage discharge of Component of Public Transport Improvement, and there are some indirectly impacts from the enlarged scope of urban area after the public transport is improved.

5.4.1 water environmental impacts analysis for component of public traffic improvement

After the implementation of the project, the main waste water come from the integrated bus stations in Yining economic Park, and South Bank new developing zone. The waste water are mainly the domestic waste water or produced during the

process of bus repairing or maintenance.

5.4.1.1 Waste water produced during the process of bus repairing or maintenance

The waste water produce in such process mainly contain some suspended matter or petroleum, etc. In addition, the waste engine oil or gasoline should be treated properly.

During the process of bus repairing or maintenance, the productivity of waste water is estimated to be 200m³/a if the unit productivity of integrated bus station is assumed as 50m³/a.

The waste water in the process of bus repairing or maintenance always contain high content of petroleum substances. This kind of is forbidden to be discharged into the municipal drainage pipeline or spilled in casual manner. In this EIA, it is suggested to increase drying tanks with volume of 20 m³ in integrated bus stations. After the evaporation and drying, the remained solid waste belongs to the hazards waste with the content of mineral oil. The related collection, storage and dispose of the solid waste should comply with the national regulations, and forbid this solid waste to be mixed with the domestic waste and construction waste.

5.4.1.2 Domestic sewage

The productivity of domestic sewage mainly come from the working staffs and driver's daily domestic waste water and is estimated to be 0.73×10^4m³/a, including unit productivity of 10m³/a in bus stations.

Due to the small productivity of domestic sewage for this component of project, the related emission can meet the Grade 3 limit of Integrated Wastewater Discharge Standard GB8978-1996. The domestic sewage will be discharged into the nearby municipal drainage pipeline and finally for the further treatment in waste water treatment plant.

5.4.2 Water environment monitoring during operation period

During operation period, the monitoring at the domestic waste water discharging points of integrated bus stations in Yining economic park and South bank new developed zone should be performed annually; the monitoring indexes include PH, BOD_5, COD, suspended matter, NH_3-N and petroleum.
The Grade 3 limit in Integrated Wastewater Discharge Standard（GB8978-1996）will be adopted as the assessment referential standard for above monitoring indexes.

5.5 Vibration impacts analysis during operation period

The intensity of vibration aroused by road traffic has relationship with motor vehicle's structure, traffic condition, road pavement condition, road structure and subgrade conditions.

According statistic data from Japan's environment impact assessment manual, the vibration impacts on environment has following characteristics:

（1）There are no relevance between vibration intensity and traffic volume, but has certain relevance with moving speed of motor vehicles. According the testing result, every increase of 10km moving speed of motor vehicle, every increase of 2.5dB vibration intensity can be realized.

（2）The vibration intensity of subgrade has relevance with the longitudinal smoothness of road and vertical slab staggerting. After the improvement of road pavement, the vibration intensity can be reduced by 5～10dB.

（3）The road structure includes the plane structure, viaduct, backfill, excavation and tunnel, etc. The testing result indicate that vibration intensity reduce gradually in the sequence of backfill, viaduct, plane structure.

The zoo road section of internal ring in Guangzhou city is chosen to be object for analogy in this EIA. It can be judged from the analogy that vibration in all road sections of internal ring of Guangzhou city can meet the standard during the daytime, night or traffic peak time during operation period. And the vibration has no obvious negative impacts on the acoustic environmental sensitive points. After the quarterly motoring during the 1.5 years construction period and 2 years operation period, the vibration monitoring results statistic in Guangzhou zoo road section are as following Table5.5-1.

Table 5.5-1 Vibration monitoring results statistic in Guangzhou zoo road section（analogy）

Period	Before road put into use, from Jan.1999 to 27th Jan.2000.	After road put into use, from 28th Jan.2000 to Jun.2002
Vibration intensity	<50dB	51.1－64.4dB
Traffic volume	no road and traffic volume before road put into use	471－3564 vechicles/hour

It can be seen from above table that the vibration intensity will not surpass 70dB even when the traffic volume reach thousands of vehicles in one hour. This analogy indicates the vibration will have no obvious negative impacts on ambient acoustic environment along the road for this project during operation period.

5.6 Solid waste impact analysis during operation period

（1）Traffic Environment Improving Construction.

The solid waste during the operation period of Road Construction is mainly the bitumen slag, which is not needed in front operation period of road and has no relative negative impacts. The bitumen slag is produced in the process of road repair. For the upper bitumen slag on the road, the related recycled utilization can be made. For the useless abandoned slag, they should be transported to the indicated place for further disposal.

（2）Public Transport Improvement

The solid wastes produced in the Public Transport Improvement during operation period are mainly the domestic solid waste and solid waste from bus maintenance and repair works.

①Bus maintenance and repair

After the evaporation and drying, the waste water from bus repair becomes the solid waste that contains mineral oil. So this solid waste belongs to the hazardous waste. The related collection, storage and dispose of the solid waste should comply with the national regulations. Those solid wastes will be transported to Xinjang hazardous waste disposal center for further disposal and then have no negative impacts on ambient environment.

②Domestic waste

The productivity of domestic waste mainly come from the working staffs and driver's daily domestic waste and is estimated to be 36.5t/a, including unit productivity of 100kg/d in integrated bus stations. All those domestic waste will be transported to the Yining domestic garbage landfill by the Yining Municipal Sanitation Department without negative impacts outside.

5.7 Social impacts analysis

（1）Improve the road network to ease traffic pressure

According to the national provisions for designing and planning urban traffic road，the road network density for arterial road is 0.8-1.2km/k ㎡, for secondary road is 1.2-1.4 km/k ㎡, and for branch road is 3.0-4.0 km/k ㎡. Currently the road network density of Yining central area on aspect of arterial roads, secondary roads and branch roads are individually 1.42 km/k ㎡, 0.82km/k ㎡, and 2.68 km/k ㎡. It can be seen that, except the arterial road, other road network density is lower than the minimum level regulated in the national provisions. And according to the existing road network layout, the vehicles entering the city must rely on urban road, but due to the arterial roads' poor connectivity, the secondary roads' limited capacity, the current roads' situation cannot meet the requirements of the gradual growth of traffic volume on site.

After the completion of the project, the new arterial roads, secondary roads and alley roads can share traffic flow in different extent, provide more route selection for driving vehicles; during the traffic peak in city, those roads can improve the efficiency of traffic on the roads with big traffic pressure to guarantee the smooth traffic between downtown and suburb.

（2）Optimize the layout of the road , and improve the traffic efficiency

According to the site survey, it is found that part of the road in the project area is narrow, and cannot bear the existing traffic volume, and also appeared in motor vehicles, non motorized vehicles mixed situation, the main reason is the small number of lanes, which cannot separated the vehicles of different speed, and guarantee the traffic safety. Some crowded intersection has the wide distance, which affect the efficiency of the vehicle and pedestrian passing by. Part of the roads are not even arranged with sidewalks and other facilities for slowing down.

When the carriage way is upgraded, the roads width in project area can be adjusted. Different vehicles can reasonably diverted to ensure daily traffic efficiency and traffic safety. The road intersection width can be reduced through rational design for saving vehicles and pedestrian crossing time. Repave and rebuild the sidewalks and other basic facilities to ensure the convenience of pedestrian for crossing streets.

（3）Construction of damaged roads, upgrading of highway maintenance system

Some roads along the project site has been used for long time, and many transit vehicles such as large trucks mainly rely on city roads to pass by, which result in serious damage of road pavement, the brick pavement of sidewalks are also damaged. The uneven roads not only affect the appearance of the city, but also easily lead to vehicle bumps with potential safety risks.

After the damaged roads is fixed, a firm flat pavement will improve traffic environment, reduce the vehicle bumps, at the same time guarantee the safety of pedestrians, especially for the elderly, the disabled and other special groups. The seeper and splash of rain water on road will also be improved. After the establishment of highway maintenance system, it can not only solve the problem of low efficiency of few existing road maintenance system, but also provide timely maintenance on the new road, reduce the probability of road damage, prolong the life the road..

（4）Improve the traffic infrastructure, provide convenience for pedestrian crossing street

According to the site interviews, it is not set the traffic lights, traffic safety signs, even the crosswalk in part of the community/village near the road, which cause the more frequent traffic accidents and form a safety hazard for residents. According to the information provided by the traffic police group, in 2015 there occurred 1315 traffic accidents in project area. Some residents respond there is no speed bump, sidewalks and traffic safety signs in nearby village/community, schools, hospitals, and parks, those will bring the inconvenience for children, the disabled, the elderly and other special groups, who may not have a good safety awareness, or act very slowly.

After the Traffic infrastructure is upgraded, all the road sections' traffic infrastructure will be improved. The traffic lights, pedestrian crossing, traffic safety signs and non-motorized transportation will be completed as the safety measures to ensure the

safety of residents daily travel. particularly the traffic safety for the special groups as the elderly, disabled and children will be enhanced.

（5）Promote the employment of residents in the project areas especially the vulnerable groups, increase the income of residents

Temporary or permanent jobs will be provided during the traffic environment improving construction. During the construction, the residents of the project area can participate in the work of cleaning, painting, stone pulling and other non-technical works. During the operation of the project, the job opportunities as cleaning and management will be provided. According to the communication with project construction unit and PMO, The results of communication, 825 jobs can be provided during construction and operation, among which 30% of the 578 non-technical positions will be given to the women, poor families, the migrant population and other vulnerable groups in priority.

5.8 Cultural resources impacts analysis

5.8.1 Impacts on cultural relics

According to the analysis of ambient air pollution, the oxynitride from tail gas will be increased a little during the project's operation, which can meet the emission standard. In addition, the relics mostly locate in the old urban area with less vehicles, so the tail gas has less impacts on the relics.

Due to improvement of traffic condition, the people visit the cultural relics are convenient, at the same time, due to the cultural relics surrounding landscape are enhanced, the cultural relics can play the import role on promote the local tourism. The education of relics for the public can also be promoted.

5.8.2 Impacts on historical cities and blocks

The Qianjin street, Ayidun street and Yili street in project area form the Kazanqi touring area that area all the historical cities and blocks.

The project will rearrange the carriage ways, sidewalks and channels' width on both sides of the building to ensure the safety and convenience of residents and tourists, as well as the smooth traffic, the water leak proof for channel and landscape; Remove the pole and cable on ground, at the same time all the pipes will be embedded and the cables will be placed underground to ensure the harmonious landscape in the area. On the main traffic roads along the two tourist routes, the bitumen concrete pavement should be adopted on roads. For Jiafang area (on Qianjin street No. 8 and No. 13 alley) with the characteristics of folk tourism roadway, the colorful strong pervious

concrete pavement will be used, and the rainwater infiltration can solve the drainage problems on road surface. Through the implementation of these works, it can improve the environment of historical and cultural blocks, enhance the tourism image, highlighting the characteristics of historical and cultural blocks, build Yining as national 4A level scenic city.

After the implementation of the project, the involved the roads of the project become historical and cultural blocks displaying objects, and the road connection between various historical and cultural blocks can be made, which greatly improve the Qianjin Street, Yili street, Ayidun Street current traffic conditions. At the same time, after the implementation of the project's alley works on Kazanqi area, the motor vehicles outside of the region is prohibited entering the region, the main traffic approaches in the region is by bike and walking, which can meet the traffic demand of developing tourism, and mitigate the impacts on various types relics, reduce the environmental pollution.

6 Project plans comparison and selection

6.1 Project plans comparison and selection

The analysis with and without project is the environment developing trend analysis that focus on the current regional environmental condition, and industrial environmental condition.

6.1.1Traffic Environment Improving Construction

The present situation of the road surface is damaged, the road ancillary facilities are not complete, the motor and non-motor vechicles are mixed together in traffic roads, and the traffic rights for different participants are not clear, and the traffic safety facilities are falling behind.

The integrated corridor improvement project on traffic safety concerns the Huaguoshan Road(nanhua road to G218), Beijing road(jiefangxi road to ahemaitijiang street), and Xinhuaxi Road(jiefangnan road to ahemaitijiang street), which can improve the traffic safety, reduce the traffic accidents occurring rate and improve the traffic speed. The following five streets will be upgraded as Tianshanhou street, Shengli road, Sidalinxi street, Sidalindong street and Beihuan road. The Daobeiweisan road's extension will be opened. The alleys are individually locate in Sidalin road, Jiefang road, Nanshi area and kezanqi cultural protection area, which will be upgraded to create an ecological, livable urban living environment. All above planning construction will complete and improve the Yining road network connected with the current traffic system. The convenient and quick traffic system can form the ideal base for the urban development and investment introduce.

The project has a significant meaning on improving residential environment and living standard, creating the new city image, promoting the sustainable development in economy, society and environment, as well as in building the Open Border City with minority feature.

6.1.2Public Transport Improvement

The lagging construction of city bus station will reduce the covering rate of transit network and bus station, which caused the low bus running efficiency and punctuality rate, the intensive and crowded passengers, and insufficient transit capacity in traffic peck time

Make the proper arrangement of depots and auxiliary devices. Strengthen the building of the public traffic transfer hub. All these provide the guarantee for bus priority's implementation and the safe, reliable, convenient, economically and comfortable public traffic transport services to people groups. The advantages of bus facilities built in this project will attract more and more local people to take bus as their main traffic transport tool.

6.2 Plans comparison and selection for Traffic Environment

Improving Construction

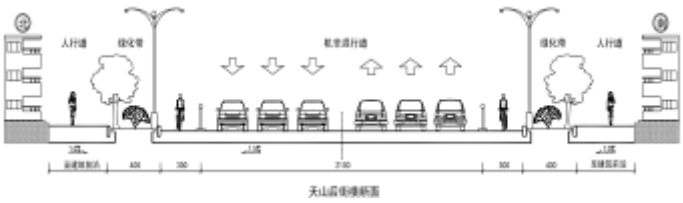
Traffic Environment Improving Construction include 3 parts: traffic road construction, integrated corridor improvement works on traffic safety, and road maintenance machinery system, among which 6 trunk and branch roads, 4 alley areas and 3 integrated corridor improvement project on traffic safety are all belong to the reconstruction. It is no necessary for plans comparison and selection. In FSR some roads' cross section have been adjusted.

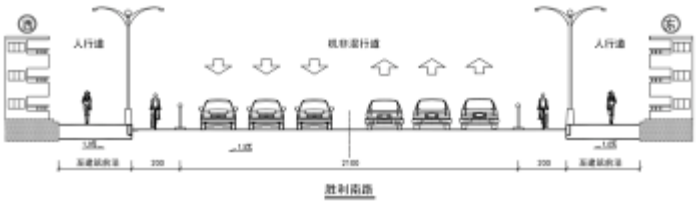
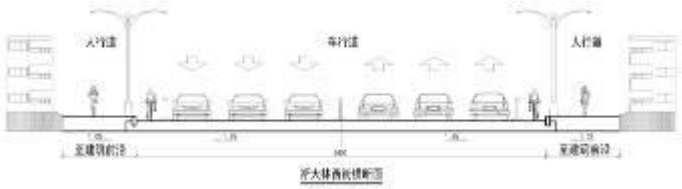
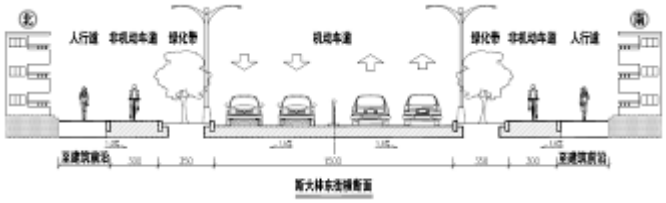
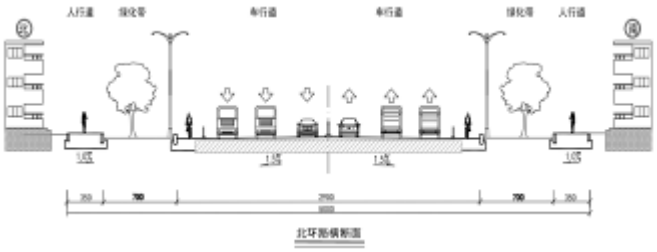
In FSR some roads' cross section adjusting plan has been introduced. .According analysis of environmental positive or negative impacts for the individual configuration design in FSR figures, the suggestion on optimization of those configuration is provided in this EIA.

6.2.1 Introduction of cross section plan

In the feasibility study report of this project, the cross section plan and analysis for the following roads has been made, which are Tianshanhou Street(feijichang road to shenglibei road), Shenglinan Road(yingbin road to yili road), Sidalinxi Street（amaitijiang street to xinhuaxi road）, Sidalindong Street（jiefangnan road to shenglinan road）, Beihuan road(huaguoshan road to yueliangwan buiding materials market). The optimization design of cross-section is based on the principle of meeting the requirements of municipal overall plan. The conclusion is like the following Table6.2-1.

Table 6.2-1 Cross section analysis

Road section	Current section	FSR plan	Comparison analysis
Tianshanhou Street(feijichang road to shenglibei road)	Two directions, 4 carriageways		Expand 4 carriage ways to be 6, rebuild carriage ways with bitumen concrete pavement and sidewalk. Keep the original arbor under with planting bushes and flowers in full area.

Shenglinan Road(yingbin road to yili road)	6 carriage ways		Maintain current layout of carriage ways, cycle path and sidewalks, overlay carriage ways in Yili street, newly built the carriage ways from Xinhua Road to Yingbin Road, reconstruct sidewalks on both sides of shenglinan road
Sidalinxi Street（amaitijiang street to xinhuaxi road）	6 carriage ways		make use of current road section, Maintain current layout of carriage ways, cycle path and sidewalks, overlay carriage ways and reconstruct sidewalks for whole Sidalinxi street
Sidalindong Street（jiefang nan road to shenglinan road）	4 carriage ways		Build the cycle path within current sidewalks, reconstruct sidewalks on both sides, keep the greenbelt
Beihuan road(huaguoshan road to yueliangwan buiding materials market)	6 carriage ways		Expand 1.75m for both sides of current road, keep the current 6 carriage ways, add the separating rail between motor ways and non-motor ways. Newly built the greenbelt and sidewalks.

6.2.2 Environmental comparison

The FSR design is plan to expand the carriage ways in some road, which can ensure the traffic speed on road, as well as reduce the noise and tail gas emission.

Ecological environment: The carriage ways will be planned and divided. The 1000 street trees on both sides of above-mentioned road section need to be transplanted, which concerns the elm, poplar, willow and Chinese ash with average tree's life of 5 to 20 years. For the safe traffic consideration of BRT and social vehicles, the amount of green land and transplanting trees will be reduced according to For's plan for road section. Before the transplanting, the survey on the soil and water sources in related area concerning the transplant will be made firstly, and at the same time the principle of transplanting to nearby area should be followed, like the bush will be mainly transplanted to the green land nearby, the trees with 5cm-15cm DBH(Diameter at Breast Height) will be directly transplanted in arterial road and secondary trunk road as the street trees. For the trees over the 15cm diameter will be transplanted to the tending base, in which the trees is under the special care and protection. For guarantee the trees' surviving rate, the excavation during the transplanting will strictly follow the related standard that regulated the earth ball-plant should be 3 to 4 times more than tree trunk's diameter. To guarantee the surviving rate. After the above-mentioned measures are adopted, the project's impacts on the ecological environment are within the acceptable range.

Conclusion: Based on the safe traffic of BRT and social vehicles, the expansion work of carriage ways has been reduced as far as possible in FSR for reducing the project's negative impacts on urban ecological environment. So it is suggested in this EIA report that the FSR's plan should be adopted. The trees removed from the project site should be used on the greening of fell or transplanted in nearby area, which can reduce the loss of trees and economic cost.

6.3 Plans comparison and selection for Public Transport Improvement

The bus station's location only has one alternative , there is no selection and comparison for the bus stations in FSR.

According analysis of environmental positive or negative impacts for the stations site selection, as well as the analysis on stations serving function, the 2 stations sites selection are all reasonable . The details can refer to Table 6.3.1.

Table 6.3-1 Site selection analysis

No.	stations	sites	conclusion	Photos
1	Integrated bus stations in Yining economic park	Crossing of Yinan street and No.1 alley of Yinan street	It locate in Yining economic park, fulfill the requirements on CNG refill and bus maintenance in the economic park. Now it is governmental reserved land. No housing removal. Site selection is rational.	
2	Integrated bus station in South Bank New Developing Area	Crossing of Muzaerte road section and Sanduan road	It locate in Yili river south bank area, fulfill the requirements on CNG refill and bus maintenance in the economic park. Now it is governmental reserved land with crops. No housing removal. Site selection is rational。	

6.4 Bus facilities analysis and suggestions

Bus is part of urban public infrastructure, and the important traffic approach for urban residents. During its design and construction, the humanization should be taken into the consideration.

The intensive passenger movement are in the integrated bus stations. The public toilet has been designed in the FSR. It is suggested to increase the number of women toilet's squatting pan in this EIA. The proportion of men squatting pans and women squatting pan is 4:6. The seats in the waiting hall will be increased to ensure the comfort of passengers. It is suggested that granite slab should adopt the fired slab paved outside of terminal station, which can prevent the skid of passengers.

7.Public Participation

7.1The Objective and Approaches of Public Participation

In light of the requirements of environmental protection regulations of China and the World Bank's environmental assessment policy (OP4.01), public participation should be involved in the activities of the project.

The public participation in environmental assessment of the project facilitates the local people to know the project closely and timely, and its impacts both in positive and negative aspects. It would collect their ideas and suggestions. It is helpful to find out the means based on the public interests, making the assessment sound and justice, assuring the project performance being carried out smoothly and unperturbedly, lessening the debate about pollution might be happened during the performance and running henceforth.

Based on the rules and regulations in the 'The Environmental Protection Law in PRC','The Assessment of Environmental Issues in PRC','The Provisional Measures for Public Participation in Environmental Assessment in PRC'and the policy of World Bank OP/BP4.01 and its attachments, as well as in reference of the experiences from the domestic similar projects , the assessment has been made by means of following means: site visit, collecting written information through questionnaire, and holding information disclosure meetings to know their worries and explain to them the measures taken to alleviate the environmental troubles.

Two times of public comments collection and two times of information disclosure were determined by the EIA team for the purpose of making the sufficient understanding about the public satisfaction level for project environmental impacts and mitigation measures

7.2 Information disclosure

According to the Provisional Measures for Public Participation in Environmental Impacts Assessment in PRC and Xinjiang EIA Public Participation Management Interim Regulation, the information disclosures have been made for 2 times.

7.2.1 The first information disclosures

7.2.1.1 Internet notification

The notification is made in Xinjiang EPB website for 10 days, which is from 21st June of 2016 to 4th July of 2016.

Public information disclosure consists the name and contact message of EIA agency,

main contents and procedure of EIA, EIA approval procedure, and the public responding approaches, which meet the requirements of Provisional Measures for Public Participation in Environmental Impacts Assessment in PRC and Xinjiang EIA Public Participation Management Interim Regulation. The first information disclosure through the internet can refer to Figure7.3-1.

Figure7.3-1 First information disclosure through the internet

7.2.1.2 Media notification

EIA team make the notification in Yili Evening Newspaper for the project's EIA on 24th June of 2016,which can be browsed and downloaded for the public . See figure 7.3-2


伊犁晚报

24

广告位招商

自治州安排730万元救灾资金

5654人本周日参加特岗教师笔试

捐赠仪式


20名特殊儿童获24万元受助金

周六天气凉爽 周日气温急速上升

新疆伊宁市城市交通和环境改善项目环境影响评价公众参与第一次公示

7.2.2 Second information disclosure

7.2.2.1 Internet notification

The notification is made in Xinjiang EPB website for 10 days, which is from 28th Dec., 2016 to 12th Jan., 2017.

Public information disclosure consists the name and contact message of EIA agency, main contents and procedure of EIA, EIA approval procedure, and the public responding approaches, which meet the requirements of Provisional Measures for Public Participation in Environmental Impacts Assessment in PRC and Xinjiang EIA

Public Participation Management Interim Regulation. The second information disclosure through the internet can refer to Figure7.3-3.

Figure7.3-3 Second information disclosure through the internet

7.2.2.2 Media notification

EIA team make the notification in Yili Evening Newspaper for the project's EIA on 4th January of 2017,which can be browsed and downloaded for the public . See figure 7.3-4.

新疆伊宁市城市交通和环境改善项目
环境影响评价第二次公众参与公示

7.3 Public feedback

7.3.1 Public feedback scope

In order to gain more public feedback, the targets during the public participation of EIA survey has been confirmed as following:

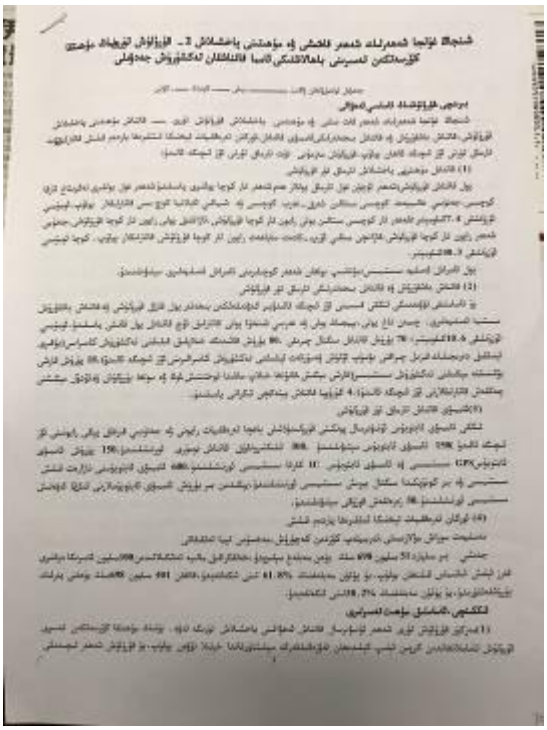
（1）The company or person directly impacted by the project construction
（2）The company or person indirectly impacted by the project construction
（3）related experts
（4）The company or person who care the project construction

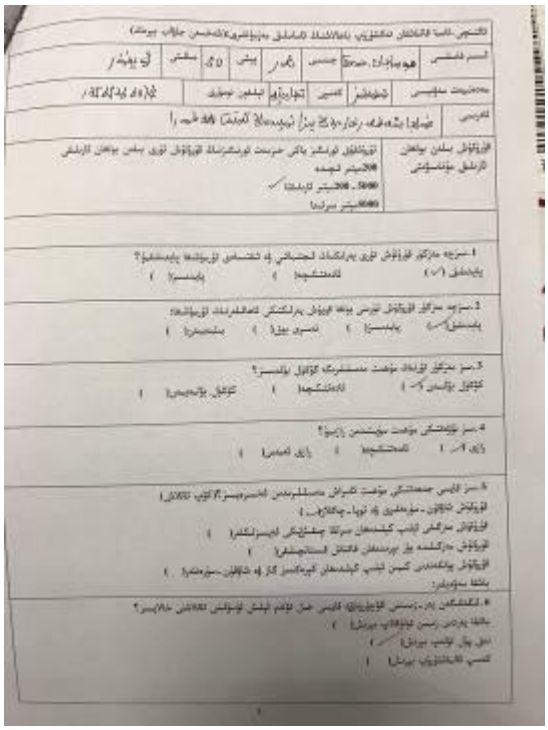
7.3.2 Questionnaire

The issue of Questionnaire is made after 10 working days of the second notification, which is questionnaire filling during site visit and questionnaire investigation through internet. The 485 copies of questionnaire had been issued, which are all gained feedback.

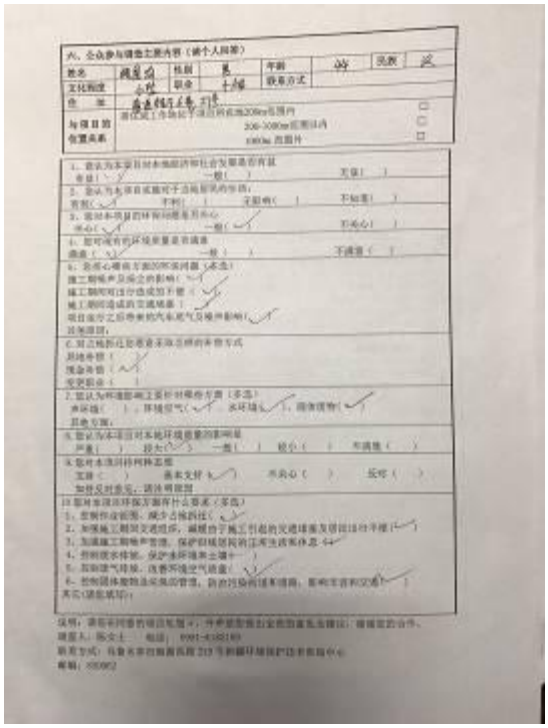
The design of questionnaire has taken consideration of ethnic minorities' distribution along the project site, which is made in Chinese and Uighur language. The respondents covered by the questionnaire survey is made up by the 135 Han people,

226 Uygur, 13Kazak, 107 Hui people and 4 other ethnic minorities. The quantity proportion between the Han people and the ethnic minorities is 29%：71%. The related Table of respondents during the survey can refer to the annex of the EIA.






新疆伊宁市城市交通和环境改善项目II 环境影响评价
公众参与调查表


六、公众参与调查主要内容（被个人问卷）

7.4 Public feedback results

7.4.1 Public feedback

The public feedback can refer to Table7.4-1。（yi9.6.1）

Table7.4-1 Public feedback of notification

Notification time	Notification approach	Feedback
21st June to 4th July of 2011（first）	Xinjiang EPB website	Several phone calls from nearby residents and store owners for querying the construction scope, period.
	Yili evening newspaper	Some inhabitants inquiry the project scope and hope the earlier project construction
28th Dec., 2016 to 12th Jan., 2017（second）	Xinjiang EPB website	No feedback temporarily
	Yili evening newspaper	No feedback temporarily

7.4.2 Public survey results

7.4.2.1 Questionnaire statistics

The public questionnaire are issued to the public with the following statistics as Table 7.4-2.

Table7.4-2 Target group statistics for issuing the questionnaire

Item		persons	percentage %	Item		persons	percentage%
Sex	Male	218	45	Age	18-30	82	17
	Female	267	55		31-50	269	55
Education	College or above	124	25		51-70	115	24
	High school	57	12		More than 70	19	4
	Junior school	187	39	occupation	farmer	109	22
	Elementary school	117	24		Community officer	76	16
					Self-employed person	219	45
Ethnics	Han	135	28		others	81	17
	Uyghur	226	47				
	Hui	107	22				
	Kazak	13	2.5				
	Others	4	0.5				

7.4.2.2 Questionnaire statistics results

The issue of Questionnaire is made after 10 working days of the second notification. The 485 copies of questionnaire had been issued, the feedback statistics can refer to Table7.4-3.

Table 8.4-1 The conclusion of public feedback in questionnaire

Questions	Public feedback
1. Will the project benefit the local economy and social development?	Yes, it will ： 445persons，92%
	Just so so：40persons，8%
	No, it will not：0persons，0%
2. What do you think the project's impacts on the local people's life?	benefit：450persons，93%
	Not benefit：0 person，0%
	No impacts：19persons，4%
	No idea： 16persons，3%
3. Do you care about the environmental issues of the project?	Care：397persons，82%
	Just so so： 85persons，17.6%
	Do not care：3persons，0.4%
4.Are you satisfied the current environmental quality?	Satisfy ： 174persons，36%
	Just so so：252persons，52%
	Not satisfy：58persons，12%
5. What environmental issues do you care about?	Noise and dust pollution during construction：445persons，63%
	Inconvenient traffic during construction：319persons，66%
	Traffic jam during construction：300，62%
	Tail gas and noise during operation：183persons，38%
6 What kind of compensation for land occupation do you want?	Compensation in other cities：103persons，21%
	Cash ： 334persons，69%
	New job offer：48persons，10%
7. What will the environmental impacts of the project mainly on?	Acoustic environment：334persons，69%
	Ambient air：348persons，72%
	Water environment：189persons，39%
	Solid waste：242persons，50%
8.What do you think of the potential environmental negative impacts of the project on ambient air quality?	Seriously big： 16persons，3%
	Big： 121persons，25%
	Common ： 227persons，47%
	Small：106，22%
	No idea：145persons，2%
9. What is your attitude for the project development？	Support：319persons，66%
	Basically support：107persons，33%
	Do not care：59persons，1%
	Oppose：0 person, 0%
10. What is your suggestions on the environmental protection work of the project?	control construction scope and reduce house removal and resettlement：189persons，39%
	strengthen the traffic organization, mitigate the traffic jam and residents' traffic inconvenience during construction：382persons，79%

	Strengthen the construction noise control to ensure the residents normal life and rest nearby：300persons，62%
	control sewage discharge, protect water and soil environment：136persons，28%
	control waste gas emission and improve the air quality：194persons，40%
	prevent and control the solid waste pollution on road, traffic and city appearance：276persons，57%

The second public feedback shows：

（1）92% respondents agree that project benefit the local economy and social development；8% respondents think the project have nothing to do with the local economy and social development；

（2）93% respondents agree the project can benefit on the local people's life，3% think the project has nothing to do with the local living standards.4% have no idea on what kind of change the project's operation will bring for the local.

（3）36% respondents think the overall local environmental quality is good, 52% think it is ordinary, and 12% respondents regard it is poor.

（4）72% respondents think the construction will pollute the ambient air, and 69% respondents think the construction noise will have negative impacts on acoustic environment.

（5）69% respondents hope to gain the proper cash compensation, 21% respondents hope to gain the compensation in other cities，and 10% want to gain the new job offer as the compensation.

（6）66% respondents totally support the project construction, 33% express they basically support, and 1% express their careless.

7.5 Adoption and response for the public suggestions

According to the public survey results, respondents generally believe that the construction of the project has significant social benefits and economic benefits, which can promote the sustainable development of the regional economy and play a positive role in promoting the local employment.

When the respondents were asked about their specific recommendations and requirements, most respondents expressed the environmental protection should be given enough attention during construction and the intensity of environmental protection should be increased. It cannot make the environmental loss for the immediate economic benefit, in addition, the project's construction should match with the local economic and ecological growth.

The respondents not only expressed their views on the environmental impact of the project construction, but also give the valuable suggestions on the operation of the project. The suggestions are summarized as the following:

（1）The project implementation must strictly comply with the laws and

regulations of national environmental protection, and strengthen environmental risk management, control environmental pollution.

（2）During the construction and operation period, it should be carried out the ecological environment protection measures put forward in the EIA to minimize the destruction on vegetation and ecological environment.

（3）Pay attention to environmental protection, strengthen environmental protection design and management, improve the greening

For above public feedback and cares, the EIA agency explain to the public the environmental protection measures taken in this EIA one by one. After the communication, basically all the surveyed people expressed their support the construction of the project.

8.Environmental management and monitoring plan

8.1 The obligation and arrangement of environmental management agency

According to the Environmental protection law of the People's Republic of China and Ordinance on Administration for Environmental Protection of Construction Projects, the EIA report of this project should be approved by the EPB of Xinjiang Uygur Autonomous Region. So the EPB of Xinjiang Uygur Autonomous Region is the environmental management agency of this project with the obligations of providing the environmental protection requirements based on this EIA, coordinating the environmental management of different branches, and organize the acceptance check for the implementation of pollution prevention and control measures during the project design, construction and operation periods.

The Yining Municipal Government has given high priority and strong support to this proposed IBRD project. A Project Steering Group has been established, and the Project Management Office (PMO) is already in place under the control of Yining municipal construction bureau. The PMO take charge the guidance, supervision and coordination for the project and is directly responsible for the World Bank.

The Yining Foreign Loan Project Office takes charge the organization of feasibility study, environmental planning, coordinating the relationship between the environmental management agencies and construction contractors, direct the execution of all management measures, the environmental management during the environmental planning and designing period, checking the execution of environmental protection measures during the construction, checking the execution of environmental protection measures during the operation period.

The Yining monitoring station is assigned by Yining Foreign Loan Project Office to take charge the regional environmental quality during project construction and operation period.

The specialized environmental managers has been indicated in Yining Foreign Loan Project Office, who take charge the environmental management in every phase of this project, and carrying out the environmental plan, checking the execution of environmental protection measures, promote the advanced environmental protection techniques and experiences, organizing the environmental training to improve the staff’s quality. Due to the different contents and duration for environmental management during construction and operation period, the individual agencies for environmental management for project construction and operation. After construction is completed, the environmental management agency for project operation can take over. But the two agencies can be allowed to have a certain period for transferring the

related work or duties. The environmental management system，including Yining Foreign Loan Project Office，construction unit，environmental supervisor and monitoring agency, can refer to Figure 8.1-1.

Table 8.1-1 Institutional Arrangement and Environmental Management Responsibilities

Period	Institutions	Environmental management responsibilities	Staff
Design preliminary period	Xinjiang EPB	Approving EIA documents	1
	Yining Foreign Loan Project Office（Project owner）	（1）Take charge the overall environmental management, and make the related regulations （2）Ensure that the environmental management plan is included in the bidding document for construction and construction contract （3）Ensure the environmental management plan is included in project supervision bidding document and project supervisor contract	1
	Xinjiang architectural design and research institute Co., Ltd（project designing agency）	Providing technical support for environmental management	1
	Xinjiang Tianhe Environmental Technology Consulting Center（EIA agency）	Proposing the environmental management plan (EMP)	5
Construction period	Yining Foreign Loan Project Office（Project owner）	1. Supervise the pollution prevention and control measures taken charge by contractors. 2. Supervise and participate environmental supervision works 3. Employ the environmental consultant to give the technical support for the environmental protection in construction, provide the guidance for the contractors on environmental protection, and train the supervisor, project manager and contractor on environmental protection knowledge. 4. Assign the agency for environmental monitoring during construction. 5. Deliver the EMP execution report to World Bank every half year	1
	Contractor	1. Implementing this EMP and other environmental protection measures 2. Conducting environmental protection training for construction staff	1
	Supervisor for this project and environment management	1. Conducting regular supervision to ensure the implementation of environmental protection measures 2. Recording the implementation of environmental protection and problems in monthly supervision reports	1
	Yining Environmental Monitoring Station	Environmental monitoring during the construction phase and environmental	1

		monitoring for accidents	
	Yining municipal EPB	Examining the environmental management during the construction phase	1
	Yining Cultural Relics Bureau	check the cultural relics protection	1
	Yining Ethnic and Religious committee	check the impacts on religious activities during construction	1
Operation period	Yining Foreign Loan Project Office（project owner）	The same responsibilities as that in the construction phase	1
	Yining Bus Company, Yining Municipal Construction Bureau	1、Implementing environmental protection measures and this EMP 2、Ensuring the normal operation of environmental protection equipment	2
	Yining municipal EPB	1、 Organizing the approval of the completion of environmental protection equipment according to “Three Simultaneousness” requirement 2、 Examine the environmental management during operation period	1
	Yining Environmental Monitoring Station	Environmental monitoring during the operation phase and environmental monitoring for accidents	1
	Yining city planning bureau	Control the further development of environmental sensitive buildings or organizations on both sides of road.	1

8.2 Environmental impacts mitigation measures

Based on the EIA report, domestic related laws and regulations, and the Environmental health and safety general guidelines of World Bank, as well as refer to the similar developing experiences from other domestic projects and IBRD projects, the related environmental impact mitigation measures have been concluded in this EIA for project design, construction and operation period. The details can refer to Table 8.2-1~8.2-3.

Table 9.2-1 Mitigation measures for initial project designing and preparing period

Activities	Main negative impacts	Mitigation measures	Implementer	Supervisor	Cost estimate（10,000RMB）
Tender	/	EMP should be made in the bidding document for further execution, as well as in the construction contract.	Yining Municipal urban traffic research center	PMO	0
Road alignment	reduce the impacts on vegetation in urban area	（1）Consider the continuous use of the existed road cross-section in the further design of road, and keep the existed green belt. （2）The carriage ways need to be redesigned and divided, and 1000 street trees need to be transplanted on both sides of above-mentioned roads. The project total budget should include the replanting fee for trees.	Xinjiang architectural design and research institute Co.	PMO	0
Alternatives comparison	site and route selection, layout issue	（1）reduce the expansion work of carriage ways as much as possible for reducing the impacts on urban ecological environment （2）The intensive passenger movement are in the public transit hub and terminal. The public toilet has been designed in the FSR. It is suggested to increase the number of women toilet's squatting pan in this EIA. It is suggested that granite slab should adopt the fired slab paved outside of terminal station, which can prevent the skid of passengers.	Xinjiang architectural design and research institute Co.	PMO	0

Activities	Main negative impacts	Mitigation measures	Implementer	Supervisor	Cost estimate（10,000RMB）
Public participation	Environmental issues the public care about	（1）The safe street crossing facilities should be equipped in the station near the school. Both overbridge and underground passage should be equipped with lighting system, and be adopted the anti-skidding and rainfall flow backward prevention measures for safety. The road construction near the school should be intensive arranged in the weekend. The construction material's transport route should be arranged with the distance that is far away from the school. （2）The feedback opinions from the mosques along project site are mainly like the following: firstly the construction should be civilized. Secondly the natural gas water supply and heat supply pipelines should be coordinated accordingly during the road construction. The water cleaning ceremony in mosque should be guaranteed from the aspect of water supply. Thirdly the sidewalk should be reserved for the traffic convenience for believers going to mosque periodically .	Urumqi Municipal integrated urban traffic research center	PMO	0

Table10.2-2 Mitigation measures in construction period

Activities	Main negative impacts	Mitigation measures	Implementer	Supervisor	Cost estimate（10,000RMB）
The front construction period management	Social environmental impacts due to construction	（1）Make the notification in the Bulletin board in the region along project route. And strengthen the publicizing among the inhabitants and set the bulletin board in construction site, let them know the meaning of project construction. Deliver the information of land acquisition and resettlement policies to gain more support from the public and their understanding for the temporary intervene of project construction. （2）Limit the construction scope strictly, forbid the enlarging of land use for project construction. （3）Periodically cleaning and flushing the construction site to keep the neat and clean on site. （4）Keep a safety way for 12 schools impacted during the construction, and guarantee the normal pass in and out of school bus. Or arrange the construction period on the summer holiday of school to reduce the threaten on the traffic safety on children in school as far as possible. Those 12 schools include: No. 14 junior high school of Yining, No. 29 elementary school in Kaerdun town, Jiligelang village dazhong bilingual kindergarten, No. 19 junior high school of Yining, Yining shiyan junior high school, Yining yifu elementary school, Yili Prefecture shiyan junior high school, Yining shiyan elementary school in the extension of guangming street, Yili technician training school, Yili teacher training school, bayandai central elementary school, elementary school of bayandai village.. （5）Strengthen the cooperation with local traffic management departments. Make the proper plan for construction materials transportation on existed road; coordinate with the local government to prevent the traffic jam. Guarantee the smooth and normal running traffic with the support of Public security traffic management department if necessary. Notice the public in advance though broadcast, TV or newspaper. Make the proper transportation route and try to avoid the school and dense residential area, for the purpose of mitigate the impacts and potential pollution on local residents. （6）The temporary bridge should be placed for the school students and patients at the gate. The scaffold should be surrounded with dense mesh enclosure to ensure the safety of the pedestrians. （7）The construction floodlight at night should be placed in proper height and direction to avoid the interruption on inhabitant’s rest at night.. （8）Before the construction, the existed public facilities, such as road, power supply, communication device should be investigated and got to know by the construction contractor. The contractor should confirm the displacement, resettlement, and emergency plans to ensure the regular running of society. (9) Confirm the relic finding with the related institute （10）Strengthen the training, supervision and management of construction workers. Actively promote the civilized construction.	contractor	Project supervisor , PMO	10

Urban road and alley construction	Impacts on public traffic, and inhabitants daily life and work	（1）The construction contractor should communicate with Public security traffic management department to control the traffic volume, and direction properly, as well as the actual fulfillment of the traffic dispersion duties. Reduce or stop the transportation for the project at traffic peak time. For the purpose of reduce the traffic volume and noise. （2）Make particular mitigation measures for public traffic for each blocking area. Provide the convenience for the vehicles along the villages, teams or bus stations to enter the highway on daily traffic demands. （3）Leave the access road in crossings, gate of hospitals and schools to ensure the regular work of inhabitants in those working places. The road block facility and warning sign should be equipped.	contractor	Project supervisor , PMO	20
	Impacts on relics	(1) The construction personnel training should be made properly to prevent the man-made destruction. For the construction near the relict protection area, the management should be strengthened to forbid the entering into the relics boundary. (2) For the construction near the relict protection area, the low vibration machinery should be selected, if necessary the manual excavation should be made during construction. (3)Once finding the relics during construction, the protection on the relics should be made according to Cultural relics protection law of the People's Republic of China, and report the related relics management departments for further identification and action. After those and get the related confirmation the further construction on this place can be continued.			
	Impacts on cultural resources	（1）The construction staffs should respect the related customs of minority. The related introduction on minority’s custom and manners should be made among staffs. The staffs should pay attention to the sanitation of site, and the dispose of domestic waste. Forbid the upper body naked of construction working staffs due to the hot weather in the minority residential area to avoid the dissatisfaction of local minority.。 （2）Pay attention to the traffic safety facilities near the four mosques, including the dunmaili mosque in the extension of xinhuaxi road, bayandai Hui nationality mosque in xincun road, the bayandai Uygur mosque, bayikule village mosque in the extension of shengli street. （3）Along the some sections of project route, there are several residential areas with mainly minority population and mosques. Some seniors go to mosques on foot for several times every day. It is relatively dark outside for the night and morning, in addition, more Believers will go to mosque to do the religious activities on Friday. So the related lighting system and protective guard on construction position should be placed. Or quicken the construction schedule to reduce the impacts on local public traffic. （4）The caution sign should be written in simple words or signal. The notification of project construction should be written in Chinese and Uygur language.			

	Impacts on the historic cities and blocks	(1) Protect Tiechanggou branch channel and Piliqing River near the Huining historical city; (2) Strengthen the landscape along the channel in the historical cities, increase greening works along the channel ; (3) Protect the Huining city's wall relics, keep the natural landform and terrain inside; (4) Maintain the following alleys' names and original direction among historical and cultural blocks, for Qianjin street, there are No.3 alley, No.5 alley, No.6 alley, No.7 alley, No.10 alley; for Shengli street, there are No.2alley, No.3Alley, for Hashi street it is No.5 Alley; for Yili street, there are No.4Alley, No.5 Alley, No.6 Alley, No.10Alley, No.12alley, No.13alley, for Ayidun street, No.2 alley, No.3 alley, No.4 alley; for guoyuan street, No3 alley, No.4 Alley, No.7Alley, No.6 Alley, No.8 Alley. For above-mentioned alleys, the expansion of road is forbidden for keeping the traditional streets landscape. (5) The original names and the directions of the following streets in cultural blocks should be maintained, including in Ayidun Street, Yili street, Qianjin Street, Qianjin Street No.4 alley to Kashi street No.5 alley to Kashi street No.6 Alley. Widening the bottleneck section,and the road red line width should be controlled within 10 ~ 12 meters; the road red line width should be controlled within 8 ~ 10 meters in Yili street and Ayidun street, the road red width should be controlled within 6 ~ 8 meters for section that start from Qianjin Street No.4 alley to Kashi street No.5 alley to Kashi street No.6 Alley. The traditional street landscape should be kept. (6) The original names and the directions of jiefang road should be maintained in cultural blocks, keep the current traffic connection between Jiefang road and Ningyuan road; The original names and the directions of the following streets in cultural blocks should also be maintained, including Sidalin street, Jiefangnan road, Hongqi Road, Hongqi Street, and Qingnian Street. Keep the roads layout both inside and outside of the ancient city. (7) Protect channels, water body and green landscape of historical and cultural. Except the change of some channel's direction for planning road's construction. other existing channels' direction should be kept the original to ensure the smooth flow. (8)Protect ancient and famous trees in historic and cultural blocks.Maintain the local characteristics of garden greening and road greening in Yining.			
	Impacts on infrastructure	The sufficient communication should be made on extra traffic dispersion and directing during construction period. The damaged road due to the construction should be repaired immediately or give the compensation money to local road management departments to repair.			

road and bus depots construction	On cultivated land and agricultural production	（1）Keep the mellow soil in local farmland; collect the surface mellow soil in permanently or temporarily occupied land. After construction, the related cleaning, loosing, covering with the mellow soil, second plowing or choose the proper plants for replanting and recovering vegetation. （2）The construction activities should be limited within the land acquisition scope when it is near the farmland. The access road or temporary occupied land should use the existed road for reduce the farmland occupation and protection of vegetation. （3）。The temporarily occupied land should be avoid the farmland occupation. After the construction, the vegetation of temporarily occupied land should be recovered. And realize using, leveling, greening, second plowing at the same time.			
Alleys reconstruction and road construction	On street trees and ancient trees	（1）There are 11 ancient trees on site, which should be protected by fence before start of construction. All these is to mitigate the impacts and avoid the occasional damages on the 11 trees during construction. The big excavating machines should be forbidden running near the trees, the small scale machineries and manual construction should be selected to ensure the safety of the ancient trees. （2）The trees and flowers that tend to be impacted during construction should be transplanted in Yining urban area with completed construction, and try to guarantee the survival rate. The area with permanently damaged trees and flowers should be replanted and recovered. （3）The lawn and the flower bed should be placed on Road isolation belt and near the buildings, as well as the ever-green arbors. That is for the supplement for the demolished green area during construction. （4）Entrust local forestry department transplant the trees impacted by the land occupation in the nearby area.			
Alleys reconstruction and road construction	On landscape	（1）The road construction should be made within the red line, the stack of earth and building material is forbidden to occupy the nearby greenbelt in order to maintain the urban ecological landscape. （2）During the construction, the sequential start of construction in planning area will be made for avoiding the disorderly landscape. The Construction baffle can be used as the fence to mitigate the impacts on landscape.			

Raised dust and waste gas produced by machineries	Impacts on ambient air quality and inhabitants' daily life and work along the project	（1）The surround wall or simple enclosure should be built before construction to avoid the dust spreading, such as the enclosure made by corrugated plate or PP cloth with the height of 2.5-3.0m surrounding the construction site. （2）The periodically cleaning, spraying on the sensitive road section that transport vehicles pass by should be done to avoid the secondary dust pollution. It is required that each construction road section will be equipped with one watering cart. And the water spraying times will be determined based on weather. The basic principle is once during 9：00-10：30 , once during a13：00-14：30 and once during 19：00-20：30. Those period belong to the traffic peak time （3）Some construction materials as gravel, etc can result in the raised dust possibly. The stack for those construction material should be categorized and with the height of less than 0.7m. The dense mesh and other enclosures should cover those construction materials. （4）Choose the enclosed bitumen mixing device with dust and gas removal function to meet the related standards of cleaner production. After the construction the cleaning work for bitumen mixing should be made, the related waste produced during the bitumen mixing process should be recycled and incinerated by the bitumen supplier, or transported to the landfill indicated by local EPB. It is forbidden that reuse the waste as the fill for backfill works on project site. （5）The machineries and transport vehicles must comply with the National health protection standard to ensure the tail gas emission under the limit value. The transportation for the project should miss the rush hours and proceed at night for large amount of or urgent transportation. （6）For the earthwork management for backfill, the related measures should be made, such as surface press, periodically spraying and covering, etc. The extra earth or dreg should be cleared from the project site in time to avoid the long term pile. The totally enclosed construction approach should be adopted to prevent and control the dust pollution. The access permission should be issued only for the transport vehicle that loads waste, dreg or gravel. Those vehicles should be flushed for removal of mud and covered to avoid the leakage along the road. （7）For the trucks transporting construction material and earth, the tarpaulin, canopy or other measures that can avoid the left or leakage should be placed on the trucks for covering. Make the proper transport route and schedule to avoid the transport occurring in the central area, traffic intensive area or the intensive residential areas. For the areas with high-demand on environmental quality, the transport should be arranged at night. The earth left on the roads during transportation should be cleared at once.			10

Construction vehicles transportation, piling and tamping pavement	Noise impacts on nearby schools or residents, etc.	（1）Choose the machineries with low noise or sound insulation device. （2）Arrange the construction time properly and shorten the construction duration as short as possible. Avoid the utilization of noisy machineries at the same time in the some place. For some individual site with severe noise pollution, the temporary Sound insulation palisade structure or the noise barrier with the function of noise absorption should be equipped on site. （3）Civilized construction, the proper maintenance, repair and manual operation should be done for the construction machineries and power engines to reduce the noise emission during construction. （4）During the period of 24:00-8:00, the running of machinery with intense noise is forbidden. （5）During the college entrance exam and high school entrance examination, the construction near the schools is stopped. （6）The working staff in construction site should be equipped with private protection device, such as earplug and helmet. The working duration should be controlled according to the labor and sanitation standard. （7）Make the proper transport schedule and route for the transportation of construction materials. Avoid the route going through the towns, collective residential area, schools and other sensitive points. Once passing by the school or towns, the speed should be lowered down and no whistle. Reduce the transport noise impact to lower level on the daily life of inhabitants along the project.。 （8）The construction supervision should supervise the construction noise impact and monitor the noise impact in the nearby residences with certain number of noise measurement devices.			0
layout of construction site and domestic water emission	Pollutants from construction site come into water body	（1）The construction waste water contains large amount of sand and oil material. The direct discharge into municipal drainage pipeline will influence the water quality in whole system. If discharging into soil, the soil pollution will be aroused. So the direct discharge into municipal drainage pipeline for construction waste water is forbidden. Before discharging into the pipeline, the construction waste water must go through the relatively simple treatment. In addition, the direct discharge into surface water body for construction waste water is forbidden. （2）For the waste water from the canteen of project sire, the separation treatment of oil and residue, the waste water can be discharge into municipal drainage pipeline with domestic sewage, and finally flow into the municipal waste water treatment plant.			10

Abandoned earth	Impacts on landscape	（1）Send the abandoned earth, dreg and tile produced during construction and housing displacement to the landfill for construction waste in Yining. （2）Make a proper plan for transportation route and arrange the related road surface repair work for existed road. Some gravel pavement should be prepared in advance for the transportation of the dreg.			
Domestic waste of construction staff	Impacts on health	The domestic waste should be collected in indicated place according to related signed contract. The local environmental sanitation department takes charge the collection for integrated disposal in Yining domestic waste landfill.			
Construction machineries vibration	impacts on nearby schools or residents, etc.	① Forbid running the machineries with high vibration at night. ② Encourage the application of the machineries with low vibration level.			0

Table8.2-4 Mitigation measures during operation period

Activities	Main negative impacts	Mitigation measures	Implementer	Supervisor	Cost estimate（10,000RMB）
exhaust emission	Impacts on environmental sensitive points along road	（1）Strengthen the testing and maintenance of vehicles on road, forbid the vehicles without certified pollutant emission on road. （2）Reduce the dust on road to avoid the secondary dust pollution （3）Strengthen the traffic management, and optimize the traffic signal system in order to guarantee the smooth traffic and exhaust emission during idling of motor engine. （4）Promote the application of clean fuel.	Yining traffic bureau,Yining public security bureau	Yining NDRC	0
		For the further plan in overall city, there will be no new construction of environmental sensitive points, such as residence area, school or hospital along the new-built road.	Yining planning bureau		

Activities	Main negative impacts	Mitigation measures	Implementer	Supervisor	Cost estimate（10,000RMB）
Noise pollution during operation period	Impacts on environmental sensitive points along road	（1）For the different types of vehicles, the traffic diverging and the different routine limit can guarantee the smooth traffic and road's pavement free from damage, as well as for the inhabitants free from related traffic interruption. （2）Strengthen the roads 'maintenance works and keep the good running condition of road for reducing the traffic jam. （3）Strengthen the vehicle's testing and maintenance. （4）Carrying out the new national emission standard for vehicles. （5）Strengthen the execution of vehicle annual inspection, road inspection and sampling testing. The traffic management for vehicles should also be stricter in order to control the exhaust emission and eliminate the obsolete vehicles without certified emission on the road. （6）Strengthen the sampling test among households for vehicle. （7）Make the traffic scientific management. Enhance the road capacity and vehicle traffic speed to reduce the exhaust gas in a maximum level. （8）The actual greening works should be done on both sides of roads. Make the supplement for the occupied forest and vegetation in project construction. The low shrubs and high broad-leaved trees form the main forest belt, which will be the most important road with the landscape background. The related acoustic noise isolation and reduction can be realized at the same time. （9）Yining belong to the north city in China, the windows on building are all adopted the double-glazing with acoustic good efficiency of more than 25dB. The project has taken the acoustic window's cost into budget for one million RMB. After the project is implemented, the actual noise monitoring result will be made for deciding if it is necessary to install the acoustic window.	PMO, design agency, contractors	Ying EPB, project supervisor	0

Activities	Main negative impacts	Mitigation measures	Implementer	Supervisor	Cost estimate（10,000RMB）
Vehicles moving on road	Impacts on traffic safety	①Increase the traffic signal control points in crosswalk and road safety sign to reduce the potential traffic accidents.	Yining traffic bureau	PMO	0
Waste water emission in depot	Impacts on water body around depots	（1）The waste water in the process of bus repairing or maintenance always contain high content of petroleum substances. This kind of is forbidden to be discharged into the municipal drainage pipeline or spilled in casual manner. In this EIA, it is suggested to increase drying tanks with 20 m^3 in integrated bus stations. After the evaporation and drying, the waste water from bus repair becomes the solid waste that contains mineral oil. So this solid waste belongs to the hazardous waste. The related collection, storage and dispose of the solid waste should comply with the national regulations, and forbid this solid waste to be mixed with the domestic waste and construction waste. （2）Due to the small productivity of domestic sewage for this component of project, the related emission can meet the Grade 3 limit of Integrated Wastewater Discharge Standard GB8978-1996. The domestic sewage will be discharged into the nearby municipal drainage pipeline and finally for the further treatment in Yining east district waste water treatment plant.	contractors, Yining Bus company	Yining EPB	20

Activities	Main negative impacts	Mitigation measures	Implementer	Supervisor	Cost estimate（10,000RMB）
Hazardous leakage or rollover accident	Piliqing river pollution	The water quality for segment of Piliqing river that pass by the Yining city is Category Ⅲ. And the main water environmental function is the drinking water sources. It is necessary to set up the bridge runoff collection system, crash barrier, warning signs and accident emergency lagoon to prevent hazardous leakage or rollover accident polluting the water.	Yining traffic bureau	PMO	30
Solid waste discharge in depot	Impacts on ambient environment around depots	The domestic waste should be collected by the local environmental sanitation department periodically for integrated disposal in Yining domestic waste landfill. The related collection, storage and dispose of the solid waste from public transport improvement should comply with the national regulations. Those solid wastes will be transported to Xinjang hazardous waste disposal center for further disposal and then have no negative impacts on ambient environment.	Yining Bus company		

8.3 Environmental monitoring plan

There are monitoring reports individually for the construction period and operation period. The aim for monitoring is to have a complete and timely understanding of the pollution situation, the environmental quality variation, impacts scope and environmental quality trends during operation. The monitoring information should be reported to the related authority as the scientific reference for making the environmental management plan.

8.3.1 Environment monitoriong agency

In order to ensure various negative environmental impacts to be controlled and mitigated, the whole project cycle should be strictly and scientifically followed and standardized environmental management and supervision should be contacted.

The environmental monitoring duties for different institutions are as following:
During the construction period, the contractors and Yining Environmental Monitoring Station should undertake the monitoring duties. The project supervision company takes charge supervising of monitoring work. The Yining Foreign Loan Project Office take charge the management and be responsible for the experts from World Bank.

During the operation period, the Yining municipal construction bureau and Yining Environmental Monitoring Station should undertake the monitoring duties. The Yining Foreign Loan Project Office take charge the management and be responsible for the experts from World Bank.

Yining and Yili EPB will supervise the monitoring work during construction and operation period, and be responsible for the reports to Xinjiang EPB.

The related capital resource for this is from the project’s construction capital.

8.3.2 Monitorign plan

The monitoring contents for construction and operation period include: the monitoring objects, monitoring indicator, monitoring method, location, frequency and cost. See Table 8.3-1. The monitoring implementing agency is Yining environmental monitoring station.

Table 8.3-1 Environmental monitoring plan

period	Monitoring object	Monitoring location	frequency	Monitoring method	implementer	Capital source	Monitoring fee（10^4 rmb）
Construction	Noise, dust	Alleys in Sidalin street：Yining No.17 elementary school, Yili No.1 high school、Yining No.27 elementary school、Yining No.6 elementary school、Yining No.7 high school； Alleys in Jiefang road：Yining No.16 elementary school、Yining No.2 elementary school、Yining No.2 high school Alleys in Nanshi area：Yining No.12 elementary school Alleys in Kazanqi area：Yining No. 5 high school、Yining No.4 high school、Yining No.15 high school、Yining No.31 elementary school Beijing road：Yining No.3 high school Xinhuaxi road：Disishi hospital Huaguoshan road：huaguoshan village Tianshanhou street：Tiancheng apartment Shenglinan road：Yining Renmin hospital Sidalinxi street：Yining sanitary hospital Sidalindong street：Yili lvzhou hospital Beihuan road：dongchenghuayuan apartment	1 time quarterly or start after receiving complaint	The noise should be monitored according to Annex C: Noise monitoring method for sensitive buildings in Standards for acoustic environmental quality（GB3096-2008） The dust should be monitored according to Environmental Monitoring Technical Specifications	Yining environmental monitoring station	Project construction capital	10.0

Operation period	NO_2、TSP、PM10、SO_2	Two ambient air quality monitoring sub-station	auto monitor	Monitor according to Environmental Monitoring Technical Specifications air section	Yining environmental monitoring station	Governmental fund support	/
	pH、BOD_5、COD、NH3-N、SS, Oil type	Sewage discharge outlet of integrated bus stations	Once a year	Monitor according to Environmental Monitoring Technical Specifications surface water and waste water section	Yining environmental monitoring station	Project operation capital	2.0
	Noise L_{Aeq}	1m scope away from boundary of integrated bus stations	Once every half year，	Monitor according to the measurement guide in Emission limit standard of environmental noise within the boundary of industrial enterprise and factory（GB12348-2008）	Yining environmental monitoring station	Project operation capital	0.5
	Noise L_{Aeq}	Alleys in Sidalin street：Yining No.17 elementary school, Yili No.1 high school、Yining No.27 elementary school、Yining No.6 elementary school、Yining No.7 high school； Alleys in Jiefang road：Yining No.16 elementary school、Yining No.2 elementary school、Yining No.2 high school	Once every half year，	The noise should be monitored according to Annex C: Noise monitoring method for sensitive buildings in Standards for acoustic environmen	Yining environmental monitoring station	Project operation capital	20.0

		Alleys in Nanshi area：Yining No.12 elementary school		tal quality（GB3096-2008			
		Alleys in Kazanqi area：Yining No. 5 high school、Yining No.4 high school、Yining No.15 high school、Yining No.31 elementary school					
		Beijing road：Yining No.3 high school					
		Xinhuaxi road：Disishi hospital					
		Huaguoshan road：huaguoshan village					
		Tianshanhou street：Tiancheng apartment					
		Shenglinan road：Yining Renmin hospital					
		Sidalinxi street：Yining sanitary hospital					
		Sidalindong street：Yili lvzhou hospital					
		Beihuan road：dongchenghuayuan apartment					

8.4 Training plan and budge

For the purpose of smooth project development and operation, it is necessary to train all the staffs, especially the construction staffs on the environmental protection knowledge and technical skill. Except the general introduction of the importance and meanings for this project, for staffs in different position the emphasis of training content should be different. The training method will adopt the domestic approaches according to different importance on the position of management and environmental protection. The detailed training plan can refer to Table8.4-1.

Table8.4-1 Training plan

Staff	Training content	Training method	Persons	Days	Budget (10^4RMB)
Contractor and environmental engineer on site	（1）EMP requirements and the related measures. （2）Introduction of environmental sensitive area along the project site and	Domestic training	2 Persons For every construction phase	4	8.0

	other area near the project （ 3 ） Waste management in construction camp and site. （4）Regulation for breach of law, and the penalty for breaking the law or regulations （5）Cultural heritage issues （6）The simple noise self-monitoring method and noise pollution control measures in construction				
Project and environmental protection supervisor	① study the environmental policies of World Bank ② EMP requirements and the related measures ③ Environmental regulation, construction plan, supervision details concerning the construction activities ④ Intensive study, including the environmental protection details indicated for contractor, the monitoring specification edited by technical expert on environmental protection, and the environmental impacts and the items that related monitoring	Domestic training	1 or 2 Persons For every construction phase	5	5.0

	request. ⑤ ambient air monitoring and control technique, acoustic noise monitoring and control technique				
Environmental management staff in contractor	Above mentioned contents, and the EMP measures in operation period, as well as the environmental facilities' operation and maintenance.	Domestic training	2-4	5	3.0
Senior environmental management staff, senior environmental engineers	Above mentioned contents, The foreign advanced environmental management experiences on traffic project and noise control approaches	Domestic training	4	5	5
Total					21.0

8.5 Reporting system and requirements

The contractors, operator, monitoring agency and environmental supervising engineer should report the project development condition, EMP execution and environmental monitoring result, etc. to the related department. The reporting contents mainly including six parts as follows:

（1）The project environmental supervising engineer should record the detailed execution of EMP monthly. And submit the weekly report and monthly report to PMO. The weekly report and monthly report should include the introduction of environmental protection measures' implementation, implementation of environmental monitoring and monitoring data.

（2）The contractor and Yining municipal construction bureau should record the implementation of EMP in detail. And make the quarterly report as the submission to PMO.

（3）After completing the monitoring duties, Yining environmental monitoring station should submit the monitoring report to Yining Foreign Loan Project Office. The monitoring report should consist the motoring points, sampling time and monitoring factors. The description on whether or not the mentoring data meet the standard and the reason for exceeding the limit value should also be made in the report, as well as the analysis and assessment on the monitoring results.

（4）PMO and the expert should assess the effect of mitigation measures execution, and discuss with the project supervisor and EIA team for correcting the ineffective mitigating measures.

（5）Once the complaint on environment occurs, the environmental supervising engineer and PMO should report it to local EPB, or report to the authorities class by class if necessary.

（6）The EMP implementation report for this year should be completed and submitted to World Bank before 31st March of next year

The main contents of EMP implementation report include:

a、Implementation of tainting plan

b、Project development introduction, such as road length that has been completed in construction, and the construction progress of bus depots

c、the implementation of environmental protection measures, or environmental monitoring progress and main monitoring results.

d、Check if there is public complaints, once the complaints occurs, the main contents of complaint should be recorded, as well as the further solution and public satisfaction for it.

e、EMP implementation schedule for next year

8.6 Completion acceptance for environmental engineering

The project design should emphasize the prevention and control of “three wastes” as waste gas, waste water and solid waste, in order to realize the certified waste pollutant discharge. According to Technical Guidelines for Environmental Protection Check and Accept of Completed Project, the contractor should apply for the checking and accepting of this project made by EPB and make the monitoring plan at the same time. Once the application has been approved by EPB, the project’s Environmental Protection Check and Accept procedure can be initiated after the following data and documents has been prepared. See Table8.6-1.

Table8.6-1 The document list for Environmental Protection Check and Accept of Completed Project

Components	Pollutant	Environmental protection facility	Pollution prevention and control measures	Items for checking and accepting	Quantity	Acceptance standard
Urban Road Improvement and Construction	Waste water produced from the maintenance and repair of bus	Impermeable drying lagoon	Evaporation of waste water	-	Bus integrate station 是	
	Noise	Noise reduction, isolation, insulation facilities	Independent room for power engines	L_{Aeq}	Bus hubs	Industrial enterprise factory emission of environmental noise within the boundary（GB12349-2008）Type Ⅱ
	Domestic waste	Garbage bin	Sorting in different trash bag	100% collected and transported by environmental sanitation department		
	Green		bush and arbor match in certain percentage near the depots	The green area meet the requirements of design		
Public Transport Improvement	Noise	Speed limit	Noise reduction near residence house and school	L_{Aeq}		Standards for acoustic environmental quality（GB3096-2008）Type 2 and 4a

8.7 Environmental investment estimation

In order to realize the two win between environmental protection and economic construction, a series of environmental protection measures have been adopted in the development of this project. The total investment is 900,948,900RMB. The investment on environmental protection of this project is 6,335,000, occupying the 0.70% of total investment. The details can refer to Table8.7-1.

Table8.7-1 Environmental protection investment

	Measures	Budget (10^4RMB)	Remark
Ecological environment protection	Green project ,Replanting young trees, protection of ancient trees	200	listed in project cost
	Keep the mellow soil	10	listed in project cost
Air pollution prevention and control	dust removal by water spraying and dust prevention	10	Existed urban watering cart
Noise pollution prevention and control	The sign of passing forbidden, slow down and no whistling	3.0	New increase
	install the acoustic window	100	New increase
Social environment	Pipeline survey on ground and underground	6	listed in project cost
	notification in media for comfort the inhabitants	4	listed in project cost
	Sign of construction site	5	listed in project cost
	temporary bridge for pedestrians and mesh enclosure	15	listed in project cost
Waste water treatment	construction waste water treatment	5	listed in project cost
	prevent hazardous leakage or rollover accident polluting the water.	30	New increase
Solid waste disposal	abandoned earth and construction material disposal	10	listed in project cost
	domestic waste disposal	2	listed in project cost
	Impermeable drying lagoon	20	New increase
Environmental protection training fee budget	Environmental protection training on related staff of contractor and environmental management agency	21	New increase
Environmental management	environmental monitoring and management during construction	32.5	New increase
	EIA and environmental acceptance	150	New increase
Emergency response	emergency monitoring	10	New increase
	Total	633.5	

9.Environmental impact assessment conclusion

9.1 Overview of Project

The proposed project is Xinjiang Yining Urban Traffic and Environmental Improvement Project that plan to utilize the IBRD loan.

The main components of the project construction include:

Component 1: Traffic Environment Improving Construction.

Component 2: Traffic Management and Road Safety.

Component 3: Institutional Capacity Building.

Component 4: Public Transport Improvement.

The project total investment is 900,948,900RMB, with the application plan of one hundred million US dollars IBRD flexible loan. The construction period is from 2018 to 2022.

（1）Traffic Environment Improving Construction

Traffic Environment Improving Construction mainly concerns 6 trunk and branch roads, 4 alley areas and 3 integrated corridor improvement projects on traffic safety. The 6 trunk and branch roads are totally 11.44km length, which individually are the Tianshanhou Street(feijichang road to shenglibei road), Shenglinan Road(yingbin road to yili road), Sidalinxi Street（amaitijiang street to xinhuaxi road）, Sidalindong Street（jiefangnan road to shenglinan road）, Beihuan road(huaguoshan road to yueliangwan buiding materials market), and Daobeiwei road's extension(tiechanggou village to daoweisan road).

The alleys are individually locate in Sidalin road, Jiefang road, Nanshi area and kezanqi cultural protection area with total length of 34.5km.

The 3 integrated corridor improvement projects on traffic safety concerns the Huaguoshan Road(nanhua road to G218), Beijing road(jiefangxi road to ahemaitijiang street), and Xinhuaxi Road(jiefangnan road to ahemaitijiang street) with total length of 10.6km.

The road maintenance work need to purchase the related machineries for keep the road good quality and complete.

（2）Traffic Management and Road Safety

Include 70 sets of the traffic lights, 89 sets of traffic cameras for shooting the run red lights, and furious driving. 18 sets of monitoring system for monitoring the Retrograde driving, illegal parking，turning right or left or illegal straight forward, and the 4 sets of Traffic guidance screen.

（3）Public Transport Improvement

Build 2 integrated bus stations in Yining economic park and South bank new developing area, purchase 150 buses, install 308 electronic bus-stop board, install 150 GPS for buses and IC system, the monitoring devices and one-button-alarm system

will be equipped on 600 buses. A new set of the Bus intelligent dispatching system expansion will be purchased, as well as 50 charging piles.

（4）Institutional Capacity Building

Institutional Capacity Building mainly include the intensive training, study, discussion, the related technical research and consultation, technical devices or data, etc.

9.2 EIA conclusion for current environmental condition on site

9.2.1 Investigation and assessment on current ambient air quality

According to the monitoring result, all the indexes in monitoring place meet the Grade 2 standard of Ambient air quality standard（GB3095-1996）, but due to the smoke from burning coal for heat supply in winter, the PM_{10} rate is a little higher.

9.2.2 Investigation and assessment on current surface water

The monitoring data for Surface water environment quality shows the monitoring data in Yili bridge section meet the Type IV in Surface water environment quality standard except the BOD_5 e Index, other indexes for Piliqing River meet the standard of Type Ⅲ Surface water environment quality standard（GB3838-2002）. The water quality is good.

9.2.3 Investigation and assessment on current ecological environment

The four components of this project are all located in the built up area and planning area. So the ecological environment for this project includes urban ecological system, and oasis ecological system.

There are totally 9 roads construction for component of Traffic Environment Improving Construction, and the component “integrated corridor improvement projects on traffic safety”, which are individually the Tianshanhou Street(feijichang road to shenglibei road), Shenglinan Road(yingbin road to yili road), Sidalinxi Street（amaitijiang street to xinhuaxi road）, Sidalindong Street（jiefangnan road to shenglinan road）, Beihuan road(huaguoshan road to yueliangwan buiding materials market), Daobeiwei road’s extension(tiechanggou village to daoweisan road), Huaguoshan Road(nanhua road to G218), Beijing road(jiefangxi road to ahemaitijiang street), and Xinhuaxi Road(jiefangnan road to ahemaitijiang street). All above belong to the built up area and typical urban ecological system.

The four alley works in Sidalin street, Jiefang road, Nanshi area and Kazanqi area are all located in the built up area, which belong to typical urban ecological system.

The 2 integrated bus stations in Yining economic park and South bank new developing area located in the suburb of Yining, the land currently is farmland , which

belong to planning industrial land in the future. So it belong to oasis ecological system.

9.2.4 Acoustic environmental quality's present situation investigation and assessment

For components Traffic Environment Improving Construction， and Traffic Managementand Road Safety, the sensitive points' monitoring result along related roads show the acoustic environment cannot meet the related standard. For the project of Public Transport Improvement, the current acoustic environment quality can meet the related standard.

9.3 The environmental compliance analysis

（1）Compliance with laws and regulations

According to site survey and data collection, the project are not concerning the nature protection area, place of interest, water resources protecting area and other sensitive areas. So the project has no environmental law barrier.

（2）Compliance with industrial policies

The project is encouraged urban infrastructure, as well as the urban public transport improvement project and intelligent traffic system according to Guiding Catalogue of Industrial Structure Adjustment (2011 Version), among which it is clearly indicated on Article 22, 3 and 4. So the project is consistent with the requirements of national policies.

（3）Compliance with urban master plan

The project is planned to use the IBRD loan for improving the Yining urban infrastructures, include 8 roads construction as the Tianshanhou Street(feijichang road to shenglibei road), Shenglinan Road(yingbin road to yili road), Sidalinxi Street（amaitijiang street to xinhuaxi road）, Sidalindong Street（jiefangnan road to shenglinan road）, Beihuanlu(huaguoshan road to yueliangwan buiding materials market), Huaguoshan Road(nanhua road to G218), Beijing road(jiefangxi road to ahemaitijiang street), Xinhuaxi Road(jiefangnan road to ahemaitijiang street). After above construction, the roads' safety will be improved, the traffic accidents is reduced, and the traffic flowing speed can also be enhanced. The reconstruction of alley among 4 areas as Sidalin Road, Jifang Road, Nanshi area and Kezanqi touring area can create an ecological and livable civic environment. Therefore the project comply with the demand of Urban master planning of Yining city(2013 -2030).

9.4 Environmental impacts prediction conclusion and related prevention measures

9.4.1 Environmental impact prediction and mitigation measures during construction period

9.4.1.1 Ecological impacts prediction and the related prevention control measures during construction

The related prevention control measures for ecological impacts from roads construction and alley works during construction include：

（1）There are 11 ancient trees on site, which should be protected by fence start of construction. All these is to mitigate the impacts and avoid the occasional damages on the 11 trees during construction. The big excavating machines should be forbidden running near the trees, the small scale machineries and manual construction should be selected to ensure the safety of the ancient trees.

（2）Replant the existed vegetation with the great effort for their continuous survival. The ideal place for replanting is the urban area of Yining. Make the supplement vegetation for the vegetation suffered in the permanent land occupation.

（3）The lawn should be placed on Road isolation belt and the flower bed should be placed near the buildings, as well as the ever-green arbors. That is for the supplement for the demolished green area during construction.

The related prevention control measures for impacts On cultivated land during construction include：

（1）Keep the mellow soil in local farmland; collect the surface mellow soil in permanently or temporarily occupied land. After construction, the related cleaning, loosing, covering with the mellow soil, second plowing or choose the proper plants for replanting and recovering vegetation.

（2）Prevent the block of irrigation and drainage system

（3）Once the farmland is occupied due to the project, the related compensation and other measure should be made to ensure the farmer’s living standard as before.

The project’s building material come from the commercial yard, the slag waste will be sent to Yining construction waste landfill, the project will not have its own yard for borrowing earth and stack of abandoned earth. The construction site is the temporary occupied land, which have the following mitigation measures for future recovery.

（1）Strictly following the design to stack the abandoned earth and slag in dedicated area. The earth is strictly forbidden abandoning in the wind erosion area.

（2）After the completion of the construction, the area of construction camps, construction material storage yard, construction road, preprocessed plant, mixing place should be all made the land leveling. All the solid waste on the occupied land

should be cleared. The bitumen waste is forbidden to be dumped anywhere, especially for the mixing station and the area on both sides of subgrade.

（3）Recover the construction site, the temporary occupied land's terrain and landform should be basically the same with the previous after recovery. The original overall landscape should not be affected.

Measures on protecting the historical cities and blocks during the road construction and alley works.

(1) Protect Tiechanggou branch channel and Piliqing River near the Huining historical city;

(2) Strengthen the landscape along the channel in the historical cities, increase greening works along the channel ;

(3) Protect the Huining city's wall relics, keep the natural landform and terrain inside;

(4) Maintain the following alleys' names and original direction among historical and cultural blocks, for Qianjin street, there are No.3 alley, No.5 alley, No.6 alley, No.7 alley, No.10 alley; for Shengli street, there are No.2alley, No.3Alley, for Hashi street it is No.5 Alley; for Yili street, there are No.4Alley, No.5 Alley, No.6 Alley, No.10Alley, No.12alley, No.13alley, for Ayidun street, No.2 alley, No.3 alley, No.4 alley; for guoyuan street, No3 alley, No.4 Alley, No.7Alley, No.6 Alley, No.8 Alley. For above-mentioned alleys, the expansion of road is forbidden for keeping the traditional streets landscape.

(5) The original names and the directions of the following streets in cultural blocks should be maintained, including in Ayidun Street, Yili street, Qianjin Street, Qianjin Street No.4 alley to Kashi street No.5 alley to Kashi street No.6 Alley. Widening the bottleneck section,and the road red line width should be controlled within 10 ~ 12 meters; the road red line width should be controlled within 8 ~ 10 meters in Yili street and Ayidun street, the road red width should be controlled within 6 ~ 8 meters for section that start from Qianjin Street No.4 alley to Kashi street No.5 alley to Kashi street No.6 Alley. The traditional street landscape should be kept.

(6) The original names and the directions of jiefang road should be maintained in cultural blocks, keep the current traffic connection between Jiefang road and Ningyuan road; The original names and the directions of the following streets in cultural blocks should also be maintained, including Sidalin street, Jiefangnan road, Hongqi Road, Hongqi Street, and Qingnian Street. Keep the roads layout both inside and outside of the ancient city.

(7) Protect channels, water body and green landscape of historical and cultural. Except the change of some channel's direction for planning road's construction. other existing channels' direction should be kept the original to ensure the smooth flow.

(8)Protect ancient and famous trees in historic and cultural blocks.Maintain the local characteristics of garden greening and road greening in Yining.

9.4.1.2 The noise impacts prediction, and prevention and control measures

The road construction noise impact is big within the 50m scope away from the noise source. For the scope of 50～100m, there is still a certain impact of noise. The noise impact from construction at night is especially serious. But the impact is temporary and will disappear after the construction. So for the noise impact, the inhabitants' attitude is understanding and acceptable. But for contractor, they should adopt the necessary noise control measures and management method to reduce the impacts on

the normal rest and daily life of inhabitants.

9.4.1.3 Prediction and prevention control measures for impacts on ambient air

The dust was raised during the process of land leveling, subgrade excavation, pavement works, construction material transportation, stack, load and unload, concrete mixing or lime soil mixing, etc, The surrounding enclosure, water spraying, site ground harden process or other measures can reduce these dust pollution impacts on ambient environment.

9.4.1.4 Prediction and prevention control measures for impacts on water environment

The waste water from construction is the rainwater mix with grout, domestic sewage under the effect of surface runoff. The contractor should organize the regular discharge for the waste water; forbid the irregular discharge to pollute the environment. Strengthen the environmental management, Reduce the oil pollutant or construction material in the surface water as more as possible, as well as the pollution on river.

9.4.1.5 The solid waste impacts prediction, and prevention and control measures

During construction, large amount of residue earth, slag earth (include the slag earth from demolish of buildings), construction waste and residues will be produced. So the improper dispose for these solid wastes will result in the traffic jam and environmental pollution. During the transportation, the vehicles left the earth or slag along the road that will pollute the environment and influent the urban appearance and traffic.

The contractor should gain the permission for dumping the abandoned earth at indicated place. The transportation of construction material should avoid the traffic peak time, in regulated day part and follow the indicated route. When carrying the abandoned earth or other waste, the vehicle should be loaded in proper capacity and be covered by canopy. Before moving on road, the vehicle should be flushed and cleaned to avoid the leakage of soil or earth along the road. For sources that raised dust, the stack with enclosure will be adopted. For the brick or tile type, the normal stack method can be adopted before transporting to designate landfill. The construction is the totally enclosed type for the purpose of controlling the pollutants impacts within the scope of construction site and reducing the impacts on ambient environment.

9.4.1.6 The vibration impacts prediction, and prevention and control measures

There are lots of vibration sources. For this project, the vibration mainly come from piling works, subgrade engineering, compacting backfill works or truck moving.

The constructions for this project include the new road construction, road reconstruction, and public transportation components. Basically there is not big vibration from this project. The vibration aroused by heavy truck moving mainly comes from the roller or diesel fuel vehicles.

9.4.1.7 The resettlement impacts prediction, and prevention and control measures

Based on the experiences of the domestic and foreign similar projects, the Resettlement affairs office will be set up for this project, which takes charge all the issues concerning the resettlement. Hehai University has been assigned for making the project's the resettlement plan(RAP), policies, publicizing and mobilizing works for this project, as well as dealing with the issues concerning land acquisition, housing removal and resettlement to guarantee the smooth development of project construction.

9.4.2 Environmental impact prediction and mitigation measures during operation period

9.4.2.1 Ecological impacts prediction and the related prevention control measures during operation

After the implementation of the project, the related greening ratio along the bus depots and roads will be increased, and properly arranged, which have integrated environmental benefits , like protecting the road pavement, reducing the loss of water and soil, mitigating the impacts from raised dust and traffic noise, as well as adjust the partial climate along the road. The greening work can improve the landscape along the project, and create a beautiful road appearance for public.

9.4.2.2 Prediction and prevention control measures for impacts on ambient air

(1) For the different types of vehicles, the traffic diverging and the different routine limit can guarantee the smooth traffic and road's pavement free from damage, as well as for the inhabitants free from related traffic interruption.

(2) Strengthen the roads'maitenance works and keep the good running condition of road for reducing the traffic jam.

(3) Strengthen the vehicle's testing and maintenance to ensure the certified tail gas pollutant emission. Practice shows that amount of exhaust emission have relationship with the motor engine's running condition. Especially once the unleaded gasoline or exhaust purifier is adopted by motor vehicle, the testing work become more necessary. Therefore the vehicle's testing and maintenance must be strengthened to keep the good running condition of motor vehicles and reduce the exhaust gas pollutant emission.

(4) Carrying out the new emission standard for vehicles, which is Light car emissions limits and measurement methods（Chinese 5^{th} Phase）（GB18352.1-2013）for diesel vehicles and light cars. The pollutant emission of vehicle exhaust gas can be controlled from the sources.

(5) strengthen the execution of vehicle annual inspection, road inspection and sampling testing. The traffic management for vehicles should also be stricter in order to control the exhaust emission and eliminate the obsolete vehicles without certified

emission on the road.
(6) Strengthen the sampling test among households for vehicle.
(7) Make the traffic scientific management. Keep using single direction road and accommodation lane. At the same time, strengthen the control on the overall traffic volume and further improve the traffic scientific management. The traffic signals should be controlled coordinately. Enhance the reporting efficiency for vehicle speed and road, to reduce the exhaust gas in a maximum level.
(8) The actual greening works should be done on both sides of roads. Make the supplement for the occupied forest and vegetation in project construction. The low shrubs and high broad-leaved trees form the main forest belt, which will be the most important road with the landscape background. The related acoustic noise isolation and reduction can be realized at the same time.

9.4.2.3 Noise impact analysis and prevention control measures during operation period

The noise pollution is obvious during the project operation period. The intensity of noise is different among different types of motor vehicle with various driving state. Following the increase of traffic volume, more and more noise impacts will be made on the environment sensitive points on both sides of road. So measures for mitigating the noise impacts should be planned based on the overall planning and the noise pollution prevention and control purpose.

(1) According to the noise impacts prediction result, the noises in the place that is 100m distance away from the central line of road all exceed the Type 2 limit value in Standards for acoustic environmental quality. So for the further plan in overall city, there will be no new construction of environmental sensitive points, such as residence area, school or hospital within the 100m scope away from the central line of road.
(2) Limit the driving speed of motor vehicles, especially at night, make a good maintenance for road surface and repair the damaged pavement as soon as possible.
(3)More vegetation should be placed on both sides of road, especially in the acoustic environment sensitive points, such as schools and hospitals.
(4) Yining belong to the north city in China, the windows on building are all adopted the double-glazing with acoustic good efficiency of more than 25dB. The project has taken the acoustic window’s cost into budget. After the project is implemented, the actual noise monitoring result will be made for deciding if it is necessary to install the acoustic window.

9.4.2.4 Analysis and prevention control measures for impacts on water environment

After the implementation of the project, the waste water mainly come from the integrated bus stations. The waste water is mainly the domestic waste water or produced during the process of bus repairing or maintenance. The amount is very little, which can discharge into the nearby municipal drainage pipe for further treatment in Yining waste water plant.

9.4.2.5 Traffic vibration impacts analysis and prevention control measures during operation period

After the analogy analysis on vehicle vibration, the intensity of vibration on the inhabitants along the road can meet the limit value for education and culture zone's requirements in Standard of environmental vibration in urban area. So the vibration will have no negative impacts on ambient environment along the road.

9.4.2.6 Solid waste impacts analysis and prevention control measures during operation period

During the operation period, the main solid waste is the domestic waste and used oil from integrated bus stations. The domestic waste will be sent to designated landfill by municipal environmental sanitation department and have no negative impacts on the ambient environment. Although the amount of used oil produced in bus maintenance station is very small, it still belong to the hazardous waste. So the used oil will be sent to qualified hazardous waste treatment entity for treating, and will have no negative impacts on ambient environment.

9.5 Public participation

The two notification has been made following the Interim rules for public participation. The 485 copies of questionnaire had been issued, which are all given the public feedback. The design of questionnaire has taken consideration of ethnic minorities' distribution along the project site, which is made in Chinese and Uighur language. The respondents covered by the questionnaire survey is made up by the 135 Han people, 226 Uygur, 13Kazak, 107 Hui people and 4 other ethnic minorities. The quantity proportion between the Han people and the ethnic minorities is 29% :71%. The respondents of public feedback is living along the roads and communities near the project site, whose trip in the city mainly depends on public transportation. For the governmental departments, the survey results show all the governmental departments would like to support the project development. For the public respondents, the survey results show that 66% of support, 33% of basically supporting opinion, and 1% of careless. The statistics of the public feedback show that most of the public support the project's development and deem the project has active and good impacts on Yining urban traffic development.

9.6 Environmental management and monitoring plan

In order to control and mitigate the environmental impacts of the project efficiently, the scientific and regular environmental management and monitoring should be performed during construction and operation period. Execute the environmental monitoring plan during construction and operation period strictly. Implement the related environmental measures and train the related staffs.

9.7 General conclusion

The implementation of the project construction can enlarge the developing space for Yining, improve the current traffic condition, improve the road network capacity, change the investment environment, and promote the tourism development and urban economic development.

There are no ecological environmental sensitive areas, such as nature reserves, place of interests and drinking water source protection areas, within the EIA scope of the project. So the project site selection and route selection comply with the relevant national laws and regulations, as well as the national industrial policies and related planning

After the implementation of environmental protection measures for this project, the negative impacts will be efficiently controlled. Therefore, from the environmental protection point of view, the result of environmental impacts assessment for this project is feasible.

9.8 Suggestion and requests

（1）The government and related departments should deal with resettlement properly and give the compensation for land acquisition timely to guarantee the resettled groups' benefits.

（2） For this project, the earthwork is large and the construction period is relatively long. The construction noise and raised dust on the road will have negative impacts on regional environment. It is suggested in this EIA the approach of intensive construction span by span can be adopted for reducing the construction period. And the construction fence or enclosure should be used to surround the site.

（3） Take the urban master planning into the consideration of the project construction. The related municipal infrastructures should be improved when the project is fully funded, such as the drainage pipeline, heat supply pipeline, natural gas, cable for TV, etc. The purpose for that is to avoid the repetitive excavation of road pavement for rearranging those pipelines, which result in unnecessary waste.