Addendum to Environmental Impact Assessment

Project Number: 44007-013
September 2017

PRC: Jiangxi Fuzhou Urban Integrated Infrastructure Improvement Project

Prepared by (Jiangxi) Fuzhou Municipal Government for the Asian Development Bank. {This is an addendum to the project environmental impact assessment posted in May 2012 available on https://www.adb.org/projects/documents/jiangxi-fuzhou-urban-integrated-infrastructure-improvement-project-eia.}

I. INTRODUCTION

A. Project Scope Change

1. Jiangxi Fuzhou Urban Integrated Infrastructure Improvement Project was approved in October 2012. The impact of the project is an efficient, inclusive, and sustainable urban transport system in Jiangxi Fuzhou. The outcome is efficient multimodal access to the new main railway station. The outputs are: (i) a 12.2-kilometer (km) bus rapid transit (BRT) system, (ii) an urban transport hub at the new Jiangxi Fuzhou Railway Station, (iii) river rehabilitation and "greenway" development, (iv) 10 km of station access roads, and (v) institutional strengthening and capacity building. The executing agency (EA) is the Fuzhou Municipal Government (FMG). The implementing agency (IA) is the Fuzhou Investment and Development Company (FIDC).

2. In July 2013, the IA assessed the difficulty of implementing the originally proposed BRT route at Gandong Avenue, due to the limited width of right-of-way (ROW); proximity to sensitive receptors such as schools, residential areas and hospitals; and other concerns from the public. The IA made a decision to re-evaluate the BRT route from Gandong Avenue to Yuming Avenue and BRT realignment. The Feasibility Study was assigned to Guangzhou Municipal Engineering Design & Research Institute, and the report was accomplished and submitted to the IA in December 2013. In February 2014, ADB mission conducted survey in Fuzhou regarding issue of BRT route re-alignment, and request to hire a third party to evaluate the re-alignment proposal. In March 2014, the Construction Agency hired China Academy of Urban Planning & Design (CAUPD)–Shanghai Branch to analyze and evaluate BRT changing proposal via Yuming Avenue for its feasibility and passenger volume forecast. In 15 August 2014, ADB mission reviewed the new alignment proposal of bow-shaped corridor BRT designed by CAUPD. After 4 days' review and evaluation, the bow-shaped proposal was accepted for further due diligence. The final agreement was made between ADB, Vice Mayor of FMG on March 3 2016 on the implementation of BRT "bow-shaped" alignment. The minor scope change was approved on July 18 2016.

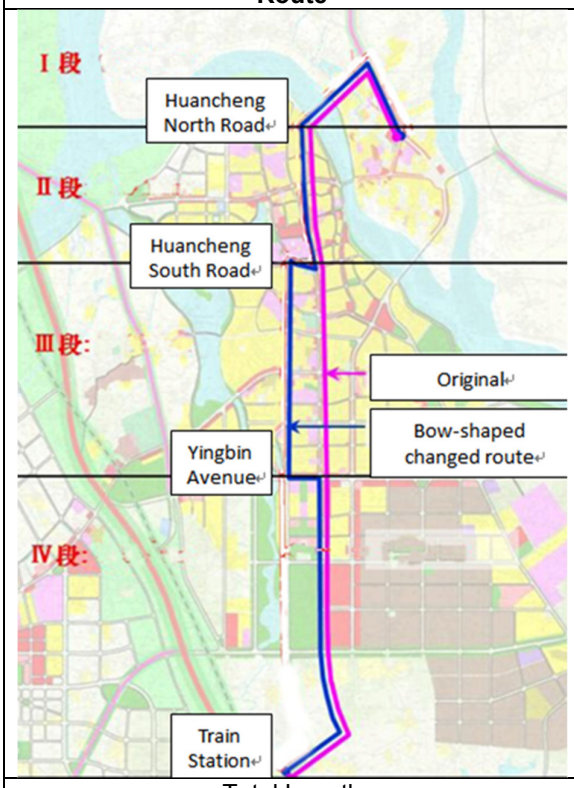
3. The environmental impacts of BRT re-alignment was conducted by Jiangxi Provincial Research Institute of Environmental Protection, commissioned by the IA, and the initial report was submitted to ADB on November 2015. Additional environmental due diligence was requested by ADB and a revised report was submitted to ADB on November 2016. ADB requested to conduct additional noise monitoring to reflect the changes in the sensitive receptor. The final environmental due diligence is completed in February 2017. This addendum is prepared to summarize the environmental impact of BRT re-alignment route that connects Huancheng South Road, Yuming Avenue and Yingbin Avenue.

B. Comparison between the Original and Realigned BRT Routes

4. The original Fuzhou BRT route starts from XinJiangZiKou, via Wenchang Avenue - Gandong Bridge - Gandong Avenue - Zhanqian Avenue, and ends to a BRT terminal at the Fuzhou train station hub square. The BRT route is designed with total length of 12.2km and 22 bus stations with 550m average spacing.

5. The re-alignment Fuzhou BRT route is a bow-shaped route, starting from XinJianZiKou, via Wenchang Avenue – Gandong Bridge – Gandong Avenue north – Huancheng South Road – Yuming Avenue – Yingbin Avenue – Gandong Avenue south – Zhanqian Avenue and ending at a BRT terminal at the Fuzhou train station hub square. The re-aligned BRT route is designed with total length of 13.5km and 22 bus stations with 600m average spacing. The road width is between 33-70m with bilateral 2 lanes for BRT and bilateral 4-6 lanes for other vehicles. To sum-up, the re-alignment content includes: increased length up to 1.3km, and adjusted route from Gandong Avenue corridor to Huancheng South Road – Yuming Avenue – Yingbin Avenue bow-shaped corridor. Table 1-3 provides detailed comparison between the original and re-aligned routes.

Table 1. Comparison of Original and Realigned BRT Routes

Route	Original	Re-aligned to	Note
	Wenchang Avenue – Gandong Bridge – Gandong Avenue north (4.68km)	Wenchang Avenue – Gandong Bridge – Gandong Avenue north (4.68km)	Un-changed
	Gandong Avenue north - Yingbin Avenue (2.83km)	Huancheng South Road – Yuming Avenue – Yingbin Avenue(4.13km)	**Changed**
	Yingbin Avenue - Station roads (4.69km)	Yingbin Avenue - Station roads (4.69km)	Un-changed
Total Length	12.2 km	13.5 km	

Source: Feasibility study for BRT re-alignment (2014)

Table 2.Profile Comparison between the original and re-aligned BRT routes

Indicator	Unit	Original EIA	Re-alignment to	Variation
Length	km	2.83	4.13	+1.3
Investment	10^4 Yuan	4751.07	8830.92	+4079.85
Subgrade Earthwork	m^3	2500	6500	+4000
Site Area	m^2	19810	29120	+9100
Building Reallocation	m^2	None	None	None
Landscaping Reallocation	m^2		10780	

Source: Feasibility study for BRT re-alignment (2014)

Table 3.Route Re-alignment Rational

No.	Area	Re-alignment	Length (km)	Rational	Note
1	Huancheng South Road	Compared with original EIA, route was swung 0-502m to west	0.502	• Road condition: Yuming Avenue obtains better condition with 42m cross section that suits BRT road red-line; Gandong Avenue obtains only 33m and cannot be widened. • Passenger volume: Yuming Avenue is lightly higher than Gandong • Public willings: public concerns higher for Gandong than Yuming, and they are positive to Yuming route benefit	• Sensitive points within 200m-area in original EIA include LinChuan No. 10 Primary School, LinChuan No. 9 Primary School, Yuming Yuan, Yueting City Star Zone with population of 19,700. • Sensitive points in re-alignmentd route include East China University of Technology south area, Maternity and child care, Huafu Apartment, Paris Lidu, Qingchun Jiayuan, Jianding Huacheng with population of 26,000.
2	Yuming Avenue	Compared with original EIA, route was moved 325-530m to west	3.12		
3	Yingbin Avenue	Compared with original EIA, route was swung 0-513m to west	0.513		

Source: Feasibility study for BRT re-alignment (2014)

II. DETAILED DESCRIPTION OF SCOPE CHANGE

6. The re-alignment route is Huancheng South Road – Yuming Avenue – Yingbin Avenue (4.13km). The following construction activities will be involved at the re-alignment:

(i) widening of station part and fixing sidewalk at Huancheng South Road;

(ii) remove road median strip, build new motorized vehicle lane, repair damaged sidewalk, widen road by narrowing down sidewalk, rebuild non-

motorized vehicles and sidewalks At Huancheng South Road – Yuming Avenue

(iii) set BRT lanes at Yuming Avenue – Yingbin Avenue.

7. Other ancillary engineer includes: drainage and afforestation projects. The proposal of cross section is attached in Annex 3.

A. Technical Standard and Designed Indicators

8. According to the Feasibility Study Report, the re-alignment route will apply the following technical indicators:

(i) Class I city main road is designed with driving speed of 40km/h;

(ii) Standard axle load of pavement structural calculation: BZZ-100;

(iii) Pavement designed life expectancy should be 15 years for asphalt concrete pavement and 30 years for cement concrete pavement;

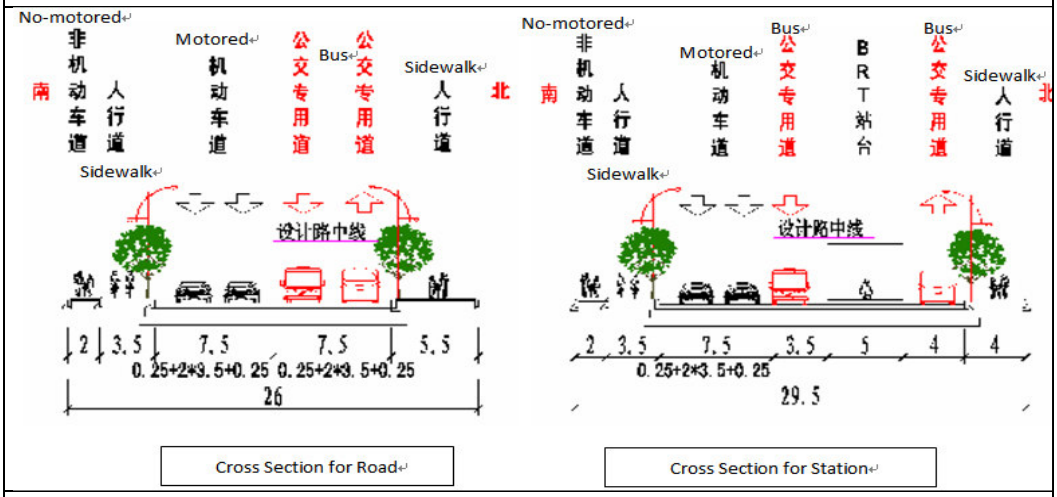
(iv) Construction Clearance: no less than 5.0 m; and

(v) Road class: class I in the PRC.

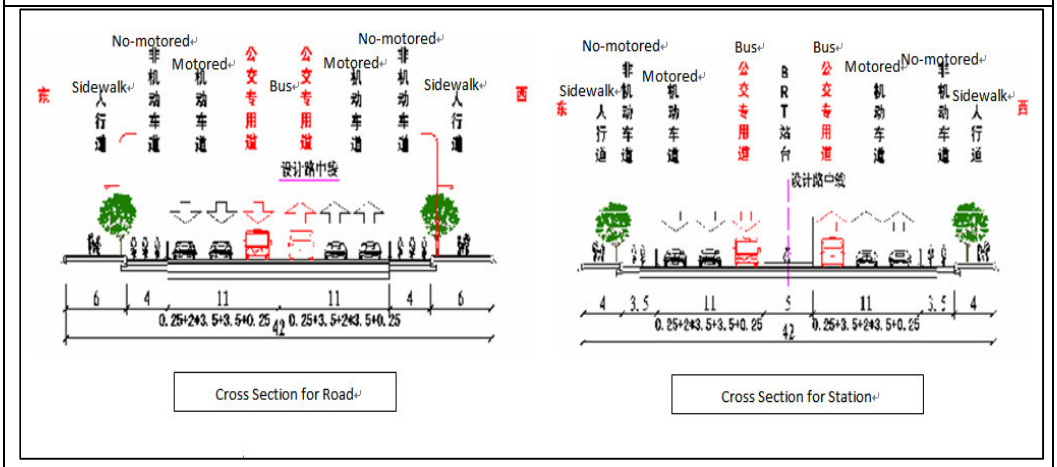
B. Re-alignment Route and Cross Section Layout

9. The road cross section layout will be arranged according to lane number, road function, transport demand, surrounding planning, and BRT Platform Selection (Central Island).

Table 4. Detailed design layout of realigned BRT routes

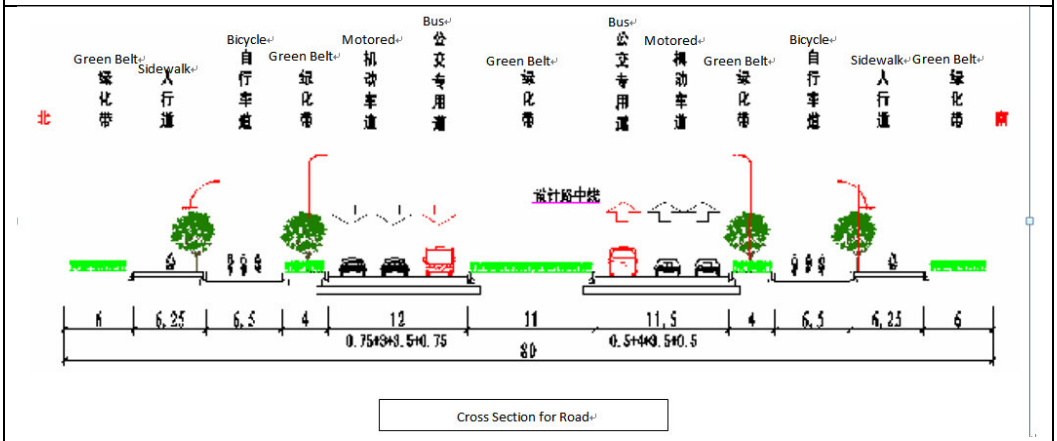
Huancheng South Road
• Road cross section: 26m = 2m (sidewalk) + 3.5m (bicycle lane) + 7.5m (vehicle lane) + 7.5m (vehicle lane) + 5.5m (sidewalk) • Station cross section: 29.5m = 2m (sidewalk) + 3.5m (bicycle lane) + 11m • (vehicle lane) + 5m (BRT platform) + 4m (vehicle lane) + 4m (sidewalk)
 Cross Section for Road　　Cross Section for Station
Yuming Avenue
• Road cross section: 42m = 6m (sidewalk) + 4m (bicycle lane) + 11m (vehicle lane) + 11m (vehicle lane) + 4m (bicycle lane) + 6m (sidewalk)

- Station cross section: 42m = 4m (sidewalk) + 3.5m (bicycle lane) + 11m (vehicle lane) + 5m (BRT platform) + 11m (vehicle lane) + 3.5m (bicycle lane) + 4m (sidewalk)



Yingbin Avenue

- Road cross section: 80m = 6m (landscaping) + 6.25m (sidewalk) + 6.5m (bicycle lane) + 4m (landscaping) + 12m (vehicle lane) + 11m (landscaping) + 12m (vehicle lane) + 4m (landscaping) + 6.5m (bicycle lane) + 6.25m (sidewalk) + 6m (landscaping)
- Only BRT lane is set in Yingbin Avenue and no station is set.



Source: Feasibility study for BRT re-alignment (2014)

C. Roadbed, Pavement Engineering

10. The re-alignment route involves modification or maintenance of existing urban roads, for instance, upgrading original asphalt or cement concrete pavement of the existing roads. The site visit confirmed that Huancheng South Road has concrete pavement, which needs station widening and crosswalk restoration. Yuming Avenue has concrete pavement, which needs modification of existing landscaping areas, station widening, and modifying lanes. Yingbin Avenue has asphalt pavement, which needs setting-up BRT lanes.

11. For Huancheng South Road and Yuming Avenue, which have good pavement condition of cement concrete, limited reconstruction work will be involved.

(i) Newly-built cement concrete standard at bus stations: C40 concrete (steel mesh for station) 26cm; 5%cement stabilized grades macadam 18cm; 4% cement stabilized stone chips 18cm;

(ii) Non-motored lane: For coplanar layout of non-motored land and sidewalk, line drawing will be applied for distinguishing lanes; for upper individual non-motored lane, newly-built pavement standard will be applied.

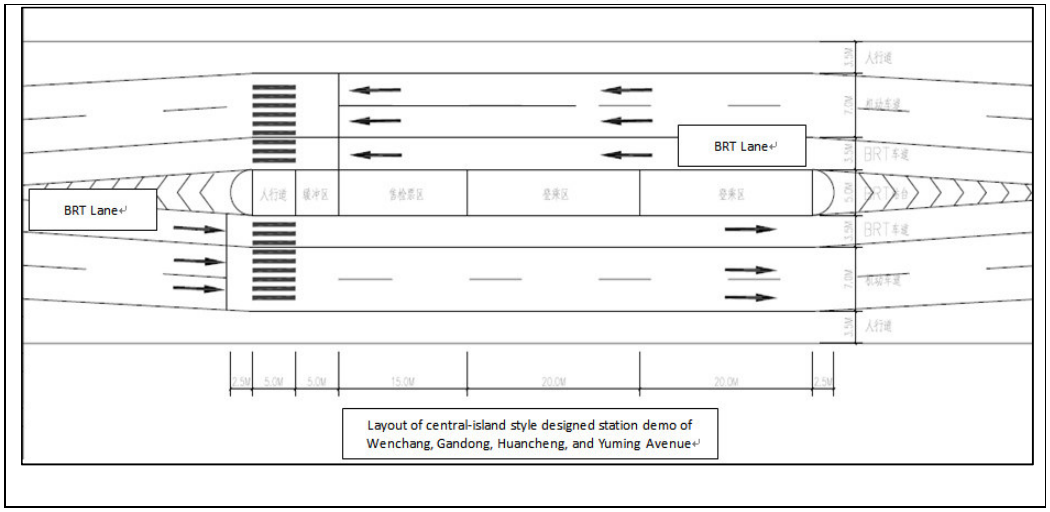
(iii) Sidewalk: For standard road, sidewalk will be only maintained; for BRT station area, sidewalk will be narrowed and renovated.

D. Station Engineering

12. According to the project design, the re-alignment route will have one station (Majiashan Square Station) on Huancheng South Road; 6 stations on Yuming Avenue (Yuminghuacheng Station; East China University of Technology Station; Municipal China Mobile Station; Jiandinghuacheng Station, Mingshijiayuan Station; and Yingbin Avenue Cross Station). There will be no bus station on Yingbin Avenue. Each station involves safety zone, buffer zone, fare collection zone, and two-side boarding zone.

13. Bus station will be designed as island-style station. Stations will provide disabled and blind facility in line with standards. Wide emergency access will be set between fare checking areas. A total of six fire boxes will be installed in station zone including ABC and HFP extinguishers. Boarding area will provide several seats as well as special chairs for the elderly, the young, the sick, the disabled and pregnant women. Sufficient drainage will be designed and electric pipes will be hidden in the structure. The station layout picture is shown below:

Table 5. Station layout



Source: Feasibility study for BRT re-alignment (2014)

E. Drainage Engineering

14. The re-alignment route will be designed to have separated drainage and sewage systems. The required drainage engineering will not modify any main sewage pipe system, except for a few minor adjustments. A toilet will be installed at BRT stations, which will be designed with one sink, one squatting pan, water supply and sewage system. A platform canopy is set on station, and rain and sewage water will be discharged to rain pipe and sewage pipe, separately. The BRT drainage and sewage systems will be connected to existing municipal drainage and sewage collection networks.

F. Landscaping Engineering

15. Huancheng South Road (25m wide and 0.5km long) has existing evergreen camphor trees, which will be maintained as much as possible. Those cannot be kept will be transplanted and replanted for other landscaping purpose. Yunming Avenue (42m wide and 3.16km long) has deciduous plane trees, camphor trees and heathers, which will be maintained as much as possible. Those cannot be kept will be transplanted and replanted for other landscaping purpose. Yingbin Avenue (80m wide and 0.5km long) will have landscaping area of 11m in central, 4m by side and road trees.

Figure 1. Current landscaping areas at Re-alignment

Source: Environmental Impact Assessment for Re-alignment (2015)

G. Land Acquisition and Resettlement

16. The total length of new road section within the re-alignment is 4.13 km, and the BRT lane width is around 3.5m each (BRT route has dual lanes), accounting total area of 29,120m^2. No land acquisition or resettlement issue is involved in BRT re-alignment.

H. Excavation and Temporary Yard

17. According to BRT proposal and cross section setting, road widening will be undertaken by narrowing down sidewalk at Huancheng South Road stations. At Yuming Avenue, landscaping between motored and non-motored lane will be

removed, and a new motored lane will be built. Sidewalk will be narrowed down for new non-motored and sidewalk lanes. The engineering will generate excavation of 6,500 m3, and modify landscaping area of 10,780 m^2.

III. ENVIRONMENTAL CONDITIONS AT BRT RE-ALIGNMENT

18. The original and re-alignment routes only concern construction and modification of existing urban roads, close to the original road sections. As no environmentally sensitive areas are involved, environmental impact of new BRT road sections are almost identical to the original environmental impact.

A. Changes in Sensitive Receptors

19. The sensitive receptors within 200m area of original and re-alignment route mainly concern city residential areas, schools and hospitals. Table 4 demonstrates information in details. Comparing to the sensitive receptors of the original bus routes that involved 19,700 residents, the sensitive receptors under the re-aligned BRT route involves 26,000 people, which is 6,300 people more than that in original. On the other hand, the re-aligned BRT bus route can benefit more people with improved urban transport system. **Table 6** presents detailed information on sensitive receptors for the re-alignment.

B. Additional Baseline Data

20. The major road section realigned (Yuming Avenue) is a block away (around 400 meter) from the original road section (Gandong Avenue). In terms of baseline data for **air quality**, there is no significant variation assessed. Thus, the baseline air quality data collected at the time of project appraisal will remain as the baseline air quality data for the scope change.

21. As for **water quality**, the re-alignment does not involve any bridge, culvert, water pipe and water body across. Thus, the baseline water quality data collected at the time of project appraisal will remain as the baseline water quality data for the scope change as well.

22. Baseline data for **noise** was additionally collected taking into consideration the changes in the sensitive receptors. The on-site noise monitoring was done on 17 February, 2017 using monitoring equipment of AWA6228-type integrated sound level meter. The detailed results show in **Table 7**.

Table 6. Sensitive Receptors Information

Factor	EIA Approved in Original	Scale(No. of people)	Distance from Road (m)	Re-alignmentd Site	Scale(No. of people)	Distance from Road (m)
Air and Sound	Jiangdi Zone	1500	28	Yuminghuacheng Zone	1900	36
	Wanxiangxincheng Zone	1700	26-35	No. 3 Middle School	2100	100
	Dormitory Area of Construction Bureau	1300	26	Donghua University of Technology South Zone	3200	35
	City Classic Zone	1800	28	Nanhu Garden	600	35
	No. 10 Linchuan Primary School	300	50	Jiayuanmingmen Zone	1200	35
	Aolin Vacation Zone	1500	30-45	Laoganbu Dormitory	400	32
	Yumingyuan Zone	2100	26-45	Hengsheng Urban Garden	2000	35
	Urban Sunshine	800	30	Jiandinghuacheng Zone	2400	35
	No. 9 Primary School	200	40	Jiangxi Traditional Chinese Medicine Advanced College	2000	35
	Jiangxi Traditional Chinese Medicine Affiliated Hospital	1000	40	Huafu Garden	2800	35
	Wanjincheng Zone	2000	28-45	Qingqing Jiayuan Zone	1300	35
	Fuzhou Education College	1200	30	Niujiaowan Zone	1000	35
	Yixiuyuan Zone	2100	28-45	Paris Lidu Zone	1600	35
	Urban Star Zone	2200	30	Xinghe Danti Zone	1200	35
				Huafu Apartment	800	35
				Maternity and Child Care	400	45
				Yueting City Zone	1100	35
	Total	19700		Total	26000	
Surface and Ground Water	The route before and after re-alignment is under construction on old roads and concerns no construction of water body across, tunnel and cavern. Therefore, it causes minor re-alignment to water environment.					

Source: Environmental Impact Assessment for Re-alignment (2015)

Table 7. Noise Monitoring Results at the Re-alignment on 17 February 2017(Unit: dB (A)

No. of the monitoring points	Name of the monitoring points	Time interval	Noise value	Standard value (GB 3096-2008)_
N1	Before the first row of buildings adjacent to Huancheng south road in Changyun Bus Terminal	Daytime	67.8	70
		Night	50.2	55
N2	Before the first row of buildings adjacent to Yuming Avenue in Yuminghuacheng zone	Daytime	68.5	70
		Night	49.8	55
N3	Quiet area inside Donghua University of Technology	Daytime	57.3	60
		Night	44.3	50
N4	Intersection of Yuming Avenue and Linchuan Road	Daytime	68.7	70
		Night	51.2	55
N5	Jiangxi Traditional Chinese Medicine Advanced College	Daytime	54.6	60
		Night	44.8	50
N6	Before the fist row of buildings adjacent to Yuming Avenue in Xinghe Danti zone	Daytime	66.2	70
		Night	50.6	55
N7	Quiet area in Xinghe Danti zone (behind the first row of buildings)	Daytime	52.1	60
		Night	43.6	50
N8	Before the first row of buildings adjacent to Yingbin Avenue in Yueting City zone	Daytime	58	60
		Night	48.5	50

Source: Revised Environmental Impact Assessment for Re-alignment (2017)

IV. ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

23. The minor change in scope with BRT road section change does not affect the assessment of original environmental impact of the project and responding mitigation measures. The measures identified in the original EMP to mitigate impacts from noise, such as speed limit on construction vehicle, no night time working, sound proofing/absorbing of equipment, sufficient distance of workers' camps from sensitive areas, and strict compliance of noise standard for construction sites during construction and operation phases were confirmed to be adequate. Noise monitoring during construction and operation is included in the original monitoring plan and will be regularly reported in the environmental monitoring reports. Therefore, there is no need for change in the original environmental management plan (EMP) of the project.

V. DISCLOSURE, CONSULTATION AND PARTICIPATION

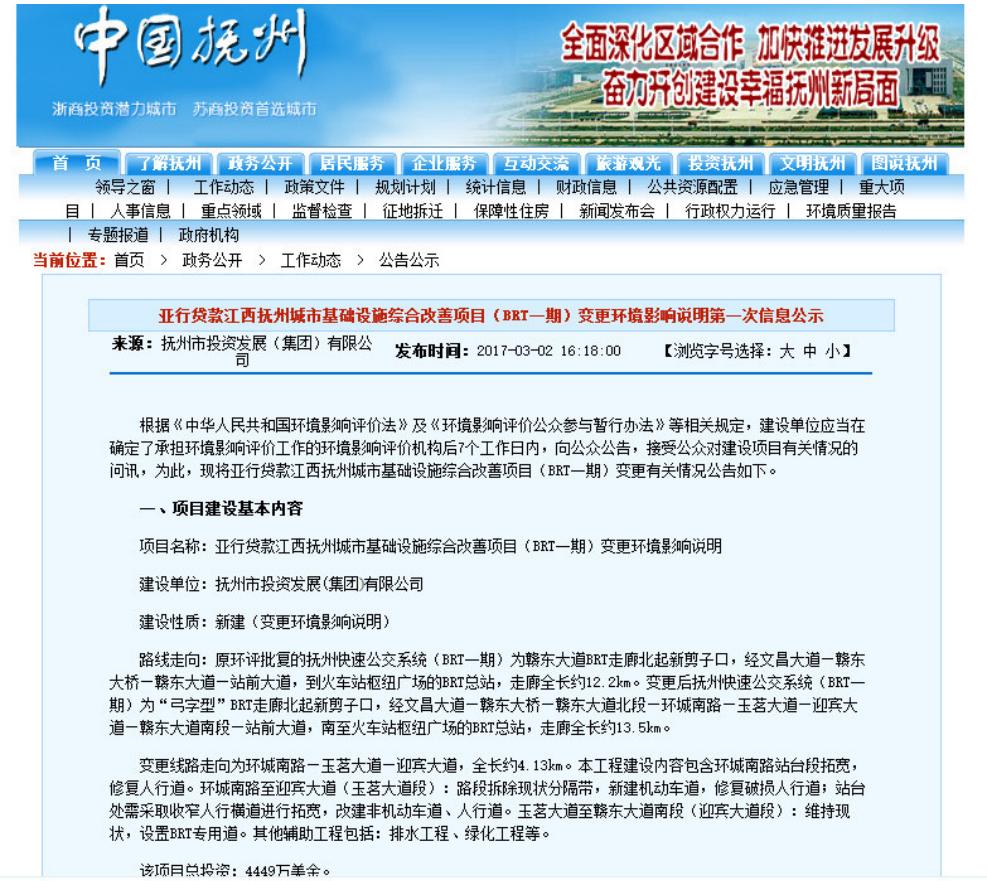
24. In accordance with the ADB Safeguards Policy Statement (SPS) (2009), and the PRC's "Temporary Act of Environmental Impact Assessment of Public Participating " (Huanfa 2006 [28]) formulated by the former State Environmental Protection Administration, additional public consultation was carried out.

A. Information Disclosure

25. In accordance with Article 8 of the "Temporary Act of Environmental Impact Assessment of Public Participating" issued by the State Environmental Protection Administration, the construction unit shall publicize related contents to the public within 7 days after having determined the environmental impact assessment agency that will bear the environmental impact assessment work as for the project that will be constructed in the environmentally sensitive areas and needs preparing the environmental impact report as defined in the “Catalog of Classified Management of Construction Project Environment”, with the main contents of the publicity including (i) Project profile and contents; (ii) Name and contact method of project construction unit and environmental impact assessment unit; (iii) working procedures and main work contents of environmental impact assessment; (iv) Main items that are to solicit public opinions; and (v) Main ways that the public bring forward their opinions.

26. Since 5 March 2017, Fuzhou City Investment &Development (Group) Co., Ltd. has begun to conduct publicity on Jiangxi Fuzhou Government Affairs Public Network (http://www.jxfz.gov.cn/xxgk/gzdt/gggs/201703/t20170302_3057401.htm) (**Figure 2**).

Figure 2. The first round of website information on the project with scope change

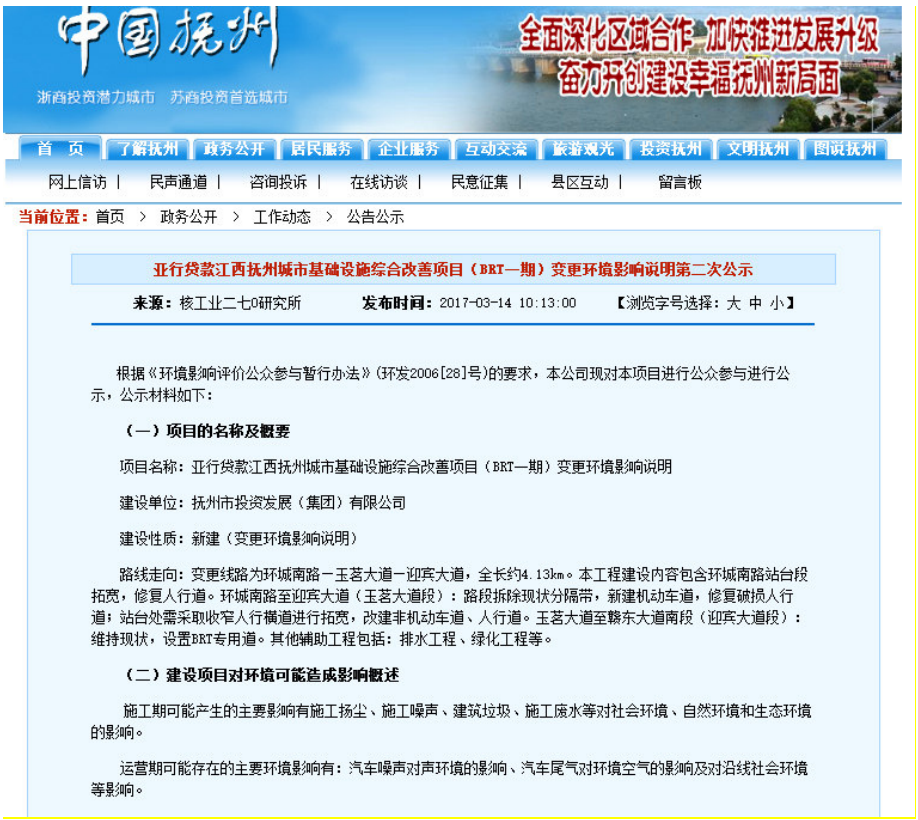


27. The second round of information disclosure was carried out by the Institute of Nuclear Industry 270 on March 14, 2017 on Jiangxi Fuzhou Government Affairs Public Network, with the main contents of the publicity including the following points:

(i) Brief description of the construction project;
(ii) Overview on the possible impact of the construction project on the environment;
(iii) Key points of countermeasures and measures to prevent or mitigate adverse environmental impacts;
(iv) Main points of the environmental impact assessment conclusions proposed in the environmental impact report;
(v) The manner and duration of the public access to the abridged edition of environmental impact report, and the manner and duration of obtaining additional information from the construction unit or its entrusted environmental impact assessment agency when the public considers it necessary;
(vi) The scope and main matters of soliciting public opinions;
(vii) The specific forms of soliciting public opinions;
(viii) The starting and ending time for the public to make comments.

28. The second publicity of the project is from March 14, 2017 up to now (dated on September 2017) (http://www.jxfz.gov.cn/xxgk/gzdt/gggs/201703/t20170314_3061856.htm) (**Figure 3**). No objection on the project was received.

Figure 3. The second round of website information on the project with scope change



29. On- site publicity of the project was also carried out by the IA, Fuzhou City Investment & Development (Group) Co., Ltd. in December 2016, the government bulletin board to inform the project and its scope change was installed at Ma Jiashan Square (Figure 4).

Figure 4. Bulletin boards installed at Ma Jiashan Square

B. Public consultation

30. To gain better public understanding and their opinion on the general situation of the project, a series of questionnaires, random consultation and conversation was conducted. A questionnaire was distributed to on the residents along the BRT re-alignment (**Table 8**). A total of 81 individuals responded to the questionnaire.

Table 8. Public opinions collection form -Questionnaire

1.Brief introduction of the construction project
The re-alignment route is Huancheng South Road - Yu Ming Avenue - Yingbin Avenue, with the total length of about 4.13km. The construction contents of this project include the widening of Huancheng South Road station and repairing of the sidewalk. HuanchengSouth Road--Yingbin Avenue (Yu Ming Avenue section): the demolition of the existing separator, new construction of motor vehicle lane and repair of damaged sidewalks; the bus station needs to be widened by narrowing the pedestrian crosswalk, and the non-motor vehicle lanes and sidewalks will be rebuilt. Yuming Avenue--the south section of Gandong Avenue (Yingbin Avenue section): maintain the status quo, and set up BRT lane. Other auxiliary projects include: drainage works and greening engineering, etc., with the total investment of 88.3092 million yuan.

2. Major environmental impacts

The main impacts during the construction period of the project may include: the impact of traffic disturbance, construction dust, construction noise, land acquisition and house demolition, construction waste and construction waste water, etc. on the social environment, natural environment and ecological environment.

The main environmental impacts that may exist during the operation period include: the impact of car noise on the sound environment and that of car exhaust on ambient air and social environment along the route, etc.

3. The basic situation of the respondents and investigation contents

Name		Age		Gender	
Education degree		Profession		Position or title	
Address				Contact phone	

1. What is the way you learned about the construction of this project?
□ Broadcast ( ) □ Newspaper ( ) □ TV ( ) □ This questionnaire ( ) □ Other ( )

2. Are you satisfied with the current traffic situation in your area?
□ Satisfied ( ) □ Relatively satisfied ( ) □ Dissatisfied ( )

3. Whatdo you think are the main impacts on the environment in the construction period ? (Multiple choices)
□ Air pollution ( ) □ Water pollution ( ) □ Ecological damage ( ) □ Noise pollution ( ) □ Other ( )

4. The construction process may bring inconvenience for your personal life, and what do you think will be the main impacts? (Multiple choices)
□ Flying dust ( ) □ Noise ( ) □ Sewage mud ( ) □ Travel inconvenience ( ) □ Landscape ( )

5. In the process of project operation, what may be therelatively greater impacts on the environment (can be multiple choices):
□ Car noise( ) □ Car exhaust ( ) □ Vibration( ) □ Other

6. If the construction of this project has an impact on your living environment, what kind of compensation would you like to receive?
□ Economic compensation( ) □ Require the governance to reach the standard ( ) □ Relocation ( ) (□ Does not matter ( )

7. Do you think what is the role of this project in the local economic development?
□ Promotion ( ) □ Obstruction ( ) □ No influence ( )

8. What is your basic attitude towards this project?
□ Agree ( ) □ Does not matter ( ) □ Disagree ( )

9.What is your greatest concern during the operation of this project? What are your specific opinions, requirements and recommendations on the environmental protection of the project and improvement of the surrounding environment?

Table 9. Summary of Respondents

Gender		Age			Education degree			
Male	Female	Above 50	30-50	Under 30	Primary school or under	Middle school	High school	Junior college or above
25	56	18	40	22	1	13	19	53

Table 10. Detailed Information on Public Participants

No.	Name	Gender	Age	Education degree	Address	Phone No.	Agree or not
1	Kong Fanqiao	Male	46	University	Dormitory of District Food Bureau	13823229896	Agree
2	Zou Lanxiang	Female	23	Middle school	Erxian Bridge zone	15307046702	Agree
3	Chen Huixiang	Female	26	High school	Yuminghuacheng zone		Agree
4	Xu Xiaolan	Female	29	High school	Yuminghuacheng zone		Agree
5	Gui Fen	Female	28	Middle school	Yuminghuacheng zone		Agree
6	Deng Xiaomin	Male	44	University	No.363 Gandong Avenue	13030590009	Agree
7	Feng Limin	Male	40	University	Liminqiejia zone	13979482006	Agree
8	Huang Yumei	Female	35	Middle school	Nanhu garden		Agree
9	Wang Zhixun	Male	23	University	Nanhu garden		Agree
10	Qiu Huijin	Female	26	University	Nanhu garden		Agree
11	Zhou Fuqi	Male	40	University	Yanghe	13177669901	Agree
12	Hua Nian	Male	32	University	No.18 Gandong Avenue	13979479033	Agree
13	Dai Jijin	Male	27	High school	No.30 Yanhe Road	18679439890	Agree
14	Pan Weiquan	Female	33	Junior college	Erxian Bridge zone	15946917763	Agree
15	Chen Honghong	Female	46	Junior college	Xihulvzhou zone	13755942199	Agree
16	Zhao Jumei	Female	60	Middle school	Yanhe Road	0794-8291905	Agree
17	Deng Yinxiang	Female	60	Middle school	Hengsheng Urban Garden		Agree
18	Huang Jianqin	Female	49	High school	Hengsheng Urban Garden		Agree
19	Zhang Lingting	Female	41	Junior college	Hengsheng Urban Garden		Agree
20	Chen Xiaomei	Female	49	Junior college	No.18 Gandong Avenue	13879492919	Agree
21	Chen Lisheng	Male	50	High school	Zhongyanghaoting zone	15070428628	Agree
22	Zhang Chunlan	Female	43	High school	No.125 Juya lane	13617941088	Agree
23	Guan Yueqin	Female	46	High school	No.90 Mutang Road	13919486756	Agree
24	Xiong Yinghua	Female	69	High school	No.124 Mutang Road	13361665623	Agree
25	Chen Yuanxiang	Female	67	High school	No.16 Bingma lane	0791-8291080	Agree
26	Huang Ping	Female	33	Junior college	Fuzhou No.3 textile factory	0791-7893618	Agree
27	Wan Renping	Male	35	Junior college	No.2 Sanyuan Building	13920485579	Agree
28	Fu Dongmei	Female	31	Junior college	Qingqing Jiayuan zone	13407942351	Agree
29	Yu Xueying	Female	23	University	Qingqing Jiayuan zone		Agree
30	Zhang Guishi	Male	22	University	Erxian Bridge zone		Agree
31	Chen Yujin	Female	23	Junior college	Fuzhou Machinery Factory		Agree
32	Rao Yonghong	Female	24	Junior college	No.34 Zhishi Lane	13320046748	Agree
33	Liao Shuilan	Female	20	Postgraduate	No.16 Gandong Avenue	13617047322	Agree

34	Rao Lanxiang	Female	21	University	No.34 Zhishi Lane	13767674410	Agree
35	Zhu Quanjiao	Female	21	University	No.16 Gandong Avenue	15216269939	Agree
36	Huang Qionglin	Male	31	University	Fanluoshan zone	13907049907	Agree
37	Hu Kailin	Female	23	University	No.3 Sanyuan Building	13970476255	Agree
38	Rao Wei'an	Male	19	University	Wenchang Garden	13879492257	Agree
39	Peng Ban	Female	54	University	No.80 Jinggong Road		Agree
40	Li Junlin	Male	56	university	No.35 Juya Lane		Agree
41	Wan Guanghua	Male	39	University	Zhuanjian dormitory	07948297528	Agree
41	Xiao Youxiang	Male	52	University	Zhuanjian dormitory	18770189804	Agree
43	Zhang Dongqing	Female	52	University	Xianghe Jinghui zone		Agree
44	Hu Zhushan	Male	53	University	Erxianqiao Garden		Agree
45	Zhang Shenghe	Male	46	University	No.3 Xinglu Road	13970408468	Agree
46	Xu Tong	Male	55	High school	Limin Xiangyuan zone	07948272614	Agree
47	Zhong Xiaoyun	Female	52	High school	Limin Xiangyuan zone	15946936949	Agree
48	Wan Shi	Male	25	High school	Xianghe Jiayuan zone		Agree
49	Zhu Xiurong	Female	42	University	No.26 Gandong Avenue	0794-8292526	Agree
50	Fu Shunping	Male	47	University	No.16 Gandong Avenue	13755958267	Agree
51	Wu Zeping	Male	53	University	No.16 Gandong Avenue	0794-8295289	Agree
52	Xu Wu	Male	48	University	Huimin Haoyuan zone	13307948271	Agree
53	Fu Runze	Male	45	University	Erxianqiao Garden		Agree
54	Huang Xianrun	Male	44	University	Xianghe Garden	13879497458	Agree
55	Shuang Tijun	Female	33	University	Limin Xiangyuan zone	1370747335	Agree
56	Wan Yinghong	Female	44	University	Erxianqiao Garden	18379429657	Agree
57	Xiong Zhihui	Male	22	Middle school	No.3 Haozi Lane		Agree
58	Xu Wenfu	Male	59	Middle school	Erxianqiao Garden		Agree
59	Zhang Yinhua	Male	56	University	Xianghe Garden	13907049513	Agree
60	Xiong Zhigang	Male	56	Middle school	No.124 Mutang Road	15279486899	Agree
61	Fu Juelong	Male	42	Middle school	No.38 Shangyanhe Road	13979126271	Agree
62	Li Yuanmei	Female	45	Middle school	New Wuhuangdian furniture	13879485441	Agree
63	You Hongguang	Female	51	High school	No.51 Jinggong Road		Agree
64	Yang Shuizhou	Male	46	High school	No.33 Huancheng West		Agree
65	Chen Quanhua	Female	79	Middle school	Liushui Bridge	13133948268	Agree
66	Zheng Kaijin	Male	31	University	No.26 Gandong Avenue	18045632895	Agree
67	He Shumei	Female	42	High school	New Wuhuangdian Bus		Agree
68	Zheng Minna	Female	34	Postgraduate	Linchuan No.6 middle	13755909915	Agree
69	Guo Longping	Male	70	Primary school	Fuzhou Chengwai zone	13247740116	Agree
70	He Qin	Female	23	Junior college	Fuzhou Chengwai zone	15679400846	Agree
71	Zhan Guoxiang	Female	65	Middle school	No.110 Huayuan lane		Agree
72	Yang Xiong	Male	40	High school	No.80 Huancheng west	13177653833	Agree
73	Tang Yiqiong	Female	67	Middle school	Linchuan No.6 middle		Agree
74	Wan Guo'an	Male	50	Middle school	Huimin Huayuan zone		Agree
75	Cai Guosheng	Female	50	Middle school	No.23 Fanluoshan	13307945998	Agree
76	Long Guofa	Male	60	Middle school	No.20 Gandong Avenue	15179451344	Agree
77	Zhang Wuxiang	Male	43	Middle school	No.146 Mutang Road	13307945095	Agree

78	Li Qiuxiang	Female	53	High school	Hunan townwhip		Agree
79	Liu Yingming	Female	50	High school	No.3 Xinglufang road		Agree
80	Zhang Yong	Male	47	High school	Fuzhou No.3 textile factory	0791-7893618	Agree
81	Liu Ping	Male	51	High school	Kezi lane	13755985683	Agree

31. The questionnaire results is presented at **Table 11**.

Table 11. Results of public participation

No.	Investigation contents	Option	Number of people	Proportion (%)	Remark
1	What is the way you learned about the construction of this project?	Broadcast	81	100	
		Newspaper	0	0	
		TV	0	0	
		This questionnaire	0	0	
		Other	0	0	
2	Are you satisfied with the current traffic situation in your area?	Satisfied	79	97.6	
		Relatively satisfied	1	1.2	
		Dissatisfied	1	1.2	
3	What do you think are the main impacts on the environment in the construction period ?	Air pollution	20	24.7	
		Water pollution	0	0	
		Ecological damage	0	0	
		Noise pollution	81	100	
		Other	0	0	
4	The construction process may bring inconvenience for your personal life, and what do you think will be the main impacts?	Flying dust	0	0	
		Noise	0	0	
		Sewage mud	0	0	
		Travel inconvenience	81	100	
		Landscape	0	0	
5	In the process of project operation, what may be the relatively greater impacts on the environment?	Car noise	75	92.6	
		Car exhaust	10	12.3	
		Vibration	0	0	
		Other	6	7.4	
6	If the construction of this project has an impact on your living environment, what kind of compensation would you like to receive?	Economic compensation	2	2.4	
		Require the governance to reach the standard	79	96.6	
		Relocation	0	0	
		Doesn't matter	0	0	
7	Do you think what is the role of this project in the local economic development?	Promotion	81	100	
		Obstruction	0	0	
		No influence	0	0	
8	What is your basic attitude towards this project?	Agree	81	100	
		Basically agree	0	0	
		Doesn't matter	0	0	
		Disagree	0	0	

32. The following analysis was made based on the survey results.

(i) **Message penetration rate:** Among the surveyed population, 100% of them got to know about the situation of the project through the broadcast, indicating that the project has a higher penetration rate; the construction unit should, where possible, further strengthen the publicity in various ways and conduct effective environmental management so that more people can understanding and support the project construction

(ii) **Satisfaction degree on the traffic situation and social impact of project construction:** From the investigation results, most of the public are satisfied or relatively satisfied with the regional traffic conditions. Among the respondents, 100% of them think that the construction of this project has a positive effect on the local economic development.

(iii) **Impact of project construction on individuals:** Among the respondents, 100% and 24.7% of them consider that the noise and flying dust during the construction period have a greater impact on the environment respectively. The main environmental impacts in the operation period are car noise (92.6%) and car exhaust (12.3%)

(iv) **Individual attitude towards the project construction:** The public think that the road construction can improve the regional traffic environment and promote the expansion of local urban areas. Among the respondents, most of them (96.6%) require the governance to reach the standards when the construction of the project will bring some impacts on their living environment; all the public show a positive attitude towards the construction of this project and they have no objection.

(v) **Opinions and suggestions on the environmental protection measures of the project:** In this public participation investigation, most of the public ask to speed up the construction progress, and well conduct traffic controls o as not to affect the travel safety.

33. There are four features of this survey, which are:

(i) **Legality:** The public participation work of this project is carried out in strict accordance with the requirements of the "Temporary Act of Environmental Impact Assessment of Public Participating" (Huanfa 2006 [28]). The construction and assessment units have carried out the first and second information publicity in accordance with the requirements successively, and also conducted an opinion investigation on the individuals and groups by ways of issuing public participation questionnaire, etc., and the whole public opinion collection process is both normative and legal.

(ii) **Representativeness:** The scope of public opinions collection is the affected residents and village committees (community management committee), etc. along the roads of the project. The respondents are of universality and representativeness, and the result is true and effective, which can represent the opinions of most interests-related broad masses of the people.

(iii) **Authenticity:** Public participation in the publicity, and issuance of the questionnaires are all strictly in accordance with the relevant requirements; the publicity contents accurately reflect the construction project-related information and the investigation results are true and reliable.

(iv) **Validity:** The main ways to collect public opinions in this environmental impact assessment include website information publicity and issuance of public participation questionnaires, etc., with various and effective forms. The investigation is carried out in the preparation stage of the project EIA report, which can accurately reflect the attitudes of the surrounding masses to the project. The investigation work is carried out in strict accordance with the relevant requirements. The publicity contents are true. The scope of the investigation is representative and the investigation results are reasonable and effective.

34. According to the results of the public consultation and participation, the main opinions of residents from affected communities along the re-alignment was the concern on the impacts of construction noise and flying dust. They emphasized the effective prevention and control measures to be implemented.

35. Responding to the above problems raised by the public, the assessment unit has made some feedback to the proprietors after making a summary. The proprietors attach great importance to it, while the project has a longer construction period, so it has a greater impact on the masses along the route during the construction period; therefore, the following requirements are put forward to the construction unit:

(i) The construction unit should sign a civilized construction contract, prepare adequate funds, conduct scientific scheduling and focus on shortening the construction time;

(ii) When the construction project crosses with the existing roads, they should well control the traffic to prevent traffic jams and partition;

(iii) During the construction period, they should keep good soil and water conservation, such as firstly digging side ditches, etc.

VI. CONCLUSION

36. Additional due diligence for the re-alignment was properly carried out, demonstrating that there is no significant changes in terms of environmental impacts and responding mitigation measures. The public consultation was carried out properly in accordance to the ADB SPS (2009) as well as the PRC regulation on public consultation. The original EMP of the project will remain valid even after the scope change.