Environmental Monitoring Report

Project Number: 44007-013
Semi-Annual Report
July 2018

PRC: Jiangxi Fuzhou Urban Integrated Infrastructure Improvement Project

Prepared by Fuzhou Project Management Office (Fuzhou Investment and Development Company) for the Fuzhou City Government, and Fuzhou City Environment Protection Bureau for the People's Republic of China and the Asian Development Bank.

Asian Development Bank

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CURRENCY EQUIVALENTS

(as of 29 June 2018 Friday)

Currency unit	–	Yuan (CNY)
US$1.00	=	CNY 6.6125 (Middle Rate)
CNY1.00	=	US$ 0.1512

ABBREVIATIONS

ADB	–	Asian Development Bank
BRT	–	bus rapid transit
COD	–	chemical oxygen demand
CEIA	–	consolidated environmental impact assessment
EMP	–	environmental management plan
PCC	–	Public Complaints Center
PRC	–	People's Republic of China
PEPD	–	Provincial Environmental Protection Department

WEIGHTS AND MEASURES

BOD_5	–	biological oxygen demand
CO	–	carbon monoxide
dB	–	decibel
ha	–	hectare
kg	–	kilogram
km	–	kilometer
L	–	liter
m	–	meter
m^2	–	square meters
m^3	–	cubic meters
mg	–	milligram
NOx	–	nitrogen oxide
NO_2	–	nitrogen dioxide
SOx	–	sulfur oxide
t	–	ton

NOTE

In this report, "$" refers to US dollars.

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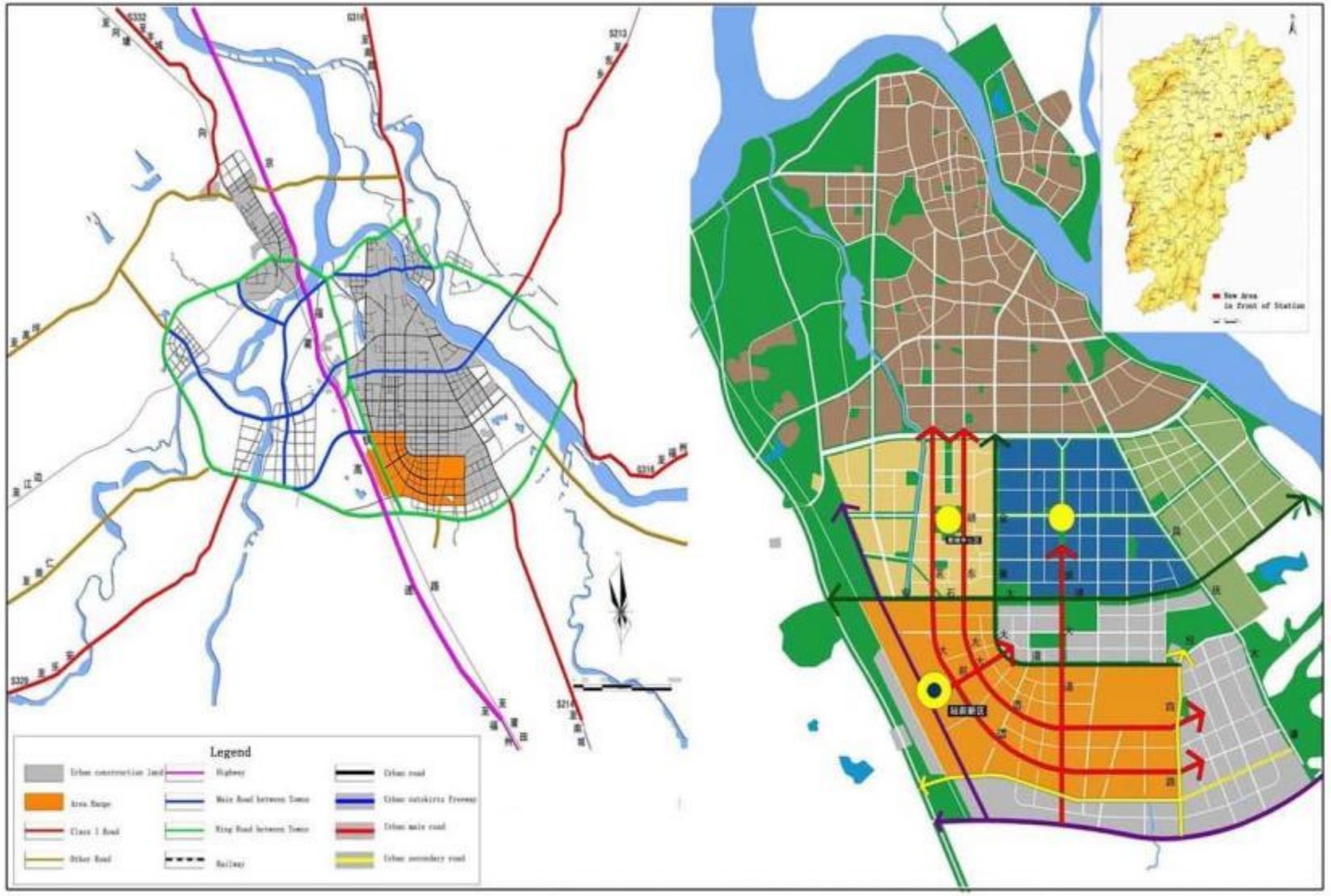


Map- 1 Project Location

I. INTRODUCTION

A. Report Purpose and Rationale

1. As defined in the domestic environmental impact assessments (EIAs) and consolidated environmental impact assessment (CEIA) for Jiangxi Fuzhou Urban Integrated Infrastructure Improvement Project (the Project), semi-annual environmental monitoring reports (EMRs) have to be prepared by the borrower in order to evaluate and assess project activities and to review progress and ensure the effective implementation of the environmental management plan (EMP).

2. The last (seventh) environmental monitoring report (EMR) covering the period January to December 2017 was disclosed in February 2018. The external environmental monitoring service contract (between FIDC and the independent consultant) has expired. All required deliverables have been submitted and approved as scheduled. As this project's physical completion date has been extended to 30 June 2019, per requirement in the Project Agreement and Loan Agreement, the PMO agreed to extend the contract (including engagement of local environmental sampling and test institute) in order to keep up external environmental monitoring until project completion, i.e., from original closing date January 2017 to new closing date 31 July 2019, during the period from now to which, at least four external semi-annual EMRs and an environmental project completion report (dated 31 December 2019) should be prepared. In December 2017, the extended contract was signed. The schedule for future semiannual EMRs submission was confirmed (semiannually, 31 July in progress report and 30 December in stand-alone EMR, until completion of the whole project).

3. The purpose of this eighth EMR is to document the project and environmental management activities and compliance with the approved EMP for this Project from 1 January- 30 June 2018. As the eighth EMR, it will not only cover the construction phase, but also demonstrate compliance with the EMP for the design, bidding, and construction preparation stages. In line with targets aimed at reducing the negative environmental impacts of the Project and in accordance with all the relevant specifications and standards of the PRC, as well as the policies of the Asian Development Bank (ADB), this report will emphasize: (i) progress made in implementing the EMP, (ii) implementation of mitigation measures, (iii) environmental compliance, (iv) institutional strengthening and training, (v) public consultation, and (vi) problems that have occurred and corrective actions taken.

4. This report is prepared by the FIDC (Fuzhou Investment and Development Company) with the assistance from the independent external environmental consultant, Mr. Mingtao Nie. The monitoring plan in the approved EMP was updated on the basis of site investigation and discussion with the local environmental monitoring agency (for field sampling and lab testing), Jiangxi Solid Environmental Services Co., Ltd. (which certificate please see **Appendix 4**).

B. Project Objective and Components

5. **Project components.** The Project involves the construction of four main components to support the urban expansion of Fuzhou city, to assist in the movement of passengers between the new train station and the existing city area and to reduce flood risk. The four components are as follows: (i) Four station access roads consisting of 9 km of new Class II road, to provide access to the new railway station and includes utilities, streetscape

improvements and improved traffic management;(ii) Upgraded public transport system consisting of 12 km of Bus Rapid Transit (BRT) between the new station and the city center;(iii) An urban transport (multimodal) hub including new city bus/bus rapid transit(BRT), long-distance bus terminals, taxi facilities and parking for bicycles, motorcycle, and automobiles; and (iv) A Fenggang river improvement and park development project to extend an existing park corridor along the river providing an urban "greenway" for non-motorized transport that will link the old city with the new station development area.

6. Besides, the GEF grant expands and enhances the project outputs to reduce the energy consumption and carbon intensity of public transport. The GEF-financed activities include: (i) reducing the greenhouse gas intensity of bus operations, (ii) upgrading BRT buses to compressed natural gas (CNG), and (iii) providing CNG buses for BRT feeder services.

7. The project was approved by the ADB on 12 October 2012 for an amount of $100 million from its ordinary capital resources. The Loan and Project Agreements were signed on 19 March 2013, and the loan became effective on 24 June 2013 with an original closing date of 30 June 2018. A grant of $2,546,300 was approved by the Global Environment Facility (GEF) in September 2013. ADB approved the grant as an additional financing on 14 May 2014. The Grant Agreement was signed on 4 June 2015, and the Grant became effective on 9 July 2015. In September 2017, ADB approved extension of loan closing date from 30 June 2018 to 31 December 2019. The closing date of the Grant was extended from 30 June 2018 to 31 December 2019. The project administration was transferred from ADB Headquarters to PRCM on 18 December 2017.

C. Project Implementation Progress

8. The below **Table 1-1** shows the latest project implementation progress.

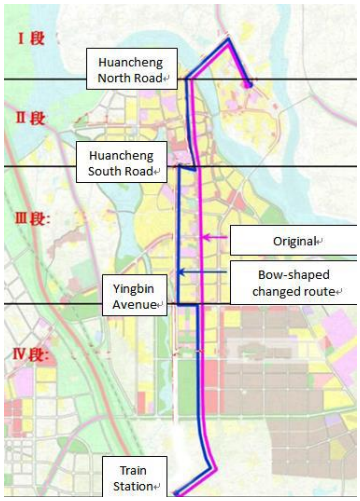
Table 1- 1 Summary of the Subproject Implementation Status(as of 30 June 2018)

No.	Subprojects	Implementation Status
C1.	**Civil works for access roads**	
1	C1.1.Waihuan Road (Front of Zhanqian Square) (k00-k2+580)	Under operation(domestically funded)
2	C1.2. Waihuan Road (K2+580-K3+060)	Trial (100% works completed)
3	C1.3. Zhanqian Road (Yuming Road – Jinchao Road)	physical works completed with few remaining items to be completed in July 2018
4	C1.4. Gandong Road (Anshi Road – Zhanqian Road) and Jinchao Road (Anshi Road – Zhanqian Road)	earthworks completed, drainage pipe system completed, and gravel layer for pavement completed. Asphalt will be paved in July 2018
5	C1.5. Zhanqian Road (Jinchao Road – Jinni Road) and Jinchao Road (Zhanqian Road – Jinni Road)	Trial (100% works completed)
6	C1.6. Gandong Road (Zhanqian Road – Jinni Road)	earthworks completed, drainage pipe system completed, and gravel layer for pavement completed. Asphalt will be paved in July 2018.
C2.	**Civil works for BRT**	
7	C2 BRT civil works	Under construction, scheduled from Jul 2017 to Dec 2018. Progress of the contract includes: • Gandong Boulevard: completed pavement, rain and waste water drainage pipes, electricity and cable pipes, transformers foundations, platforms no. 6 and no.7, steel structure, and all pedestrian walkway;

		• Huanchengnan Road: completed pavement, waste water pipes, electricity cable pipes, inspection shaft, no.8 platform's steel structure; and pedestrian was completed 50%; • Yumin Boulevard (section 1): completed pavement, wastewater pipes, electricity pipes, completed 90% transformer cabinet and foundation, completed 80% steel structure for platforms no.9,10 and 11; • Yumin Boulevard (section 2): completed wastewater pipes, electricity pipes and inspection shaft; • Yumin Boulevard (section 3): construction ongoing with 50% completed.
C3.	**Civil works for bus terminals and transport hub**	
8	C3.1. Bus company headquarter, bus and BRT terminals	the bus terminal building was completed, fitting and decoration completed 95%, maintenance and inspection rooms completed 95%, traffic engineering completed 50%, and retaining wall completed 95%. Ongoing earthworks, pavement, boundary wall, and miscellaneous works are scheduled to be completed by August 2018.
C4.	**Civil works for Fenggang River improvement** (90% works completed)	
9	C4.1. Hydraulic and landscaping works	municipal works and landscaping for 4.8 km Fengang River (including pavement and surfacing, greening, lighting, and auxiliary facilities) completed 95%, hydraulic works (including earthworks and excavation and embankment surface stabilizing and drainage culvert) completed 98%.
10	C4.2. First section of landscaping works	
11	C4.3: Second section of landscaping works	
E5.	**Equipment**	
12	E1 BRT Equipment	Being procured. To finish procurement in Q3 of 2018
13	E2 BRT Buses (70) and Feeder Buses (10)	To procure in Q3 of 2018
14	E3 Equipment for Bus Maintenance	Procured in Q3 of 2017
CS6.	**Consulting Services**	
15	CS6.1.Implementation Support and Institutional Strengthening	Under implementation
16	CS6.2.Land Acquisition and Resettlement	Under implementation
17	GAP Implementation	Under implementation
18	EMP implementation	Under implementation
19	BRT/NMT Planning and Implementation Support	Under implementation

9. **Realignment of BRT corridor**. The domestic EIA of the whole Project was approved by Fuzhou EPB in 2012. Fuzhou EPB approved the updated domestic EIA report on 16 January 2016 for the BRT corridor realignment (see ***Appendix 2*** of the fifth ***EMR*** dated Aug 2016). Correspondingly, an environmental due diligence report on the BRT corridor realignment was approved by ADB and disclosed on ADB project website in September 2017.

Table 1- 2 BRT Route before and after Re-alignment

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	

10. **Proposed BRT design improvement.** During the Nov 2017 ADB loan review mission, the BRT implementation support consultant pointed out that BRT buses cannot easily U-turn at the beginning point (Station B1) under the current design and proposed two alternative options for improvement. After discussions, it was agreed that a "detour plan" shown in Error! Reference source not found.**-1** will be sought. A detour route with a new station will be included in the ADB project scope while the proposed Xiaoqiao bus terminal will be developed by the government outside the ADB project scope. The IA requested that improvement of 400 m section of Xiaoyi Road excluding the Wenchangli tourism development area be financed by ADB loan. In Dec 2017, the IA (FIDC) acknowledged that as the proposed BRT design improvement will involve the national highway having heavy truck traffic so with potential traffic safety risks, the proposal was still being considered, and not yet determined. Safeguard impact assessment documents (especially environment) will be prepared for ADB's review once the design is revised.

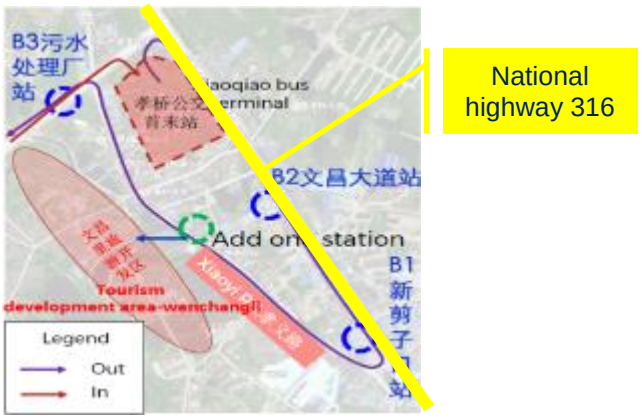


Figure 1- 1: Improvement Proposal around the Beginning Point of BRT

11. **Sponge city and wetland habitat.** FMG adopted the principles within the design of Fenggang River improvement, most works of which were completed and open in Sept. 2017. Fenggang River Improvement (Phase II) component is divided into five scenic areas from

north to south along the river channel: (i) Sanweng garden scenic spot, which has become a fine-quality park. (ii) Fengfanliubi Square, Yingbin Plaza and Liaowang Suare scenic spots. The concept of "Sponge City" is adopted in these three big squares paved with permeable brick, permeable concrete and loose wood piled below. When it rains, rainwater flows directly into the Fenggang River through infiltration, rather than by pipelines, and therefore, there will be no waterlog on square ground. (iii) Riverside wooden platform. In addition to gentle slope lawn decorated by the original ecological river bank, there are also various ecological forests, planted with such as osmanthus, magnolia, crape myrtle, and superba tree, and etc.. (iv) Gabion ecological slope protection for 3km of the river bank. It is flexible and ecological, and very beneficial to aquatic plants and fish. (v) Flood wetland keeps the original ecological environment. Through dredging the river channel, a 500-meter long flood wetland is built to guarantee flood prevention and provide a good ecological living environment. Hence, Fenggang River Improvement (Phase II) component promotes mitigation and adaption to climate change, provides ecological purification function and conserves biodiversity. In end Dec 2017, the Fenggang river park was formerly listed as one of the national wetland park **pilots** by State Forestry Administration[1].

Figure 1- 2: Overview of Fenggang River Park

12. **Environmental due diligence report on the potential scope changes.** To fully utilize the potential loan savings and strengthen the deployment of BRT, the addition of power supply for all the BRT stations, relocation of underground high-voltage power cables along Yuming Road and changes around the beginning point along BRT corridor (***para. 10***) may be considered. The first two proposed power supply subcomponents remain located under the current BRT alignment, so the incremental environmental impact is expected insignificant. However, the FMG has not decided which additions will be applied for the potential ADB loan saving. Therefore, if needed, the addendum to EIA will be prepared for ADB's review once the decision is made. The external environmental monitoring consultant will prepare the environmental due diligence on the minor scope change and have it enclosed to the future environmental monitoring reports.

[1] http://www.shidi.org/sf_E3BE9DFD0D6341AC99FD71B4F07E9BB7_151_sdb.html

II. INSTITUTIONAL SETUP AND RESPONSIBILITIES FOR EMP IMPLEMENTATION AND SUPERVISION

13. **Establishment of the project environmental management system (EMS).** Based on the actual progress, the environmental officers of FIDC conducted detailed discussion with the contractor and supervisor. The below **Figure 2-1** and **Tables 2-1** to **2-2** update the environmental responsibilities of each organization during construction phase of the Project.

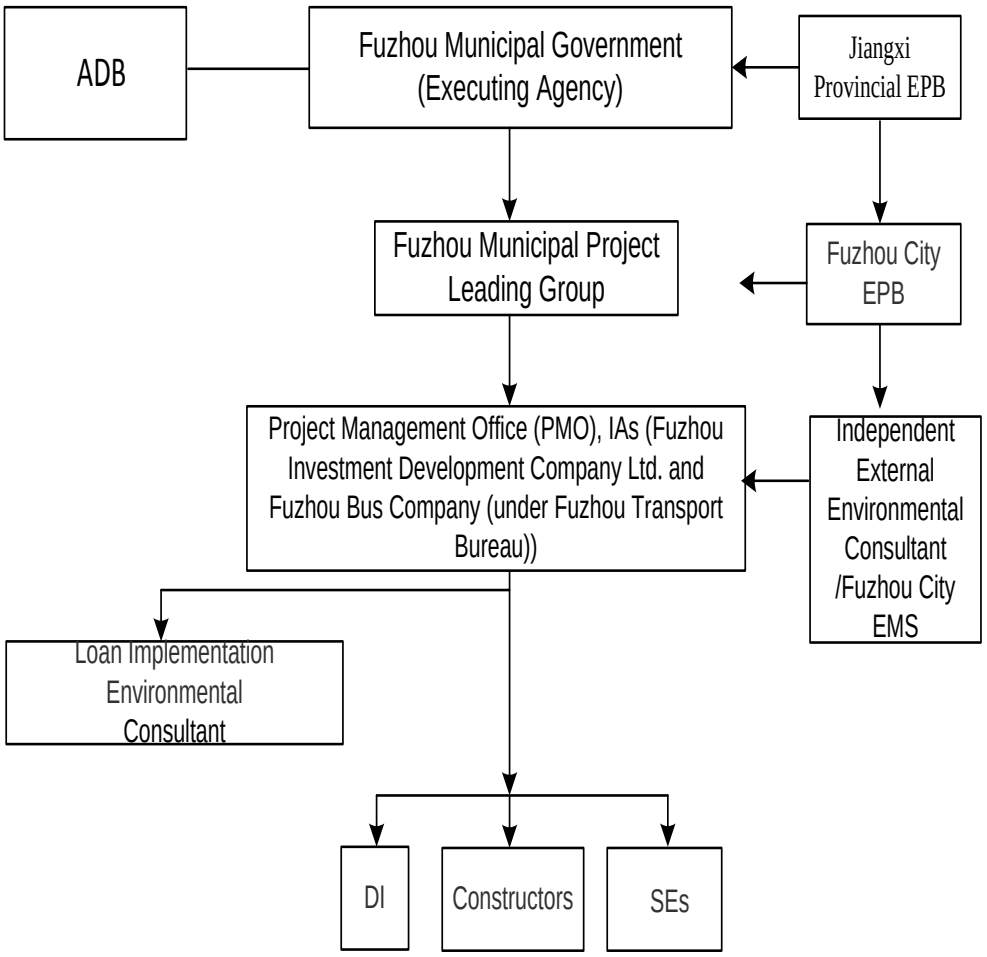


Figure 2- 1 Environmental Management System of the Project

14. The Project Management Office (PMO, under FIDC) ensures that the EMP is part of the contract documents. Contractor is responsible for preparing a specific Environmental Management Plan (Contractor's Environmental Management Plan or CEMP) based on the EMP, prior to the commencement of construction activities. Supervising Engineer (SE) is responsible for reviewing and approving Contractor's EMP as well as ensuring that contractor

complies with its mandates. Public complaints regarding adverse environmental impacts arising from inadequate implementation of the EMP, if any, will be captured through the proposed Grievance Redress Mechanism. For the details please see the **Table 2-1**. So far, all ten contractors (C1.1, C1.2, C1.3,C1.4,C1.5,C1.6, C2, C3.1,C4.1~-C4-3) have submitted their CEMPs for each contract, and they have been reviewed by the Independent External environmental consultant, and approved by PMO.

Table 2- 1 List of Agencies for Project Implementation

No.	Subprojects	IA
1	**Output 1:** Bus rapid transit system	FIDC (To be operated by Fuzhou Bus Company, under Fuzhou Transport Bureau)
2	**Output 2:** Urban transport hub	Fuzhou Bus Company (under Fuzhou Transport Bureau)
3	**Output 3:**Fenggang river greenway	FIDC
4	**Output 4:** Station access roads	FIDC
5	**Output 5:** Institutional strengthening and capacity building	FIDC and Fuzhou Bus Company (under Fuzhou Transport Bureau)

15. Each contractor has an Environmental Management Officer in the contractor's staff responsible for implementing the EMP, correspondingly, each supervising engineer's staff also includes an Environmental Surveillance Monitoring Specialist to monitor the implementation of the EMP and to manage other unforeseen environmental impacts. For details please see **Table 2-2**.

16. Before the construction activities commence, Contractor prepared and submitted other mitigation plans and method statements consistent with the EMP to Supervising Engineer (SE) for review and approval. Contract documents explicitly indicate the requirement of these plans and also state that all environmental protection measures should be included in the bid price.

17. Bidding documents and detailed design contracts are prepared and managed by the FIDC. Public consultations during the implementation of the EMP are arranged by the SE/PMO. The environmental specialist of FIDC examined the issued BDs and signed contracts. The environmental clauses have been incorporated into the design and procurement documents. The EMP has been attached in the BDs issued and civil works signed. The costs of all mitigation measures during construction have been covered in the issued bidding documents and signed contracts. The cost of civilized construction measures is included in the BOQs of all ten civil works contracts' bidding documents (BDs). Contractor Environmental Specifications attached in the PAM are included in the signed contract. Standard environmental clauses and sub clauses have been applied in the Standard Conditions of Contract (SCCs) 2.3(9), SCCs 19.3, 31.3 and 66 in the ten civil works contracts. Contractors' environmental monitoring reports are included in the SEs' monthly contract progress reports and submitted monthly, as recommended in the PAM. FIDC and the loan implementation environmental consultant (see **para. 16** below) review these monthly environmental monitoring reports and prepare quarterly environmental monitoring reports included in the Project quarterly progress reports. Contractor Environmental Specifications cover impacts on water resources, air quality, noise environment, traffic, adjoining properties, and utilities, human health and safety, flora and fauna, soil, disposal of waste, cultural heritage and other

matters. The objective of these clauses is to reduce and manage all potential environmental impacts caused by the construction activities. Construction work is carried out by qualified contractors and relevant sub-contractors. Contractor is responsible for implementing the mitigation and monitoring measures defined in the EMP. To meet these requirements each contractor has appointed an Environmental Officer to oversee this task who communicates closely with the rest of the team.

Table 2- 2 ENVIRONMENTAL PERSONNEL AND PERFORMANCE

Table 2-2-1: IAs' Environmental Personnel and Performance

From 1 January- 30 June 2018

Component	IA	IAs' Environmental Personnel			IAs' Environmental Performance
		Key Person		Contact	
C1.Civil works for access roads	FIDC	Deputy General Manager	Mr. Liu Haiquan	Cell: 13907946066, Tel: +86 794 8257866	Implemented the EMPs; supervised and coordinated the Contractors and SE's environmental work; and assisted in preparation of this 7th EMR.
		Engineer	Mr. Fan Long	Cell: 18296480180 Email: FZ_PMO@163.com	
C2. Civil works for BRT	FIDC (To be operated by Fuzhou Bus Company, under Fuzhou Transport Bureau)	Deputy General Manager	Mr. Liu Haiquan	Cell: 13907946066, Tel: +86 794 8257866	
		Engineer	Mr. Fan Long	Cell: 18296480180 Email: FZ_PMO@163.com	
C3. Civil works for bus terminals and transport hub	Fuzhou Bus Company (under Fuzhou Transport Bureau)	Section Chief of Fuzhou Transport Bureau Officer of Fuzhou Transport Bureau	Mr. Huang Zhiqun Mr.Liu Zhenhua	Cell: 13970437292 Cell: 15807049990	
C4.Civil works for Fenggang River improvement	FIDC	Deputy General Manager	Mr. Liu Haiquan	Cell: 13907946066, Tel: +86 794 8257866	
		Engineer	Mr. Fan Long	Cell: 18296480180 Email: FZ_PMO@163.com	
E5. Equipment	Fuzhou Bus Company (under Fuzhou Transport Bureau)	Section Chief of Fuzhou Transport Bureau	Mr. Huang Zhiqun	Cell: 13970437292	
		Officer of Fuzhou Transport Bureau	Liu Zhenhua	Cell: 15807049990	

DUTIES:

- to refine and implement the EMP;
- to ensure the mitigation and monitoring measures recommended in the EMPs and EIAs are incorporated into the design and bidding documents;
- to supervise and coordinate implementation of mitigation measures and environmental monitoring in construction phase;
- to analyze environmental monitoring weekly reports；
- to organize environmental compliance monitoring;
- to monitor and coordinate environmental supervision;
- to establish, organize and carry out training plan;
- to establish and implement publish consultation plan; to prepare semi-annual progress reports and EMRs with assistance of the Consultant; and to undertake other related work as required.

Table 2-2 ENVIRONMENTAL PERSONNEL AND PERFORMANCE

Table 2-2-2: Contractors' Environmental Personnel and Performance for Ongoing Civil Works Contracts
From 1 January- 30 June 2018

Component	Contract	Contractor	Contractors' Environmental Personnel		Contractors' Environmental Performance
			Environmental Person	Contact	
C1. Civil works for access roads	C1.1 Waihuan Road Civil Works	Nanchang Road and Bridge Company	Mr. Li Xuan, Engineer	Cell: 13361667066 Email: Lixuan19870207@126.com	Completed and operational
	C1.2 Waihuan Road (K2+580-K3+060)	Jiangxi Tongwei Road Construction Group Co., Ltd.	Mr. Liu Shujing, manager/Wang Wenbang, EHS Engineer,	Cell: 15207945309 /15720909021	Overall satisfactory (main environmental concerns: plenty of spoil was observed being stockpiled along the road shoulders. Some construction waste was not covered. The contractors explained those spoils were dumped by nearby villagers. The construction sites looked not fully fenced. Access control should be enhanced. Site spoil management should be strengthened. For details please see the **Appendix 2 Site Visit Notes**)
	C1.3 Zhanqian Road (Yuming Road-Jinchao Road)	Guangxi Huanan Construction Group Co., Ltd.	Mr. Jie Yang, Site manger /Miss Liu Lijuan, EHS engineer	Cell: 13870482322 /13177661661, 1390579627@qq.com	
	C1.4 Gandong Road (Anshi Road-zhanqian Road)and Jinchao Road(Anshi - Zhanqian)	Kunpeng Construction Group Co., Ltd.	Mr. Huang Jiangao, Site manger /Mr. Du Xiaoliang, EHS engineer	Cell: 18907940607 /13807949111	
	C1.5 Zhanqian Road (Jinchao Road - Jinni),Jinchao Road (zhanqian－Jinni)	YichunTongda Road & Bridge Construction Co., Ltd.	Mr. Huang Zhenhua, Site manager /Miss Li Rong, EHS engineer	Cell: 18296499776 /15870786933	
	C1.6 Gandong Road (zhanqian－Jinni)	Zhushan Construction Group Co., Ltd.	Mr. Wan Hui, Site manager, /Mr. Huang Chungeng, EHS engineer	Cell: 15179404939/ 18379464247	
C2.Civil works for BRT		Joint Venture of Fujian Lugang (Group) Co., Ltd. (Leader) and Beijing LuAn Traffic Technology Development Co., Ltd.	n/a	n/a	Overall satisfactory
C3.Civil works for bus terminals and transport hub	C3.1. Bus company headquarter, bus and BRT terminals	Guangxi Jiangong	Mr. Yin and Mr. Li	To be added in the next EMR	Overall satisfactory

Component	Contract	Contractor	Contractors' Environmental Personnel		Contractors' Environmental Performance
			Environmental Person	Contact	
C4. Civil works for Fenggang River improvement	C4 Fenggang River Improvement (C4.1. Hydraulic and landscaping works C4.2. First section of landscaping works C4.3: Second section of landscaping works)	Jingxi Hongzhou Landscape Engineering Co., Ltd.	Mr. Yang Qizhu, manager/ Mr. Li Hua, EHS engineer	Cell: 13699597387/ 13979483998	Overall satisfactory
DUTIES: • to implement mitigation measures during construction phase; • to establish environmental monitoring plan and detailed action plan as needed; • to carry out environmental monitoring, maintain relevant records, produce weekly reports, and submit to the relevant SE and IA; • to participate relevant environmental training; • to assist with public consultation; • to assist with resolving environmental problems accoutered in construction; and to provide information and undertake other work as required.					

Table 2-2 ENVIRONMENTAL PERSONNEL AND PERFORMANCE

Table 2-2-3: SEs' Environmental Personnel and Performance for Ongoing Civil Works Contracts

From 1 January- 30 June 2018

Component	Contract	SE	SEs' Environmental Personnel		SEs' Environmental Performance
			Key Person	Contact	
C1. Civil works for access roads	C1.1 Waihuan Road Civil Works	Changda Supervision Co., Ltd.	Mr. Wu Shenrong, Site supervising engineer	Cell: 13479426408	Conducted environmental supervision; and prepared and regularly submitted monthly supervision reports.
	C1.2 Waihuan Road (K2+580-K3+060)	Changda Supervision Co., Ltd.	Mr. Zhang Yigeng, Engineer	Cell: 15697883428	
	C1.3 Zhanqian Road (Yuming Road-Jinchao Road)	Changda Supervision Co., Ltd.	Mr. Zhang Yigeng, EHS engineer	Cell: 15697883428	
	C1.4 Gandong Road(Anshi Road-zhanqian Road)and Jinchao Road(Anshi -Zhanqian)	Jiangxi Hengshi Construction Supervision Company	Mr. Zhang Hegeng, EHS engineer	Cell: 13677979595	
	C1.5 Zhanqian Road (Jinchao Road - Jinni),Jinchao Road (zhanqian－Jinni)	Jiangxi Hengshi Construction Supervision Company	Mr. Zou Guisheng, Engineer	Cell: 18970475156	
	C1.6 Gandong Road (zhanqian－Jinni)	Changda Supervision Co., Ltd.	Mr. Zhang Huiming, EHS engineer	Cell: 13879493605	
C2.Civil works for BRT		Joint Venture of Fujian Lugang (Group) Co., Ltd. (Leader) and Beijing LuAn Traffic Technology Development Co., Ltd.	n/a	n/a	Conducted environmental supervision; and prepared and regularly submitted monthly supervision reports.
C3.Civil works for bus terminals and transport hub	C3.1. Bus company headquarter, bus and BRT terminals	Changda Supervision Co., Ltd.	Mr. Zhang Huiming, EHS engineer	Cell: 13879493605	Conducted environmental supervision; and prepared and regularly submitted monthly supervision reports.
C4. Civil works for Fenggang River improvement	C4 Fenggang River Improvement (C4.1. Hydraulic and landscaping works C4.2. First section of landscaping works C4.3: Second section of landscaping	Guangdong Hehai Construction Engineering Company /	Mr. Li Haihong, hydraulic engineer	Cell: 15070425431/	

Component	Contract	SE	SEs' Environmental Personnel		SEs' Environmental Performance
			Key Person	Contact	
	works)	Jiangxi Zhongxiang Construction Supervision Company	Mr. Li Xingming, landscaping engineer,	Cell: 13970429412	

DUTIES:

- to participate various review meetings and recommend environmental improvement to construction arrangements, technical issues, progress etc.;
- to review environmental performance of construction equipment;
- to supervise the implementation and any changes of mitigation measures;
- to inspect ambient environment and impacts;
- to report and help to deal with any environmental problems or accidents encountered;
- to prepare monthly environmental supervision reports and submit to FZPMO and the respective IA; and
- to participate in construction completion audit in terms of environmental aspects, and submit related reports or certification as needed.

Table 2-2 ENVIRONMENTAL PERSONNEL AND PERFORMANCE

Table 2-2-4: Other Supervision Agencies' Environmental Personnel and Performance for Ongoing Civil Works Contracts

From 1 January- 30 June 2018

Component	Other Supervision Agencies	Supervision Agencies' Environmental Personnel		Supervision Agencies' Environmental Personnel Performance
		Key Person	Contact	
C1. Civil works for access roads **C2.Civil works for BRT** **C3.Civil works for bus terminals and transport hub** **C4. Civil works for Fenggang River improvement**	Jiangxi EPB/Fuzhou EPB (Fuzhou Environmental Supervision Team),	Miss. Zou Xiaohong, Fuzhou EPB /Miss Li Hua	Tel: 0794-12369 Cell: 13979483998	Implemented and complied with environmental monitoring, and implementation supervision of mitigation measures
	Fuzhou PMO	-	-	
	Design Institute (including Jiangxi Zhongmei Engineering Group. Ltd.,/ Xiameng Zhongping Road Survey And DI Co., Ltd.)	Miss Ouyang Chuzhu, landscaping Engineer/Mr. Fan Chengkang	Cell:15216263423 / 13879481306	
	Independent Environmental Monitoring Expert	Mr. Nie Mingtao	Cell: 18086056438 Email:hjpmo@163.com	

18. **Loan implementation environmental consultant.** Except the independent external environmental consultant, the FIDC and the Loan implementation consultant (EED) entrusted an environmental consultant to support environmental management, monitoring, supervising and prepare the environmental part in the Project quarterly progress reports. So far, the Loan implementation environmental consulting work is underway.

III. COMPLIANCE WITH ENVIRONMENT RELATED PROJECT COVENANTS

19. So far, all due environmental covenants in Loan Agreement and Project Agreement are in compliance, with some still to be enacted.

20. The environmental requirements in the MOU of last ADB mission are being complied with so far. For details see **paras. 9~12** (environmental due diligence)**, 20~21**(onsite environmental management improvement)**, section D of Chapter V** (monitoring and evaluation)**, Chapter VI** (GRM and public consultation)**, and Appendix 5 (**Public and Agency Comments and Responses) of this report.

IV. ENVIRONMENTAL MITIGATION AND COMPENSATION MEASURES IMPLEMENTED IN THE REPORTING PERIOD

21. Potential environmental impacts of the Project and the mitigation measures during this reporting period are summarized in **Appendix 3.** The implementation status of the mitigation measures are summarized in the last columns of the tables for comparison with the designed mitigation measures stated in the EMP. In summary, the mitigation measures have to date been implemented effectively. EMP requirements for each contract are confirmed generally good compliance during site visits, as shown in **Appendix 2**.

22. During the ADB loan review mission in November 2017, site environmental management (*garage and construction waste randomly disposed without proper collection; several construction sites without appropriate fences; BRT alignment road traffic control inadequate; electricity lines exposed without proper protections; construction workers not equipped with personal protection equipment; and excavated trench no presence of necessary supporting measures*) issues were raised. To address those comments, FIDC immediately urged the constructors and SEs to improve onsite environmental management. The contractors and SEs organized relevant training to the onsite construction workers in order to raise their environmental awareness and facilitate sound construction practice based on the CEMPs; and strengthen supervision and environmental monitoring. In December 2017 respectively, FIDC and the independent external environmental consultant undertook further training and inspected all the construction sites and confirmed general compliance (for more details please see the **paras. 32 to 35** in the **section D** of **Chapter V** below, **Appendix 2 Site Visit Notes** and **Appendix 3**).

23. **Environmental mitigation cost and benefits data collection.** The project will contribute to positive cumulative effects of the area urban development, through an increase in socioeconomic opportunities and standards of living, provision of new amenity resources (linear urban park), and improved public transport provision which will encourage modal shift and contribute to a reduction in congestion and emissions. The Fenggang River Improvement works are expected to have medium to long-term benefits by reducing flood risk to the new urban area and downstream areas through improved flood storage capacity (please refer to the **para.9**). These benefits data are often difficult to accumulate at project completion review (PCR) stage in short notice. Since the three components (including some station access roads, Fenggang river improvement, and urban public transport hub) will be finished by June and July 2018, the environmental mitigation cost and benefits data should be collected and reported in the future EMRs and project progress reports. In May 2018, the external environmental monitoring consultant provided related training and disseminated the sample contract completion environmental data list to the contractors and CSCs. In the next (9^{th}) reporting period, the external environmental monitoring consultant will further collect environmental mitigation cost and benefits data, and report those with the domestic completion check and acceptance preparation status in the 9^{th} EMR due 31 January 2019.

V. SUMMARY OF ENVIRONMENTAL MONITORING

A. Achievements of Design and Monitoring Framework (DMF) Indicators

24. The Impact indicators in the DMF have one closely relating to environment, i.e. average concentrations of carbon monoxide and nitrogen dioxide in Fuzhou staying at current levels until 2020. The outcome indicators in DMF have an indicator closely relating to environment, i.e. Fenggang River Flood frequency reduced from annual to once in 20 years. Based on the above, FIDC is working with the independent external environmental consultant to collect the relevant data in terms of environmental management. As alternatives, the following data from Fuzhou EPB was provided by Fuzhou EPB.

- PM_{10}: 0.064 mg/m^3, $PM_{2.5}$: 0.042 mg/m^3 , CO:1.230 mg/m^3, NO_2:0.019 mg/m^3, SO_2: 0.014 mg/m^3; in total 58 Days of Class I, 96 Days of Class II, and 25 days worse than Class II in the 1st half of 2018.

(PM_{10}: 0.150 mg/m^3, $PM_{2.5}$: 0.075 mg/m^3; CO: 4 mg/m^3, NO_2:0.080 mg/m^3, SO_2: 0.150 mg/m^3 (daily average) in Ambient Air Quality Standards, GB 3095-2012, Class I)

From the below figure, the urban air quality (AQI) of Fuzhou city remained healthy through the 1st half of 2018, at an AQI daily average of about 68.

Figure 5- 1 Chart of Fuzhou City Urban Air Quality in the 1st half of 2018(AQI)

25. According to the information from the website of Fuzhou municipal government[2], the output 3 Fenggang River greenway (phase 2) under this ADB project is part of Fenggang River basin rehabilitation project, which will be completed by Dec 2019, by when Fenggang River Flood frequency will be reduced from annual to once in 20 years.

[2] Fuzhou daily on 26 May 2017, http://www.xunart.com/b52074.html

B. Environmental quality targets

26. The Project's environmentally sensitive receptors are listed in **Table 5-1** below.

Table 5-1 List of Environmentally Sensitive Receptors

Item	Type of Objective	Environmentally Sensitive Receptors	Location
Water	Surface Water	Fenggang River (Class III of **Environmental Quality Standard for Surface Water (GB3838-2002)**)	
Noise and air	Residential area nearby	(i) Xianxiyao Village (Intersection of Waihuan Rd and Chonggang Rd.). (ii)Guojialing Village-1 (Intersection of Gandong Ave., No.1 Zhanbei Rd. and Zhanqian Rd.) (iii)Guojialing Village-2 (Intersection of Gandong Ave. and Zhanqian Rd.) (iv)Guojialing Village-3 (Intersection Of Gandong Ave.) (v)Jinjia Village (Jinchao Ave.) (vi)Gongjia Village (North of Jinchao Ave., East of Weier Rd.) (Class II of Environment Ambient Air Quality Standard (GB3095—2012) and Class II Environmental Quality Standard for Noise (GB3096-2008))	80m to the property line; 45m to the property line; 50m to the property line; 60m to the property line; 28m to the property line; 40m to the property line;
Ecological Environment/ Soil Erosion	Farmland ; Earth borrow pit ; High filled and deep excavated road sections; Landscape	Total area is 3248.68mu including 2296.5mu farmland; Affected vegetation, cultivated land, soil erosion and landscape; Affected vegetation, cultivated land, soil erosion and landscape; Alignments and structures; harmony with the surrounding landscape	Along the road ; Along the road ; High filled sections； Deep excavated sections： Along the road

C. Environmental Monitoring plan and responsibilities

27. Based on the EMP and Chinese EIA, an environmental monitoring program is presented in **Table 5-2**. This program considers the scope of monitoring; monitoring parameters; time and frequency; and implementing and supervising agencies. The monitoring follows the methodology provided in the national standard methods for monitoring pollutants. Other associated standards are national environmental quality standards and pollutant emission standards. The environmental monitoring will be undertaken on a semi-annual basis.

Table 5- 2 Environmental Monitoring Program Defined in EMP

Component	Location	Parameter	Frequency	Duration	Who Implements	Who Supervise	Implementation status
Construction							
Air Quality	Sensitive locations around construction sites - 6 sites	TSP	Quarterly-3 consecutive days	3 years	Independent external environmental consultant	Fuzhou EPB, FZPMO	Complied with. For details please see **Section D.**
Acoustic Quality		Noise	Monthly -1 day	3 years			
Water Quality	Fenggang River – 4 points	SS, COD, Oil/grease	Quarterly - 1 day	3 years			
Operation							
Air Quality	Main trunk roads and sensitive locations	Exhaust	Randomly	Continuous	Qualified Environmental Monitor	Fuzhou EPB	Not yet due.
		Atmosphere	Once every season	Continuous			
Acoustic Quality		Transport Noise	Daytime once and nighttime once, annually - 2 consecutive days	Continuous			

28. **Environmental monitoring sampling arrangements**. The work scope for the environmental monitoring of the Project requires:

    a) For the components during construction period, the location and time of monitoring is determined according to the actual construction progress, activities and routes.

    b) For the components under operation, the monitoring locations are selected near sensitive sections, such as residential areas, schools, etc.

29. **Selection of water quality monitoring sections.** Four water quality monitoring sections in the Fenggang River (phase II) were selected to monitor operation impacts in May 2018. The environmental monitoring sections mainly referred to the domestic EIA report, in which the inlet section from Fenggang River directly to Fu River was monitored originally. But the section at the direct inlet from Fenggang River to Fuhe River does no longer exist now because the water route has been changed through other domestic hydraulic projects. Actually currently Fenggang River flows to Linshui River then into Fuhe River. There is no change for other sections in Fenggang River. It was recommended to alter the monitoring section to the inlet from Fenggang River to Linshui River and can reflect the water quality of effluent of Fenggang River. For details see the **Table 5-5** (section #SW 4, also see the below figure).

30. **Selection of noise and air quality sensitive locations around construction sites-6 sites.** In the environmental monitoring plan of the EMP approved by ADB, no detailed noise and

atmosphere monitoring locations have been designated. However, in the domestic EIA report, six noise and air quality sensitive locations around construction sites were monitored as environmental baseline. Among of them, three noise and atmosphere sensitive locations in Guojialin Village were monitored. Based on discussion with FIDC, two points for road operational impacts (A2&N2 and A4&N4), one point (A7&N7) for public transport hub construction impacts, and two points (A8&N8, A9&N9 and A10&N10) for BRT corridor construction impacts were selected in Jan 2018. **Table 5-6, Table 5-7** and the below figure include the details.

Figure 5- 2 Locations of the Water, Air and Noise Monitoring Points/Sections

31. The detailed sampling arrangements **in this reporting period** are shown in **Table 5-3**.

Table 5- 3 Environmental Monitoring Sampling Arrangements for this Reporting Period

Subject	Parameter	Location	Time &Frequency
Surface water quality	SS, oil, COD_{Cr}	4 sections of Fenggang River (details see the **Table 5-5**): Intersection of Fenggang River and Chonggang Ave.; Intersection of Fenggang River and Zhanqian Ave.; Intersection of Fenggang River and Linchuan Ave.;	once per day, for 3 consecutive days , twice per year including once in dry season and once in rainy season

Subject	Parameter	Location	Time &Frequency
		The inlet from Fenggang River to Linshui River.	
Air quality	TSP	All 6 sensitive receivers near boundary of the construction sites(details see the **Table 5-6, Table 5-7**): Public transport hub Guojialing Village Jingjia Village Gongjia Village BRT Bubugao bus station BRT Majiashan square bus station.	once per day for 3 consecutive days, twice per year.
Acoustic environment	Leq(dB(A))		twice a year: twice a day each time ,once during daytime, once during nighttime.

Table 5-4 shows the standard monitoring methods, detection limits, and the standard limit for each of the monitoring parameters. Without non-compliances occurred in this or previous reporting periods. For details please see the below **paras. 30 to 41**.

Table 5- 4 Standard Monitoring Methods of Ambient Air, Noise and Water

Media	Monitoring Parameter	Method (Standard No.)	Detection Limit	Standard Limit
Surface water	SS (mg/L)	Gravimetric method (GB11901-89)	4	250
	Petroleum (mg/L)	Water quality- Determination of petroleum oils and animal and vegetable oils- Infrared spectrophotometry(HJ 637-2012)	0.01	0.01
	COD_{Cr}(mg/L)	Water quality-Determination of the chemical oxygen demand-Dichromate method (GB 11914-89)	0.5	20
Air	TSP (mg/m^3)	Gravimetric (GB/T15432-1995)	0.001	0.30
Noise	Equivalent Continuous A Sound (Leq)	Environmental quality standard for noise (GB3096-2008)	0.5	60 (day)/ 50 (night)

D. Monitoring Results and Assessment

1. Emission Discharge (Source) Monitoring Results

a. Results of Discharge (Source) Monitoring

32. FZPMO and the SEs regularly inspect the environmental status of the construction sites. Fuzhou Environmental Supervision Team, Fuzhou EPB, also periodically conducted site inspections to check compliance status. Environmental monitoring was carried out by the contractors.

33. In May 2018, the independent external environmental consultant visited the work sites of the road civil works Contracts C1.2/1.3/1.4, C2 for BRT civil works, C3.1 for Public Transport Terminal and Hub and the contracts C4.1/4.2/4.3 for Fenggang River Improvement (Phase II) which is under construction. The site visit notes are shown in **Appendix 2**.

b. Assessment

34. To date site audits and environmental environmental checks have not identified any significant environmental impacts. The quality of discharge of construction waste, water, and control of dust and noise have all been at acceptable levels and site management has been improved, more details are provided in **Appendix 2**.

35. During site audits, it was observed that some hauled construction materials were randomly spoiled on the road alignment. Partial construction materials were found no coverage. And some construction camp garbage was not properly collected and transported. Further mitigation measures and clean-up will be required immediately. In addition, the constructors/SEs' environmental monitoring and documentation should be further improved to ensure effective implementation of EMP and mutually reinforce environmental monitoring.

2. Ambient Monitoring Program

a. Results

36. The summary of the water quality monitoring data in Jun 2018 is shown in **Table 5-5** for the Fenggang River. According to the results, it is found that the concentrations of SS, COD_{Cr} and Petroleum at all monitoring locations meet the Environment Quality Standard of Surface Water (GB3838—2002), Class III. The diagrams below compare water quality data for the period May 2015, November 2016 and January 2018, there has been no significant change during this monitoring period.

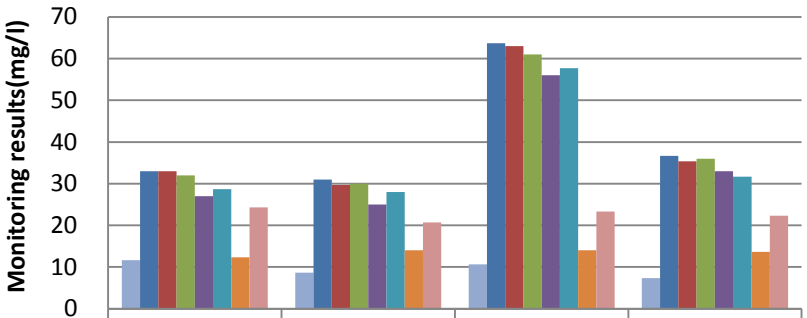
Table 5- 5 Summary of water quality monitoring data

No.	Location/ River section	Sampling date/time	Monitoring results(mg/l)			Compliance Status
			SS	COD_{Cr}	Petroleum	
SW1	Intersection of Fenggang River and Chonggang Ave. （E116°22′ 27″ N27°54′ 57″）	25 Jun, 2018	22	12	0.02	Complied with
		26 Jun, 2018	26	13	0.04	Complied with
		27 Jun, 2018	25	12	0.04	Complied with
SW2	Intersection of Fenggang River and Zhanqian Ave. （E116°21′ 7″ N27°55′ 31″）	25 Jun, 2018	22	14	0.03	Complied with
		26 Jun, 2018	21	13	0.04	Complied with
		27 Jun, 2018	19	13	0.03	Complied with
SW3	Intersection of Fenggang River	25 Jun, 2018	21	15	0.03	Complied with

No.	Location/ River section	Sampling date/time	Monitoring results(mg/l)			Compliance Status
			SS	COD_{Cr}	Petroleum	
		26 Jun, 2018	23	15	0.04	Complied with
		27 Jun, 2018	26	15	0.03	Complied with
SW4	The inlet from Fenggang River to Linshui River（E116°20′ 44″ N27°56′ 19″）	25 Jun, 2018	22	12	0.03	Complied with
		26 Jun, 2018	25	12	0.04	Complied with
		27 Jun, 2018	20	14	0.04	Complied with
Environment Quality Standard of Surface Water (GB3838—2002) Class III			N/A	<=20	<=0.05	
Standards for irrigation water quality(Standards for irrigation water quality)[3]			<=100			

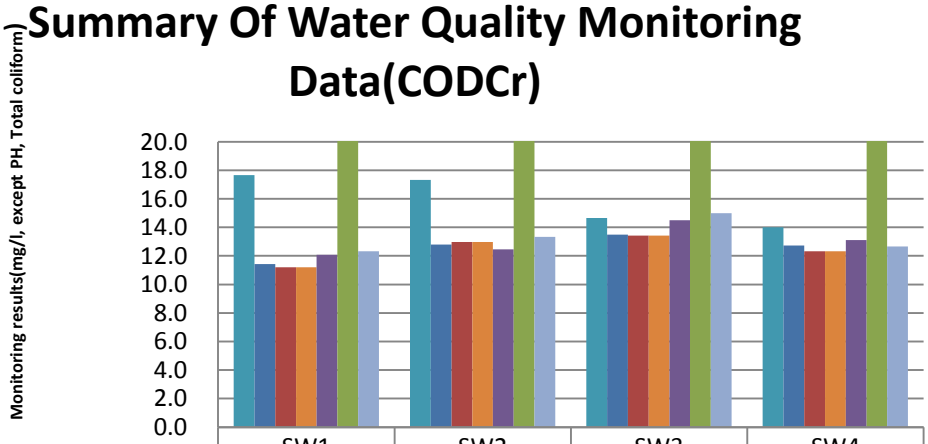
[3]Issued by Ministry of Environmental Protection only as reference here.

Summary Of Water Quality Monitoring Data(SS)

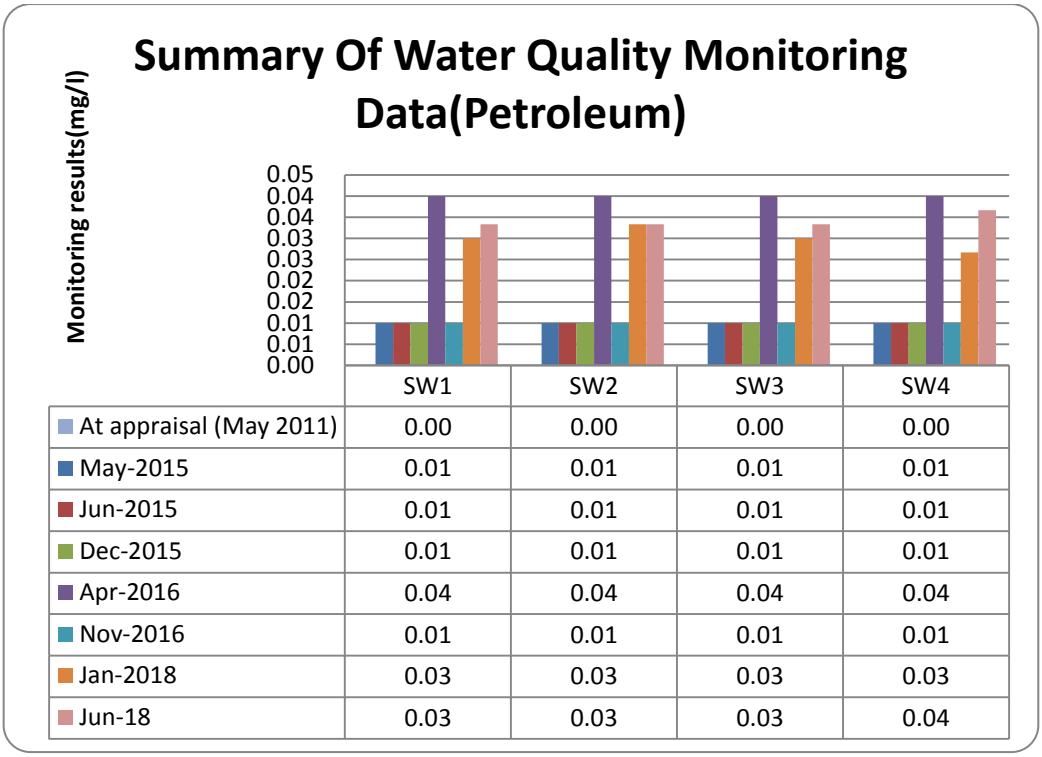


	SW1	SW2	SW3	SW4
At appraisal (May 2011)	12	9	11	7
May-2015	33	31	64	37
Jun-2015	33	30	63	35
Dec-2015	32	30	61	36
Apr-2016	27	25	56	33
Nov-2016	29	28	58	32
Jan-2018	12	14	14	14
Jun-18	24	21	23	22

Summary Of Water Quality Monitoring Data(CODCr)



	SW1	SW2	SW3	SW4
At appraisal (May 2011)	17.7	17.3	14.7	14.0
May-2015	11.4	12.8	13.5	12.7
Jun-2015	11.2	13.0	13.4	12.3
Dec-2015	11.2	13.0	13.4	12.3
Nov-2016	12.1	12.5	14.5	13.1
Jan-2018	31.7	21.0	23.0	24.7
Jun-18	12.3	13.3	15.0	12.7



	SW1	SW2	SW3	SW4
At appraisal (May 2011)	0.00	0.00	0.00	0.00
May-2015	0.01	0.01	0.01	0.01
Jun-2015	0.01	0.01	0.01	0.01
Dec-2015	0.01	0.01	0.01	0.01
Apr-2016	0.04	0.04	0.04	0.04
Nov-2016	0.01	0.01	0.01	0.01
Jan-2018	0.03	0.03	0.03	0.03
Jun-18	0.03	0.03	0.03	0.04

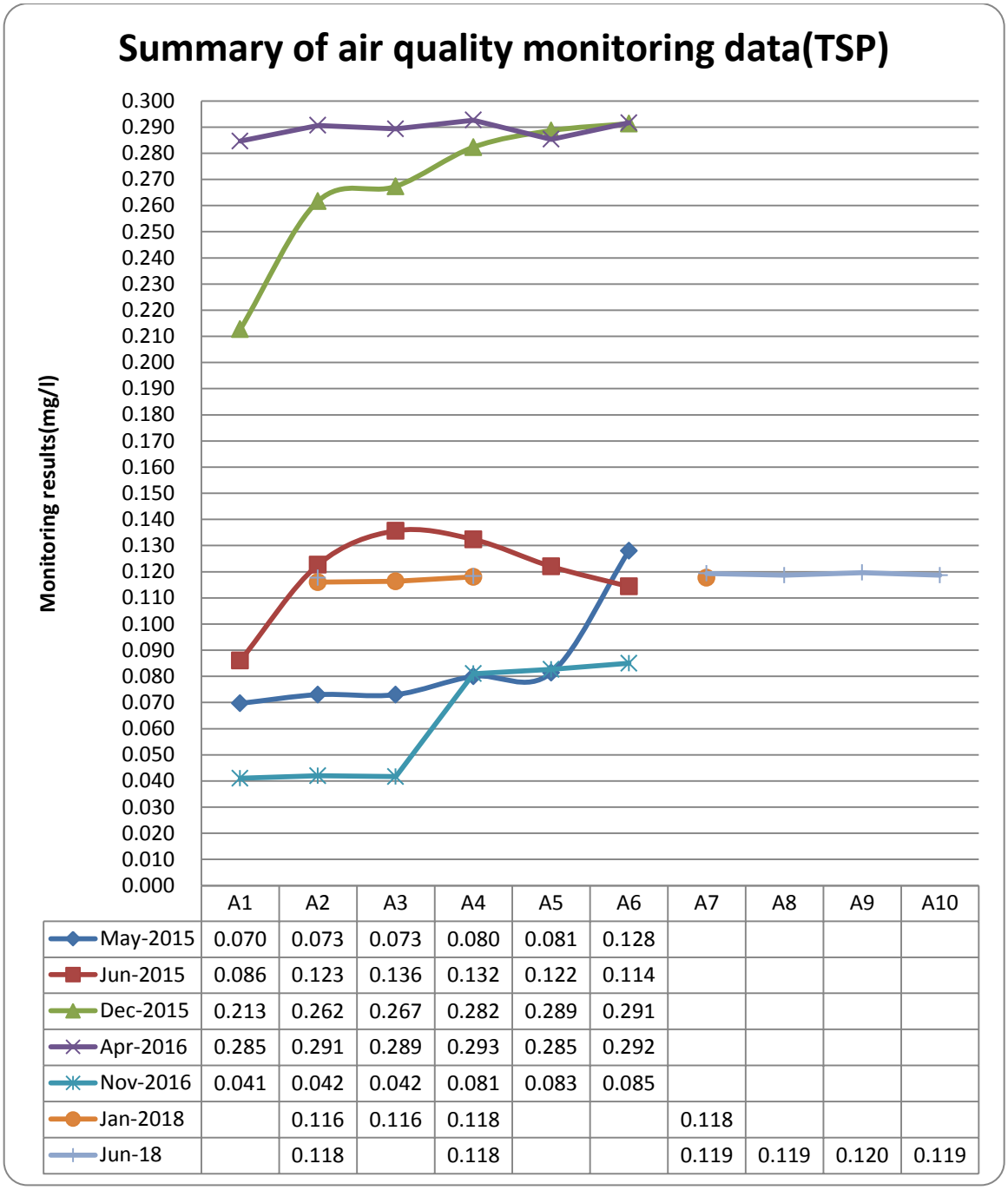
37. Construction stage ambient air quality monitoring data in June 2018 is shown in **Table 5-6** for the 6 sensitive receptors. The daily average concentrations of TSP meet Environment Ambient Air Quality Standard (GB3095—2012) Class II. The diagrams below compare air quality data for the period May 2015, November 2016 and January 2018, there has been no significant change during this monitoring period.

Table 5- 6 Summary of air quality monitoring data

No.[4]	Location	Sampling date/time	Monitoring results(mg/l)	Compliance Status
			TSP	
A7#（E116°20′59″ N27°55′27″）	Public transport hub	25 Jun, 2018	0.120	Complied with
		26 Jun, 2018	0.117	Complied with
		27 Jun, 2018	0.121	Complied with
A2#（E116°21′30″ N27°55′42″）	Guojialing Village	25 Jun, 2018	0.122	Complied with
		26 Jun, 2018	0.113	Complied with
		27 Jun, 2018	0.118	Complied with
A4#（E116°22′10″ N27°55′36″）	Gongjia Village	25 Jun, 2018	0.115	Complied with
		26 Jun, 2018	0.117	Complied with
		27 Jun, 2018	0.123	Complied with
A8#	BRT-Zhanqian Ave	25 Jun, 2018	0.121	Complied with

[4] Some points' numbers are kept consistent with the previous EMRs for comparisons.

No.[4]	Location	Sampling date/time	Monitoring results(mg/l)	Compliance Status
			TSP	
		26 Jun, 2018	0.116	Complied with
		27 Jun, 2018	0.119	Complied with
A9#（E116° 21' 42" N27° 58' 7"）	BRT alignment (intersection of Yuming Ave. and Wufeng Rd.)	25 Jun, 2018	0.120	Complied with
		26 Jun, 2018	0.114	Complied with
		27 Jun, 2018	0.125	Complied with
A10#（E116° 21' 42" N27° 58' 46"）	BRT Yuming Ave.bus station (Fulin Road-'2008' hotel)	25 Jun, 2018	0.122	Complied with
		26 Jun, 2018	0.115	Complied with
		27 Jun, 2018	0.119	Complied with
Environment Ambient Air Quality Standard (GB3095—2012) Class II			0.30	

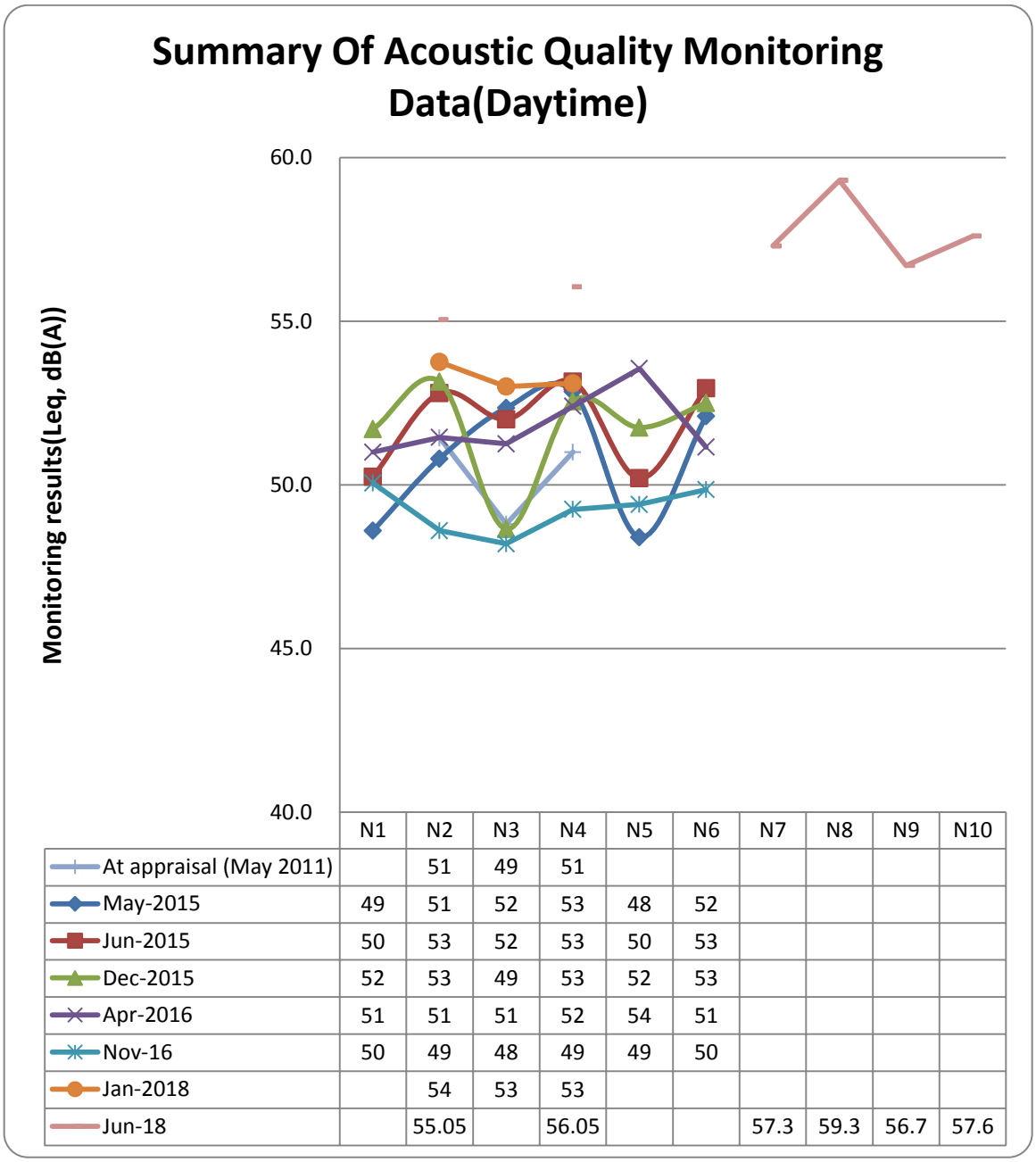


	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
May-2015	0.070	0.073	0.073	0.080	0.081	0.128				
Jun-2015	0.086	0.123	0.136	0.132	0.122	0.114				
Dec-2015	0.213	0.262	0.267	0.282	0.289	0.291				
Apr-2016	0.285	0.291	0.289	0.293	0.285	0.292				
Nov-2016	0.041	0.042	0.042	0.081	0.083	0.085				
Jan-2018		0.116	0.116	0.118			0.118			
Jun-18		0.118		0.118			0.119	0.119	0.120	0.119

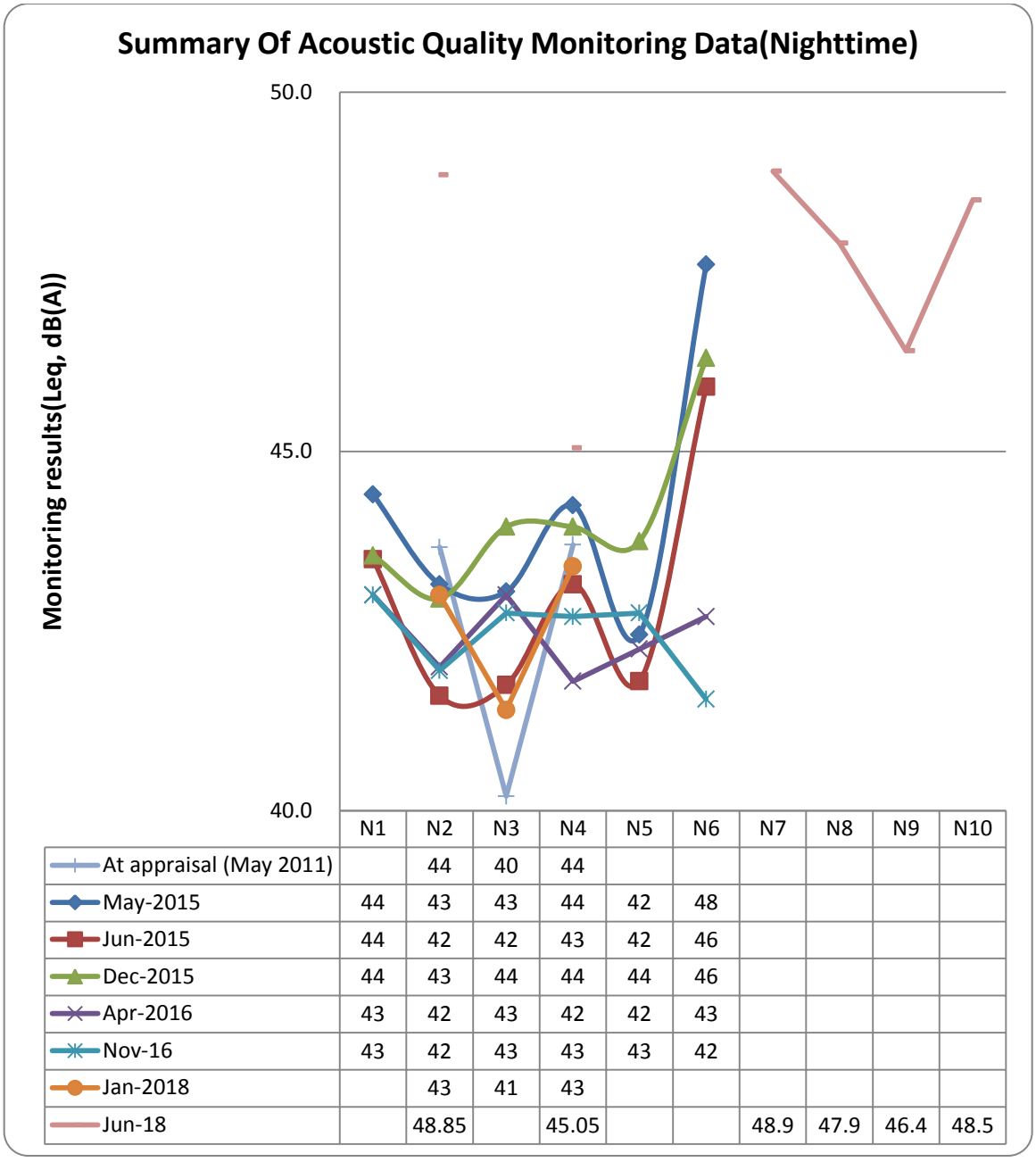
38. **Table 5-7** shows the daytime and nighttime noise monitoring results in June 2018 for the 4 construction sites and 2 sensitive receptors nearby the construction sites. The noise monitored at these points has met Class II and 4a of Environmental Quality Standard for Noise (GB3096-2008). Adverse impacts were limited due to implementation of appropriate mitigation measures. The diagrams below compare noise data for the period May 2015, November 2016 and January 2018, there has been no significant change during this monitoring period.

Table 5- 7 Summary of acoustic quality monitoring data

No.	Location	Sampling date/time	Monitoring results(Leq, dB(A))		Compliance Status
			Daytime	Nighttime	
N7#（E116°20′59″ N27°55′27″）	Public transport hub(construction noise+ traffic noise)	25 Jun, 2018	57.4	49.4	Complied with
		26 Jun, 2018	57.2	48.4	Complied with
N2#（E116°21′30″ N27°55′42″）	Guojialing Village(ambient noise)	25 Jun, 2018	56.3	48.4	Complied with
		26 Jun, 2018	53.8	49.3	Complied with
N4#（E116°22′10″ N27°55′36″）	Gongjia Village(ambient noise)	25 Jun, 2018	57.0	44.7	Complied with
		26 Jun, 2018	55.1	45.4	Complied with
N8#（E116° 21' 49" N27° 55' 39"）	BRT-Zhanqian Ave bus stop(construction noise+ traffic noise)	25 Jun, 2018	59.3	47.9	Complied with
		26 Jun, 2018	57.1	47.9	Complied with
N9#（E116° 21' 42" N27° 58' 7"）	BRT alignment (intersection of Yuming Ave. and Wufeng Rd.)-(construction noise+ traffic noise)	25 Jun, 2018	56.7	46.4	Complied with
		26 Jun, 2018	56.8	48.7	Complied with
N10#（E116° 21' 42" N27° 58' 46"）	BRT Yuming Ave.bus station (Fulin Road-'2008' hotel) -(construction noise+ traffic noise)	25 Jun, 2018	57.6	48.5	Complied with
		26 Jun, 2018	56.9	43.2	Complied with
Environmental Quality Standard for Noise (GB3096-2008), Class II (ambient noise for N2#, N3#, N4#)			60	50	
Environmental Quality Standard for Noise (GB3096-2008), Class 4a (ambient noise for N1#, N8#, N9#)			70	55	



	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10
At appraisal (May 2011)		51	49	51						
May-2015	49	51	52	53	48	52				
Jun-2015	50	53	52	53	50	53				
Dec-2015	52	53	49	53	52	53				
Apr-2016	51	51	51	52	54	51				
Nov-16	50	49	48	49	49	50				
Jan-2018		54	53	53						
Jun-18		55.05		56.05			57.3	59.3	56.7	57.6



	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10
At appraisal (May 2011)		44	40	44						
May-2015	44	43	43	44	42	48				
Jun-2015	44	42	42	43	42	46				
Dec-2015	44	43	44	44	44	46				
Apr-2016	43	42	43	42	42	43				
Nov-16	43	42	43	43	43	42				
Jan-2018		43	41	43						
Jun-18		48.85		45.05			48.9	47.9	46.4	48.5

b. Assessment

39. According to the field survey and environment monitoring, the water, air and noise environment monitoring results are summarized as below:

a) Water Monitoring Survey- Surface water quality monitored has met the requirements of national standard in *Environment Quality Standard of Surface Water (GB3838—2002, Grade III)*.

b) Ambient air Monitoring Survey- The air quality monitored has met *Environment Ambient Air Quality Standard (GB3095—2012, Grade II)*, and the air quality of each

sensitive receptor in construction phase also met the requirement of the national standard.

c) Noise Monitoring Survey- Noises at each construction site has met the requirement of relevant standards. The noise at sensitive points related to the Projects has met the requirement of *Environmental Quality Standard for Noise (GB3096-2008), Class II and Class 4a*.

40. Based on all above, there is no any data exceeding national standard limit, and the negative impact caused by the Project is limited to an acceptable level.

3. Soil Erosion Caused by Construction: All Components

41. There is a Construction Environmental Management Plan (CEMP) for each contract that includes Soil Erosion Prevention Plan requirements. FIDC will recruit a soil erosion prevention monitoring agency to carry out soil erosion monitoring based on the SEPP. Although there was no actually significant adverse impact identified during this reporting period, since the estimated volume of borrow and spoil are both quite high with potential dust impact and soil erosion risks, it is recommended that soil balance be carefully considered, and the spoil be reused for road works or other projects as far as possible, as also proposed in the approved domestic environmental impact assessment (DEIA) and the EMP.

Table 5- 8 Actual Earthwork Material Balance (10^4 m^3)

Contract no.	Estimated Volume of Fill	Estimated Volume of Cut	Estimated Volume of Borrow	Estimated Volume of Spoil
Source: the below data was from the FIDC in May 2018.				
C1.2	Not available	Not available	9.6	0.5
C1.3	2.6	Not available	Not available	16.7
C1.4	2.7	4.3	Not available	33.8
C1.5	Not available	Not available	16.9	3.6
C1.6	2.6	4.2	Not available	15.8
Subtotal of access Roads	Not available	Not available	Not available	**70.4**

Table 5- 9 Earthwork Material Balance in the EIA (10^4 m^3)

Source: the below data was from the EIA, dated in May 2012, ADB project website.									
Component	**Excavation**	**Backfill**		**Earthwork transfer into**		**Earthwork transfer out**		**Disposal**	
		Gross	**Re-use**	**Qty**	**Source**	**Qty**	**To**	**Qty**	**To**
Access Roads	101.91	119.12	101.91	17.21					
Multi-modal transportation hub	5.3	5.3	5.3						
Fenggang River Improvement	105.73	88.52	88.52			17.21			
Demolition Existing Infrastructure	5.6							5.6	
Total	218.54	212.94	195.73	17.21		17.21		5.6	

VI. INFORMATION DISCLOSURE, PUBLIC CONSULTATION AND GRIEVANCE REDRESS MECHANISM STATUS

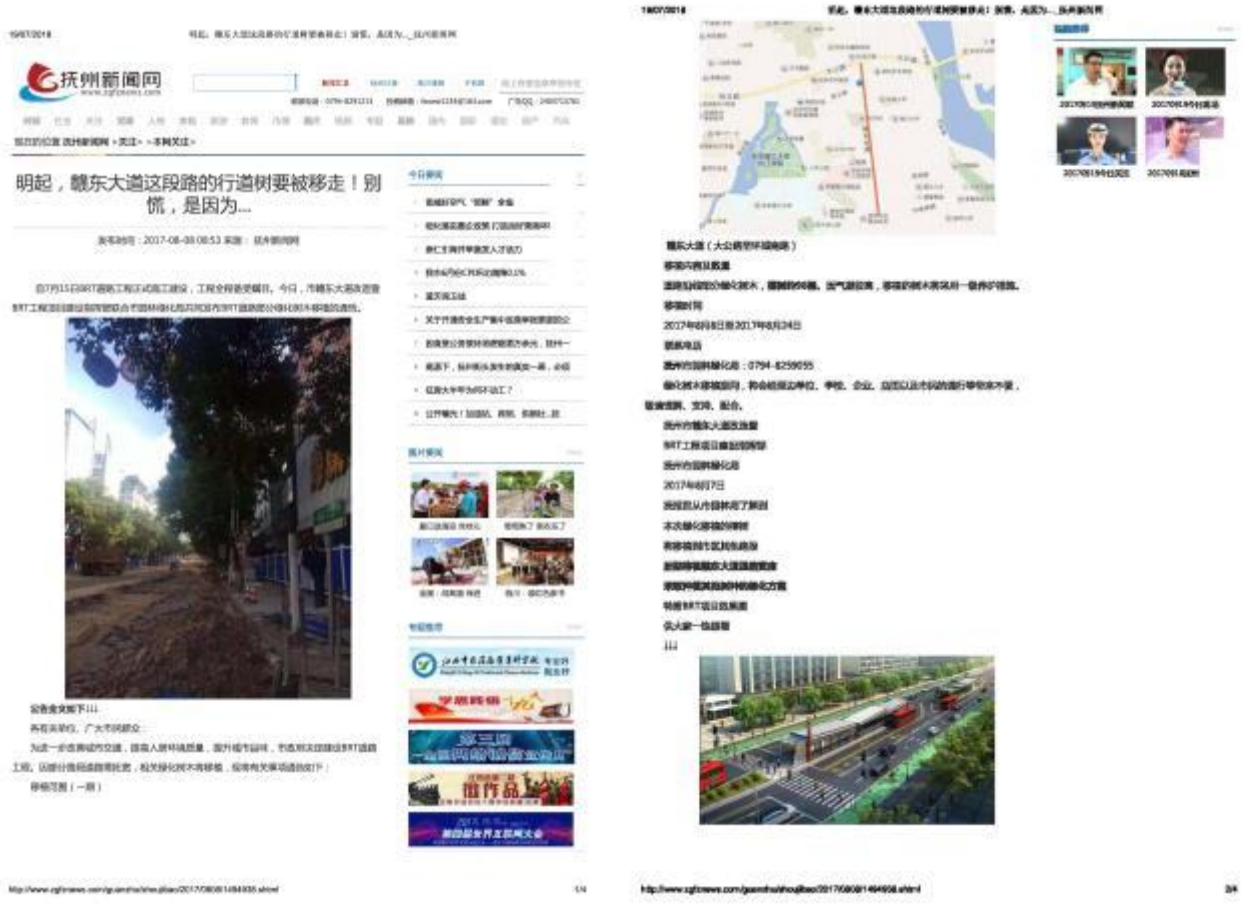
42. **Information disclosure**. The information disclosure activities were undertaken in providing the community and local representatives with information about the project and how they would be affected. The community was given information on the grievance redress mechanism and that regular interviews with the community were held. Continuing this process ensures that the community remains supportive and that they are fully informed of progress particularly during the construction period. Since the project was approved and a construction program was defined, the first information notification was issued to provide details of the construction program and to give information on the grievance redress mechanism. A website was set up including all this information (http://www.fztzjt.com/html/ADB%20Project/), however, many of the community may not have access to the internet, therefore face to face interviews and hard copy notices were provided to the whole community.

Web link: http://www.fztzjt.com/html/ADB%20Project/

Figure The ADB project website for information disclosure

Source: http://www.sohu.com/a/155075030_723308
Extracted from Fuzhou City Television and Radio Broadcasting Station

Figure First information notification to provide details of construction program and grievance redress mechanism (7 Jul 2017)



Source: http://www.zgfznews.com/guanzhu/shoujibao/2017/0808/1494938.shtml
Extracted from the newspaper of Fuzhou Daily

Figure Information notification to re-located 98 camphors along Gandong Road BRT alignment (8 August 2017)

Source: **http://www.fztzjt.com/html/News/tzgg/684.html**

Figure Temporary detour notices on BRT Gandong Road section construction (15 June 2018)

43. **Grievance Redress Mechanism (GRM).** The Project-specific GRM is under operation. **Figure 6- 1** shows the Project Environmental GRM. The assigned entry points were agreed prior to commencement of construction work. A Project Complaint Center (PCC) for safeguards GRM was established in FIDC. A full-time staff (Mr. Fan Long, 182 9648 0180) was appointed to be responsible for the daily operation management of environmental and social GRM in FIDC. The officer is independent of the Supervising Engineer and contractor/operator. The officer has experience and/or training in dealing with complaints and mediation of disputes, and the facilities to maintain a complaints database and to communicate with the Supervising Engineer, the PMO, the FMG(Fuzhou EPB), and also with complainants. The municipal government (Fuzhou EPB) nominated an officer (Miss. Zou Xiaohong, Fuzhou EPB, tel: 0794-12369, cell: 139 7948 3998) to act as a focal point for contact with the PCC. The PMO and the municipal government issued public notices to inform the public within the Project area of the GRM. The PCC and entry points' contact person names, phone numbers, and email address have been disseminated to the people through displays at the entrances of each construction site/contractor' site offices. To address this, FIDC and the Independent external environmental consultant inspected all the construction sites and confirmed compliance. Complaints received can also be dealt with via the municipal government (number 12345) and the EPBs' public complaints hotlines (number 12369). It is

confirmed by FIDC, the contractor and the SE that there have been no environmental complaints raised so far.

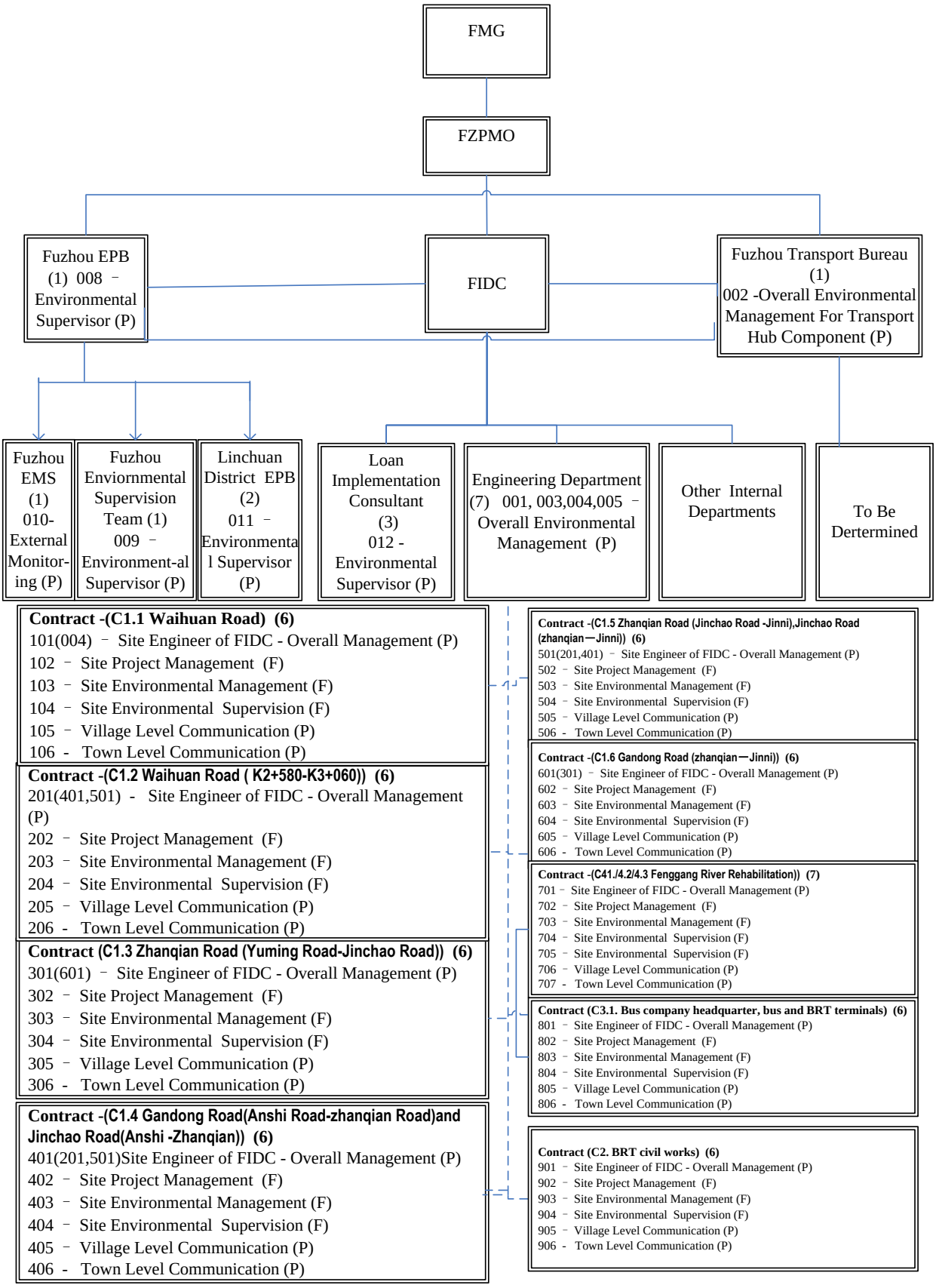


Figure 6- 1 Environmental GRM Management System

Note: the number in the brackets above means how many staff is involved; other numbers means the reference no. of different staff; F=full time; P=part time.

Table 6- 1 Contact List of Environmental GRM Entrance Points

Code	Name/ Position/ Agency	Responsibility	Contact Details	Date of Environmental Assignment
001	Mr. Liu Haiquan /Deputy General Manager /FIDC	Overall management of environmental affairs in FIDC, including coordinating with the external parities, monitoring and improving the project performances for roads and bridges components	Cell: +86-0-13907946066 Tel: +86 794 8257866 Fax: +86-794 Email: FZ_PMO@163.com	2013
002	Mr. Huang Zhiqun / Section Chief /Fuzhou Transport Bureau	Overall management of environmental affairs in Fuzhou Transport Bureau, including coordinating with the external parities, monitoring and improving the project performances for heating component	Cell: +86-0-13970437292 Tel: +86 794 Fax: +86-794 Email: FZ_PMO@163.com	2014
003	Mr. Fan Long/ Engineer /FIDC	Daily coordination of environmental affairs in FIDC, including coordinating with the external parities, monitoring and improving the project performances	Cell: +86-0-18296480180 Tel: +86 794 8257866 Fax: +86-794 Email: FZ_PMO@163.com	2017
004 (101)	Mr. Qiu Biaojun/ Deputy General Manager /FIDC	Site management of environmental affairs in FIDC, including coordinating with the external parities, monitoring and improving the project performances for the all the roads and the bus terminal contracts	Cell: +86-0-13607948096 Tel: +86 794 8257866 Email: FZ_PMO@163.com	2013
005	Mr. Zuo Lianhui/ Director of Railway Investment Department /FIDC	Site management of environmental affairs in FIDC, including coordinating with the external parities, monitoring and improving the project performances for the all the Fenggang River Greenway contracts	Cell: +86-0-13607947588 Tel: +86 794 8257866 Email: FZ_PMO@163.com	2014
008	Miss. Zou Xiaohong, EIA Department /Fuzhou EPB	Environmental supervision, survey and issue corrective actions on environmental complaints	Tel:+86-794-12369	2013
009	Miss Li Hua /Environmental Supervisor/Fuzhou Environmental Supervision Team under Fuzhou EPB	Site environmental supervision, survey and propose corrective actions on environmental complaints	Cell: +86-0-13979483998 Tel:+86-794-12369 Fax: +86-794- Email:	2013
010	Mr. Xiao Yuxing /Fuzhou EMS under Fuzhou EPB	External site environmental quality monitoring	Cell: +86-13879495576 Tel: +86-794-8268705 Fax: +86-794- Email: 369390435@qq.com	2014
011	Linchuan district EPB	Environmental supervision for the contracts in Linchuan District, survey and issue corrective actions on environmental complaints for all the contracts	Cell: +86-0- Tel:+86-794-12369 Fax: +86-794- Email:	2013
012	Mr. Nie Mingtao/independent	Environmental technical support, assistance to coordinate with ADB	Cell: +86-18086056438 Tel/Fax: +86-	2014

Code	Name/ Position/ Agency	Responsibility	Contact Details	Date of Environmental Assignment
	external environmental consultant		Email: hjpmo@163.com	
101 (004)	Mr. Qiu Biaojun/ Deputy General Manager /FIDC	Site management of environmental affairs in FIDC, including coordinating with the external parities, monitoring and improving the project performances for the C1.1 Waihuan Road contract	Cell: +86-0- Tel: +86 794 8257866 Fax: +86-794 Email: FZ_PMO@163.com	2013 (for Waihuan Road contract)
102	Mr/Miss /Site Project manager of the constructor	On site management and decision making on general environmental affairs for the C1.1 Waihuan Road contract	Cell: +86- Tel: +86-794- Fax: +86-794- Email:	2013
103	Mr Li Xuan /Site environmental manager of the constructor/ Nanchang Road and Bridge Company	On site daily environmental management affairs for the C1.1 Waihuan Road contract	Cell: +8613361667066 Tel: +86-794- Fax: +86-794- Email:Lixuan19870207@126.com	2013
104	Mr. Wu Shenrong /Site environmental manager of the supervisor/ Changda Supervision Co., Ltd.	On site daily supervision on environmental management for the C1.1 Waihuan Road contract	Cell: +8613479426408 Tel: +86-794- Fax: +86-794- Email:	2013
105	/Villager Leader/	Village Level Communication	Cell: +86- Tel: +86-794- Fax: +86-794- Email:	2013
106	/Officer of Township Government/ XX Town of Linchuan District	Town Level Communication	Cell: +86- Tel: +86-794- Fax: +86-794- Email:	2013
201 (401, 501)	Mr. Li Yongliang/ Engineer of Engineering Department /FIDC	Site management of environmental affairs in FIDC, including coordinating with the external parities, monitoring and improving the project performances for the contract(C1.2 Waihuan Road (K2+580-K3+060))	Cell: +86-0-13879481979 Tel: +86 794 8257866 Fax: +86-794 Email: FZ_PMO@163.com	2014
202	Mr Liu Shujing/Site Project manager of the constructor/ Jiangxi Tongwei Road Construction Group Co., Ltd.	On site management and decision making on general environmental affairs for the contract(C1.2 Waihuan Road (K2+580-K3+060))	Cell: +86-15207945309 Tel: +86-794- Fax: +86-794- Email:	2014

Code	Name/ Position/ Agency	Responsibility	Contact Details	Date of Environmental Assignment
203	Mr Wang Wenbang /Site environmental manager of the constructor/ Jiangxi Tongwei Road Construction Group Co., Ltd.	On site daily environmental management affairs for the contract(C1.2 Waihuan Road (K2+580-K3+060))	Cell: +86-15720909021 Tel: +86-794- Fax: +86-794- Email:	2014
204	Mr. Zhang Yigeng /Site environmental manager of the supervisor/ Changda Supervision Co., Ltd.	On site daily supervision on environmental management for the contract(C1.2 Waihuan Road (K2+580-K3+060))	Cell: +86-15697883428 Tel: +86-794- Fax: +86-794- Email:	2014
205	/Villager Leader/	Village Level Communication	Cell: +86- Tel: +86-794- Fax: +86-794- Email:	2014
206	/Officer of Township Government/ XX Town of Linchuan District	Town Level Communication	Cell: +86- Tel: +86-794- Fax: +86-794- Email:	2014
301 (601)	Mr. Bai Shaofeng/ Engineer, Engineering Department /FIDC	Site management of environmental affairs in FIDC, including coordinating with the external parities, monitoring and improving the project performances for the contract (C1.3 Zhanqian Road (Yuming Road-Jinchao Road))	Cell: +86-0-13657042874 Tel: +86 794 8257866 Fax: +86-794 Email: FZ_PMO@163.com	2014
302	Mr Jie Yang/Site Project manager of the constructor/ Guangxi Huanan Construction Group Co., Ltd.	On site management and decision making on general environmental affairs for the contract (C1.3 Zhanqian Road (Yuming Road-Jinchao Road))	Cell: +86-13870482322 Tel: +86-794- Fax: +86-794- Email:	2014
303	Miss Liu Lijuan/Site environmental manager of the constructor/ Guangxi Huanan Construction Group Co., Ltd.	On site daily environmental management affairs for the contract (C1.3 Zhanqian Road (Yuming Road-Jinchao Road)	Cell: +86-13177661661 Tel: +86-794- Fax: +86-794- Email: 1390579627@qq.com	2014
304	Mr. Zhang Yigeng/Site environmental manager of the supervisor/ Changda Supervision Co., Ltd.	On site daily supervision on environmental management for the contract (C1.3 Zhanqian Road (Yuming Road-Jinchao Road))	Cell: +86-15697883428 Tel: +86-794- Fax: +86-794- Email: 1390579627@qq.com	2014

Code	Name/ Position/ Agency	Responsibility	Contact Details	Date of Environmental Assignment
305	/Villager Leader/	Village Level Communication	Cell: +86- Tel: +86-794- Fax: +86-794- Email:	2014
306	/Officer of Township Government/ XX Town of Linchuan District	Town Level Communication	Cell: +86- Tel: +86-794- Fax: +86-794- Email:	2014
401 (201, 501)	Mr. Li Yongliang/ Engineer of Engineering Department /FIDC	Site management of environmental affairs in FIDC, including coordinating with the external parities, monitoring and improving the project performances for the contract(C1.4 Gandong Road(Anshi Road-zhanqian Road)and Jinchao Road(Anshi -Zhanqian))	Cell: +86-0-13879481979 Tel: +86 794 8257866 Fax: +86-794 Email: FZ_PMO@163.com	2014
402	Mr Huang Jiangao /Site Project manager of the constructor/ Kunpeng Construction Group Co., Ltd.	On site management and decision making on general environmental affairs for the contract(C1.4 Gandong Road(Anshi Road-zhanqian Road)and Jinchao Road(Anshi -Zhanqian))	Cell: +86-18907940607 Tel: +86-794- Fax: +86-794- Email:	2014
403	Mr. Du Xiaoliang/Site environmental manager of the constructor/ Kunpeng Construction Group Co., Ltd.	On site daily environmental management affairs for the contract(C1.4 Gandong Road(Anshi Road-zhanqian Road)and Jinchao Road(Anshi -Zhanqian))	Cell: +86-13807949111 Tel: +86-794- Fax: +86-794- Email:	2014
404	Mr. Zhang Hegeng /Site environmental manager of the supervisor/ Jiangxi Hengshi Construction Supervision Company	On site daily supervision on environmental management for the contract(C1.4 Gandong Road(Anshi Road-zhanqian Road)and Jinchao Road(Anshi -Zhanqian))	Cell: +86-13677979595 Tel: +86-794- Fax: +86-794- Email:	2014
405	/Villager Leader/	Village Level Communication	Cell: +86- Tel: +86-794- Fax: +86-794- Email:	2014
406	/Officer of Township Government/ XX Town of Linchuan District	Town Level Communication	Cell: +86- Tel: +86-794- Fax: +86-794- Email:	2014
501 (201,	Mr. Li Yongliang/ Engineer of Engineering Department	Site management of environmental affairs in FIDC, including coordinating with the external parities,	Cell: +86-0-13879481979 Tel: +86 794 8257866	2014

Code	Name/ Position/ Agency	Responsibility	Contact Details	Date of Environmental Assignment
401)	/FIDC	monitoring and improving the project performances for the contract(C1.5 Zhanqian Road (Jinchao Road - Jinni),Jinchao Road (zhanqian—Jinni))	Fax: +86-794 Email: FZ_PMO@163.com	
502	Mr. Huang Zhenhua /Site Project manager of the constructor/ YichunTongda Road & Bridge Construction Co., Ltd.	On site management and decision making on general environmental affairs for the contract(C1.5 Zhanqian Road (Jinchao Road -Jinni),Jinchao Road (zhanqian—Jinni))	Cell: +86-18296499776 Tel: +86-794- Fax: +86-794- Email:	2014
503	Miss Li Rong/Site environmental manager of the constructor/ YichunTongda Road & Bridge Construction Co., Ltd.	On site daily environmental management affairs for the contract(C1.5 Zhanqian Road (Jinchao Road - Jinni),Jinchao Road (zhanqian—Jinni))	Cell: +86-15870786933 Tel: +86-794- Fax: +86-794- Email:	2014
504	Mr. Zou Guisheng/Site environmental manager of the supervisor/ Jiangxi Hengshi Construction Supervision Company	On site daily supervision on environmental management for the contract(C1.5 Zhanqian Road (Jinchao Road - Jinni),Jinchao Road (zhanqian—Jinni))	Cell: +86-18970475156 Tel: +86-794- Fax: +86-794- Email:	2014
505	/Villager Leader/	Village Level Communication	Cell: +86- Tel: +86-794- Fax: +86-794- Email:	2014
506	/Officer of Township Government/ XX Town of Linchuan District	Town Level Communication	Cell: +86- Tel: +86-794- Fax: +86-794- Email:	2014
601 (301)	Mr. Bai Shaofeng/ Engineer, Engineering Department /FIDC	Site management of environmental affairs in FIDC, including coordinating with the external parities, monitoring and improving the project performances for the contract (C1.6 Gandong Road (zhanqian—Jinni))	Cell: +86-0-13657042874 Tel: +86 794 8257866 Fax: +86-794 Email: FZ_PMO@163.com	2015
602	Mr Wan Hui/Miss /Site Project manager of the constructor/ Zhushan Construction Group Co., Ltd.	On site management and decision making on general environmental affairs for the contract(C1.6 Gandong Road (zhanqian—Jinni))	Cell: +86-15179404939 Tel: +86-794- Fax: +86-794- Email:	2015
603	Mr Huang Chungeng/Site environmental manager of	On site daily environmental management affairs for the contract(C1.6 Gandong Road (zhanqian—Jinni))	Cell: +86-18379464247 Tel: +86-794-	2015

Code	Name/ Position/ Agency	Responsibility	Contact Details	Date of Environmental Assignment
	the constructor/ Zhushan Construction Group Co., Ltd.		Fax: +86-794- Email: 1390579627@qq.com	
604	Mr. Zhang Huiming/Site environmental manager of the supervisor/ Changda Supervision Co., Ltd.	On site daily supervision on environmental management for the contract(C1.6 Gandong Road (zhanqian－Jinni))	Cell: +86-13879493605 Tel: +86-794- Fax: +86-794- Email:	2015
605	/Villager Leader/	Village Level Communication	Cell: +86- Tel: +86-794- Fax: +86-794- Email:	2015
606	/Officer of Township Government/ XX Town of Linchuan District	Town Level Communication	Cell: +86- Tel: +86-794- Fax: +86-794- Email:	2015
701	Mr. Zhu Zhiwu/ Engineer, Engineering Department /FIDC	Site management of environmental affairs in FIDC, including coordinating with the external parities, monitoring and improving the project performances for the contract(C4.1Fenggang River Rehabilitation)	Cell: +86-0- 15179454937 Tel: +86 794 8257866 Fax: +86-794 Email: FZ_PMO@163.com	2015
702	Mr Yang Qizhu/Site Project manager of the constructor/ Jingxi Hongzhou Landscape Engineering Co., Ltd.	On site management and decision making on general environmental affairs for the contract(C4.1Fenggang River Rehabilitation)	Cell: +86-13647900929 Tel: +86-794- Fax: +86-794- Email:	2015
703	Mr XX /Site environmental manager of the constructor/ Jingxi Hongzhou Landscape Engineering Co., Ltd.	On site daily environmental management affairs for the contract(C4.1Fenggang River Rehabilitation)	Cell: +86 Tel: +86-794- Fax: +86-794- Email:	2015
704	Mr. Li Haihong, hydraulic engineer/Site environmental manager of the supervisor/ Guangdong Hehai Construction Engineering Company	On site daily supervision on environmental management for the contract(C4.1Fenggang River Rehabilitation)	Cell: +86-15070425431 Tel: +86-794- Fax: +86-794- Email:	2015
705	Mr. Li Xingming, landscaping engineer /Site environmental manager of the supervisor/	On site daily supervision on environmental management for the contract(C4.1Fenggang River Rehabilitation)	Cell: +86-13970429412 Tel: +86-794- Fax: +86-794-	2015

Code	Name/ Position/ Agency	Responsibility	Contact Details	Date of Environmental Assignment
	Jiangxi Zhongxiang Construction Supervision Company		Email:	
706	/Villager Leader/	Village Level Communication	Cell: +86- Tel: +86-794- Fax: +86-794- Email:	2015
707	/Officer of Township Government/ XX Town of Linchuan District	Town Level Communication	Cell: +86- Tel: +86-794- Fax: +86-794- Email:	2015
801	Mr. Zhang Dehua/ Engineer, Engineering Department /FIDC	Site management of environmental affairs in FIDC, including coordinating with the external parities, monitoring and improving the project performances for the contract(C3.1. Bus company headquarter, bus and BRT terminals)	Cell: +86-0- Tel: +86 794 8257866 Fax: +86-794 Email: FZ_PMO@163.com	2016
802	Mr Yin/Site Project manager of the constructor/Gangxi Jiangong Company	On site management and decision making on general environmental affairs for the contract(C3.1. Bus company headquarter, bus and BRT terminals)	Cell: +86- Tel: +86-794- Fax: +86-794- Email:	2016
803	Mr Li /Site environmental manager of the constructor/ Gangxi Jiangong Company	On site daily environmental management affairs for the contract(C3.1. Bus company headquarter, bus and BRT terminals)	Cell: +86 Tel: +86-794- Fax: +86-794- Email:	2016
804	Mr. Zhang Huiming/Site environmental manager of the supervisor/ Changda Supervision Co., Ltd.	On site daily supervision on environmental management for the contract(C3.1. Bus company headquarter, bus and BRT terminals)	Cell: +86-13879493605 Tel: +86-794- Fax: +86-794- Email:	2016
805	/Villager Leader/	Village Level Communication	Cell: +86- Tel: +86-794- Fax: +86-794- Email:	2016
806	/Officer of Township Government/ XX Town of Linchuan District	Town Level Communication	Cell: +86- Tel: +86-794- Fax: +86-794- Email:	2016
901	Mr. Zhang Peng/ Engineer, Engineering Department	Site management of environmental affairs in FIDC, including coordinating with the external parities,	Cell: +86-0- 13755971018	2017

Code	Name/ Position/ Agency	Responsibility	Contact Details	Date of Environmental Assignment
	/FIDC	monitoring and improving the project performances for the contract(C2. BRT civil works)	Tel: +86 794 8257866 Fax: +86-794 Email: FZ_PMO@163.com	
902	/Site Project manager of the constructor/ Joint Venture of Fujian Lugang (Group) Co., Ltd. (Leader) and Beijing LuAn Traffic Technology Development Co., Ltd.	On site management and decision making on general environmental affairs for the contract(C2. BRT civil works)	Cell: +86- Tel: +86-794- Fax: +86-794- Email:	2017
903	/Site environmental manager of the constructor/ Joint Venture of Fujian Lugang (Group) Co., Ltd. (Leader) and Beijing LuAn Traffic Technology Development Co., Ltd.	On site daily environmental management affairs for the contract(C2. BRT civil works)	Cell: +86 Tel: +86-794- Fax: +86-794- Email:	2017
904	/Site environmental manager of the supervisor/	On site daily supervision on environmental management for the contract(C2. BRT civil works)	Cell: +86- Tel: +86-794- Fax: +86-794- Email:	2017
905	/Villager Leader/	Village Level Communication	Cell: +86- Tel: +86-794- Fax: +86-794- Email:	2017
906	/Officer of Township Government/ XX Town of Linchuan District	Town Level Communication	Cell: +86- Tel: +86-794- Fax: +86-794- Email:	2017

44. FIDC and other relevant departments regularly communicate with affected persons on environmental and resettlement issues. And the contractors keep close contact with nearby villagers. It was informed by the IAs and constructors that some local farmers were employed by the constructors for temporary non-technical jobs during construction. In addition, FIDC and the independent external environmental consultant conducted a public consultation campaign for the BRT works in May 2018. **The GRM was verified during the public consultation. Some concerns on construction noises, travel inconveniences during construction and operation** were raised and responded. It also indicated that the community favors the development of the project and that there are no major community objections to the development. The public consultation activities in this reporting period and the plan for the next reporting period are in **Table 6-2** and **Appendix 5.**

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Table 6- 2 Public Consultation Activities in this Reporting Period and the Plan in the Next Reporting Period

Organizer	Approach	Times	Subject	Participants	Implementation status	Next Plan
A. Project Preparation, Pre-construction						
IAs, contractors, PCC	Information disclosure on construction site information boards	Throughout project implementation	Project information, planned interventions including timeframe, responsibilities, GRM structure and entry points, contact information	All residents within project's are of influence	Implemented during the Project preparation stage. Additional consultation was undertaken for BRT alignment change in February 2017 (as shown in **para. 6** of **Chapter 1** in the **6th EMR** dated Jan 2017).	As required in future.
B. Construction						
IAs, Fuzhou PMO, independent external environmental consultant	Questionnaire survey, or interview	At least once a year	Actual construction impacts, complaints, comments and suggestions from affected public and stakeholders; adjusting mitigation measures if necessary; comments to the GRM.	Residents within construction area, and affected stakeholder enterprises and agencies	The FIDC undertook some public consultation on resettlement (for details see the external resettlement reports) and the contractors irregularly communicated with nearby villagers, such as on local labor or material supply**.**	To be undertaken in the next reporting period. Ongoing public consultation with affected persons will be enhanced throughout implementation in future (to continuously undertake questionnaire survey)
	Public workshop	At least once a year	Adjustment of mitigation measures if necessary, construction impacts, comments and suggestions	Representatives of residents and other stakeholders	Once carried out in May 2018 by FIDC and the independent external environmental consultant (see above **para. 45**)	To be undertaken in the next reporting period.

VII. INSTITUTIONAL STRENGTHENING AND TRAINING

45. The implementation status of institutional strengthening and training program is shown as **Table 7-1**. During the ADB loan review mission in November 2017, site environmental management (*garage and construction waste randomly disposed without proper collection; several construction sites without appropriate fences; BRT alignment road traffic control inadequate; electricity lines exposed without proper protections; construction workers not equipped with personal protection equipment; and excavated trench no presence of necessary supporting measures*) issues were raised. To address those comments, the contractors and SEs organized relevant training to the onsite construction workers in order to raise their environmental awareness and facilitate sound construction practice based on the CEMPs; and strengthen supervision and environmental monitoring.

46. Furthermore, a training workshop was conducted on 22 May 2018 at FIDC's new office building in Fuzhou City. The training was designed to give the FIDC management and daily operational staff as well as the contractors/CSCs an insight into the value and necessity of an effective CEMP, as well as equipping participants with the basic skills required to implement the green construction[5] efficiently. The participants included 8 personnel from FIDC and its subsidiary organizations (including 1 from its component management company), and the remaining 7 from contractors/CSCs for the. Post training evaluation indicated that all the trainees were positive to the two training course.

Figure 7- 1 Training Workshop in May 2018

47. In the course training in May 2018 and various onsite trainings through 2014~2017, the environmental GRM was also covered.

[5] The definition of green construction is under the premise of ensuring basic requirements of quality and safety, through scientific management and advanced technology, to maximizes resource conservation, reduces negative impacts to the environment, and achieve four environmental protection benefits (energy saving, material saving, water saving, land saving and environmental protection). During construction activities. (Evaluation standard for green construction of building, Ministry of Housing and Urban-Rural Development (MOHURD), GB/T 50640-2010)

Table 7- 1 Implementation status of Institutional Strengthening and Training Program

Activities	Targeted Agencies/Attendees	Contents	Implementation status in this reporting period	Notes
Institutional Strengthening (Newly added in comparison with the EMP)				
Institutional Strengthening	Fuzhou PMO, IAs(FIDC, Fuzhou Transport Bureau), Fuzhou EPB	Defining institutional arrangements for environmental management, monitoring, and supervision; defining positions and responsibilities; appointing and recruiting personnel;	Fulfilled for FIDC and Fuzhou Bus Company (under Fuzhou Transport Bureau), for contract C2. Civil works for BRT. See **Chapter II**.	For new contract started in 2017 (contract C2-BRT civil works)
		Recruiting and contracting EMC for environmental monitoring;	Fulfilled. The consulting service of independent external environmental consultant contracted in March 2014 was extended and ongoing.	
		Recruiting and contracting a LIEC for the overall Project, for environmental management consultancy	Fulfilled. Environmental specialist (Loan implementation environmental consultant) included in the loan implementation international consulting firm (EED) was ongoing.	
		Environmental Management System Strengthening and Improvement.	Fulfilled. Established in FIDC and Fuzhou Bus Company (under Fuzhou Transport Bureau).	
Environmental Management Clauses and Protocols	Fuzhou PMO, IAs(FIDC, Fuzhou Transport Bureau), Contractors; SEs	Developing environmental management clauses and incorporating them into construction and operational contracts	Environmental protection clauses were developed and incorporated into construction contracts (C2. Civil works for BRT)	
		Developing/refining environmental monitoring protocols	Environmental monitoring program was complied with. See **Chapter III**.	
		Developing environmental emergency response procedures	The environmental emergency response procedures for construction activities are in place.	
Training				
ADB's and PRC's environmental laws, regulations and policies	Fuzhou PMO, IAs(FIDC, Fuzhou Transport Bureau), contractors	ADB's SPS and other environmental regulations; Project applicable PRC's environmental laws, policies, standards and regulations; International environmental	A training was conducted by the independent external environmental consultant in May 2018	Covering green construction concept and requirements

Activities	Targeted Agencies/Attendees	Contents	Implementation status in this reporting period	Notes
		management practice in civil constructions;		
Grievance Redress Mechanism	Fuzhou PMO, IAs(FIDC, Fuzhou Transport Bureau), PCC, IAs, GRM entry points, Fuzhou EPB	GRM structure, responsibilities, timeframe Types of grievances, eligibility assessment Gender responsive GRM Reporting procedures.	A training was conducted by the independent external environmental consultant in May 2018	For new contract started in 2017 (contract C2-BRT civil works)
EMP implementation	Fuzhou PMO, IAs(FIDC, Fuzhou Transport Bureau), contractors, SEs	Responsibility and duties during construction, management and environmental protection; Task of environmental protection during construction; Key environmental protection contents during construction; Various environmental forms and reporting EMP improvement and corrective actions; Based on the actual case, adjustment and improvement of EMP.	A training was conducted by the independent external environmental consultant in May 2018	For new contract started in 2017 (contract C2-BRT civil works)
Emergency response	FMG, FWRB, Fuzhou PMO, IAs(FIDC, Fuzhou Transport Bureau), contractors, SEs	Environmental accident, crisis and mitigation measures; Emergency response team, procedure and actions. Flood and mudslide emergency planning Flood early warning system	Not yet.	To be implemented in next reporting period (Jul to Dec 2018)
Environmental technologies	Fuzhou PMO, IAs(FIDC, Fuzhou Transport Bureau), contractors	Relevant technologies and good construction practice for environmental protection.	A training was conducted by the independent external environmental consultant in May 2018	Covering green construction concept and requirements
Theories and practices on soil erosion prevention	Fuzhou PMO, IAs(FIDC, Fuzhou Transport Bureau), FWRB, and contractors	Risks for soil erosion and other geologic hazards; Mitigation measures for soil erosion prevention.	Not yet.	To be implemented in next reporting period (Jul to Dec 2018)
Environmental monitoring, inspection, and reporting	Fuzhou PMO, IAs(FIDC, Fuzhou Transport Bureau), Fuzhou EPB, Fuzhou EMS and contractors	Monitoring and inspection methods, data collection and processing, interpretation of data, reporting system.	Not yet.	To be implemented in next reporting period (Jul to Dec 2018)

VIII. KEY ENVIRONMENTAL ISSUES AND NEXT-STEP ACTION PLAN

A. Key Issues Identified and Actions Recommended

48. Site audits and monitoring to date indicates that the EMP is being implemented and there are no significant environmental impacts. The site management has improved during this reporting period but there is a room for improvement including spoil management and construction waste mitigation and management, which needs more attention to improve. In addition, site environmental management need to be strengthened and closely monitored/documented. For details see the **paras. 30 to 42, section D** of **Chapter V**.

Table 8- 1 Suggestions and Recommendations

No.	Suggestions and recommendations	Time Framework	Implementation Agencies	Supervision Agencies
a)	More efforts are required on **water and soil conservation** to prevent soil erosion efforts in the next stage. It is recommended that water and soil conservation at borrow areas and construction waste disposal sites be better considered and strengthened to reduce soil erosion during rainy seasons.	Every civil works contract implementation period (from starting to ending).	Contractors	FZPMO(FDIC); SEs; Fuzhou Water Resource Management Bureau; Loan implementation environmental consultant (EED)
b)	The contractors should strengthen site management, especially spoil management and site access control and site domestic wastewater and waste management, and minimize the negative impact on the environment.	Every civil works contract implementation period(from starting to ending)	Contractors	FZPMO(FDIC); SEs; Fuzhou EPB; Loan implementation environmental consultant (EED)
c)	It is necessary to strengthen[6] the environmental monitoring, documentation and supervision, along with good practices of environment, healthy, and safety (EHS) for training.	Mobilization stage of every civil works contract package. Every civil works contract implementation period(from starting to ending)	Contractors; SEs	FZPMO(FDIC); Fuzhou EPB; Loan implementation environmental consultant (EED)
d)	More tailor-made training should be provided for all relevant environmental management agencies to improve the environmental management, monitoring and reporting during construction period (referring to **para. 48** in **Chapter VII**).	Mobilization stage of every civil works contract package. Every civil works contract implementation period(from starting to ending)	Contractors; SEs; FDIC; Loan implementation environmental consultant (EED)	Fuzhou EPB

[6] Current environmental supervision, monitoring and documentation and are not adequate and need to be improved. For details, please see the site visit notes in **Appendix 2**.

B. Action Plan of Environmental Monitoring (January to June 2018)

49. It is expected that most of the project civil contracts including the BRT component will continue construction in the second half of 2018. The environmental monitoring will be focused on the following three aspects: a) Emphasize soil erosion prevention of construction site, including road components in the Project; b)Enhance the implementation of environmental management plan and mitigation measures to minimize the negative environmental impact of the projects under construction; and c)Strengthen monitoring and assessment of water, air and acoustic quality.

IX. CONCLUSION

A. Overall Progress of Implementation of Environmental Management Measures

50. Based on the environmental monitoring of Jiangxi Fuzhou Urban Integrated Infrastructure Improvement Project, it is found that the contractors have undertaken relevant environmental mitigation measures specified in the project domestic EIA report and CEIA, and have addressed issues raised by the monitor to improve site environmental management and compliance with the EMP. Recommendations have been made to improve spoil and waste management during this monitoring period (please refer to **para. 33, page 27**).

X. APPENDICES

1. Applicable Environmental Standards

2. Notes on Site Visit (May 2018)

3. Implementation Status of the Impacts and Mitigation Measures during Construction of All Components

4 Certificate of Local Environmental Monitoring Agency (For Field Sampling and Lab Testing), Jiangxi Solid Environmental Services Co., Ltd.

5: Public and Agency Comments and Responses

APPENDIX 1
APPLICABLE ENVIRONMENTAL STANDARDS

(1) Water Environment

Table A1- 1 Environmental Functional Zoning for Surface Water along the Proposed Project

No.	Water Body	Scope	Functional Category	Environmental Quality Standard for Surface Water (GB3838-2002)
1	Fenggang River		Class III	Class III

Table A1- 2 Quality Standard Limit for Surface Water Environment (Class III)

Unit: mg/L (exclusive of PH value，Coli-form〕

No.	Item	Standard Limit	No.	Item	Standard Limit
1	pH	6～9	14	Lead	0. 05
2	Dissolved Oxygen (DO)	5	15	Cadmium	0.005
3	Index of Permanganate	6	16	Copper	1.0
4	Chemical Oxygen Demand	20	17	Zinc	1.0
5	Biochemical Oxygen Demand	4	18	Oil	0.05
6	Total Nitrogen	1.0	19	Fluoride	1.0
7	SS	30	20	Sulphate	250
8	Sulphide	0.2	21	Chloride	250
9	Volatile Phenol	0.005	22	Total Phosphorus	0.2
10	Cyanide	0.2	23	Anionic Surfactant	0.2
11	Arsenic	0.05	24	Coli-form	10000/L
12	Mercury	0.0001	25	Ammonia Nitrogen	1.0
1 3	Hexavalent chrome	0.05			

(2) Ambient Air

Table A1- 3 Ambient Air Quality Standard (Class II)

Unit: mg/m^3

Standard	No.	Item	Daily Average
GB3095-2012	1	TSP	0.30

(3) Acoustic Environment

Table A1- 4 Acoustic Environment Quality Standard

(GB3096-2008) Unit: Leq[dB(A)]

Category	Range of Usage	Noise Limit	
		Daytime	Nighttime
Class I	Regions dominated by residence, cultural and educational organizations	55	45
Class II	Residential, commercial and industrial confounding area	60	50
Class 4a	On both sides of the urban trunk road	70	55

(4) Water Erosion Intensity Classification

Level		Erosion modulus (t/km^2 per year)
I	very slight erosion	< 500
II	slight erosion	500–2,500
III	moderate erosion	2,500–5,000
IV	intense erosion	5,000–8,000
V	very intense erosion	8,000–15,000

APPENDIX 2
Notes on Site Visit (May 2018)

(Note: the contracts' progress data sourced from the FIDC)

C1.1_ Civil Works of Waihuan Road (Front of Zhanqian square)

Package Contents:	Civil Works of Waihuan Road (Front of Zhanqian square) with the total length of 2580m	Remarks: Open to traffic now. No site visit during this reporting period. No major issues reported.
Contract Amount	The total investment of construction is CNY 160 million (contract price is CNY 159.1million). It is financed by Fuzhou Municipal Government and regarded as associated facilities to the ADB Loan Project.	
Contractor:	Nanchang Road & Bridge Engineering Co., LTD	
Contract Awarded:	April 24, 2013	
Completion Time	Completed in July 2015	
Progress:	A total of 100% construction progress has been achieved	
		
Completed tunnel of Waihuan Road (photos in Dec 2015 and Dec 2017)		

C1.2_Civil Works of Waihuan Road (Zhanqian square-Chonggang Road)

Package Contents:	Civil works of the Waihuan Road (Zhanqian square-Chonggang Road) with the total length of 481m and right-of-way width is 70m	Remarks: Open to traffic now. The independent external environmental consultant visited the site in May 2018.
Contract Amount ($ million)	3.30	
Contractor:	Jiangxi Tongwei Road Construction Group Co., Ltd	
Contract Awarded:	22 Jul 2014	
Completion Time	Oct 2017	
Progress:	A total of 100% construction progress has been achieved	
 		

C1.3_Zhanqian Road (Yuming Road-Jinchao Road)

Package Contents:	Civil works of the Zhanqian Road (Yuming Road-Jinchao Road)with the total length of 1089m and right-of-way width is 70/55m	Remarks: The independent external environmental consultant visited the site in May 2018. The main findings are shown below: • Persons met: • IA's site representative: Mr. Zhang Peng SE: Mr. Zhang, site supervisor, Jiangxi Hengshi Construction Supervision Company • **No major issues identified. Other minor issues include:** ➢ Some hauled material was observed being spoiled on the road alignment. Contractors agreed to clean up spoiled materials and fully enclose haulage vehicles immediately. ➢ Environmental monitoring: included in the SE's monthly contract progress reports. However, the contractor's environmental monitoring reports are too generic. Site supervising, environmental monitoring reporting and documentation should be further improved on the basis of the sample environmental monitoring checklist provided by the independent external environmental consultant.
Contract Amount ($ million)	6.49	
Contractor:	Guangxi Huanan Construction Group Co., Ltd	
Contract Awarded:	22 Jul 2014	
Planned Completion Time	June 2018	
Progress:	Physical works completed with few remaining items to be completed in June 2018	

C1.4 Gandong Road (Anshi Road-Zhanqian Road)+Jinchao Road (Anshi Road-Zhanqian Road)

Package Contents:	(i) Civil works of the Gandong Road (Anshi Road-Zhanqian Road)with the total length of 1151m and right-of-way width is 55m; and (ii) Jinchao Road (Anshi Road-Zhanqian Road) with the total length of 837m and right-of-way width is 50m	Remarks: The independent external environmental consultant visited the site in May 2018. The main findings are shown below: • C1.4Jinchao Road (Anshi Road – Zhanqian Road), the length is 837m. • Persons met:IA's site representative: Mr. Zhang Peng • **No major issues identified. Other minor issues include:** • Environmental monitoring: included in the SE's monthly contract progress reports. However, the contractor's environmental monitoring reports are too generic. Site supervising, environmental monitoring reporting and documentation should be further improved on the basis of the sample environmental monitoring checklist provided by the independent external environmental consultant.
Contract Amount ($ million)	8.47	
Contractor:	Kunpeng Construction Group Co., Ltd	
Contract Awarded:	22 Jul 2014	
Planned Completion Time	June and July 2018	
Progress:	Earthworks completed, drainage pipe system completed, and gravel layer for pavement completed. Asphalt will be paved in June and July 2018	

C1.5 Zhanqian Road (Jinchao Road-Jinni Road) + Jinchao Road (Zhanqian Road-Jinni Road)

Package Contents:	(i) Civil works of the Zhanqian Road (Jinchao Road-Jinni Road)with the total length of 1080m and right-of-way width is 55m; and (ii) Jinchao Road(Zhanqian Road-Jinni Road)with the total length of 1224m and right-of-way width is 50m	Remarks: Open to traffic now. No site visit during this reporting period. No major issues reported.
Contract Amount ($ million)	9.31	
Contractor:	Yichun Tongda Road & Bridge Construction Co., Ltd	
Contract Awarded:	22 Jul 2014	
Completion Time	Oct 2017	
Progress:	A total of 100% construction progress has been achieved	

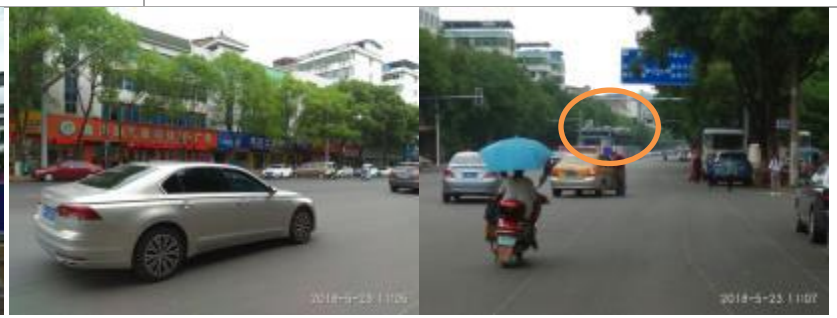
C1.6 Gandong Road (Zhanqian Road-Jinni Road) Civil Works

Package Contents:	Civil works of the Gandong Road (Zhanqian Road-Jinni Road)with the total length of 1779m and right-of-way width is 55m	Remarks: No site visit during this reporting period. No major issues reported.
Contract Amount ($ million)	8.34	
Contractor:	Zhushan Construction Group Co., Ltd	
Contract Awarded:	Aug 2014	
Planned Completion Time	June and July 2018	
Progress:	Earthworks completed, drainage pipe system completed, and gravel layer for pavement completed. Asphalt will be paved in June and July 2018	
		
Signboards on environmental supervision and GRM		

C2_Civil Works of BRT corridor

Package Contents:	BRT corridor, road improvement works (drainage, greenery, street lights, architecture, station power supply, lighting) and traffic engineering (5.5 km)	Remarks: The independent external environmental consultant visited the site in May 2018. The main findings are shown below: Persons met: IA's site representatives (Mr. Zhang Peng) • **No major issues identified.**
Contract Amount (CNY million)	223.06	
Contractor:	Joint Venture of Fujian Lugang (Group) Co., Ltd. (Leader) and Beijing LuAn Traffic Technology Development Co., Ltd.	
Contract Awarded:	June 2017	
Planned Completion Time	Dec 2018	
Progress:	Under construction	

Zhanqian ave. ave. section and bus stop



Yuming ave. section (intersection of Fulin road) with a bus stop almost completed

Yumin ave. BRT alignment pipeline rehabilitation

C3.1_Civil Works of Bus Company Headquarter and Bus Terminals

Package Contents:	Civil works of Bus Company Headquarter and Bus Terminals
Contract Amount (CNY million)	48.11
Contractor:	Guangxi Jiangong Company
Contract Awarded:	August 2016
Planned Completion Time	March 2018
Progress:	60% of the progress has been achieved.

Remarks: The independent external environmental consultant visited the site in December 2017. The main findings are shown below:

Persons met: IA's site representatives (Mr. Zhang Peng) and the contractor- Guangxi Jiangong's site representatives (Mr. Yin, Mr. Li)

- **No major issues identified. Other minor issues include:**
  Garbage was littered at construction camp, without timely collection and transfer. Contraction material was exposed without proper cover. The contractor agreed to take immediate actions to collect garbage and cover construction materials.


Main structure completed


Contractor's camp garbage randomly disposed


Construction material exposed without coverage

C4.1 to 4.3 Fenggang River Improvement Civil Works

Package Contents:	Hydraulic Work and Landscaping of Fenggang River with the total length of 8.22km.	Remarks: The independent external environmental consultant visited the site in May 2018. The main findings are shown below: • Persons met: IA's site representative: Mr. Zhang Peng • **No major issues identified. Other minor issues include:** ➢ Environmental monitoring: included in the SE's monthly contract progress reports. However, the contractor's environmental monitoring reports are too generic. Site supervision, environmental monitoring reporting and documentation should be further improved on the basis of the sample environmental monitoring checklist provided by the independent external environmental consultant.
Contract Amount ($ million)	24.64	
Contractor:	Hongzhou Gardening Construction Company, Jiangxi	
Contract Awarded:	16 Jul 2015	
Planned Completion Time	Q2 2018	
Progress:	90% of the progress has been achieved.	

The pedistrain road along Fenggang river

River alignment

Landscaping

APPENDIX 3 IMPLEMENTATION STATUS ON THE IMPACTS AND MITIGATION MEASURES DURING CONSTRUCTION OF ALL COMPONENTS (As of 30 June 2018)

Aspect	Potential impact and source	Significance[7]	Mitigation	Residual impact[b] comments	Component	Implementation Status And Compliance with EMP
Air quality	Emissions from construction vehicles and machinery	- Medium	All vehicles, equipment and machinery used for construction will be regularly maintained in accordance with manufacturers specifications to ensure that the pollution emission levels conform to the standards prescribed; All equipment and machinery to be operated in accordance with manufacturer's specifications; All construction camps, depots, and storage areas be located at least 200 m from sensitive areas; Regular monitoring to define areas of significant air pollution.	Negligible	All components; BRT most sensitive	Complied With. BRT alignment is changed. The details please see the para. 7 in **Chapter I**.

[7] **(Low, Medium, High) + = positive, 0 =neutral, - = negative**

Aspect	Potential impact and source	Significance[a]	Mitigation	Residual impact[b] comments	Component	Implementation Status And Compliance with EMP
	Construction related dust from the movement of vehicles to/from site	- Medium	Dust suppression through regular watering and cleaning will be used on unsealed road surfaces, asphalt mixing sites and temporary service areas. Setting of speed limits on dirt roads. Reducing unnecessary movement of construction vehicles on unpaved roads and sites;	Negligible	All components	Complied with. No asphalt mixing plant is required. All asphalt is purchased from designated commercial vendors. There is a concrete mixing plant on site shared by all the contractors. TSP concentrations during this monitoring campaign indicate compliance. The details please see **para. 39** in **Chapter V**.
	Vehicles hauling materials will generate dust nuisance.	- Medium	Vehicles delivering material will be covered.	Negligible	All components	Complied with
	Emission of odor from excavated spoil	-Medium	Monitor odor during excavation and dredging activities. Ensure any odorous material is quickly covered with non-odorous material, to minimize emissions. If it is not possible to cover material the same working day, inform residents that may be potentially affected of temporary nature and the grievance redress mechanism. Avoid works with odorous material during wind conditions that are likely to result in widespread odor dispersion.	Negligible	All components, most risk from Fenggang River works	Complied with.
Noise	High noise levels from construction vehicles and machinery	-Medium	Impose speed limits on all construction vehicles; No night time working, to reduce the potential impacts on sensitive uses Sound proofing of all vehicles and equipment; Stationary units to be located in sound absorbing areas; All construction camps, depots and storage areas to be located at least 200 m from sensitive areas; Regular	Negligible	All components: BRT most sensitive	Complied with. BRT alignment is changed. The details please see the **para. 9** in **Chapter I**.

Aspect	Potential impact and source	Significance[a]	Mitigation	Residual impact[b] comments	Component	Implementation Status And Compliance with EMP
			monitoring to define areas of noise sensitivity			
	Protection of workers Health and Safety	- Low	Noise standards for industrial enterprises will be strictly enforced to protect construction workers from noise impacts, in accordance with international health, safety and environment procedures.	Low	All components	Complied with
Surface water	Pollution of Fenggang river and canals by fuels and oils	- Medium	Fuel storage and refueling sites located away from Fenggang river. Extraction of water for construction only to occur in accordance with local and national regulations	Negligible	Fenggang River	Complied with.
	Construction materials blocking drainage and producing contaminated run-off.	- Medium	All water channels and drainage channels must be kept clear of debris and immediately rebuilt if needed. Drainage from all sites to be channeled to discharge via percolation area and for sensitive sites through a settling pond with an appropriate retention period. Ensure no short term flooding occurs.	Negligible	All components	Complied with
Ground water	Pollution of groundwater by fuels and oils spillage.	- Low	Construction vehicles and equipment will be maintained and refueled at protected refueling stations.	Negligible	All components	Complied with.

Aspect	Potential impact and source	Significance[a]	Mitigation	Residual impact[b] comments	Component	Implementation Status And Compliance with EMP
	Exposure and contamination of groundwater during construction	-Low	All construction activities to ensure no spillage of materials. Regular monitoring to take place to ensure no contamination takes place.	Negligible	All components but specifically Urban Transport Hub.	Complied with.
Soil	Soil erosion due to inadequate and immediate application of stabilization techniques.	- Medium	Re-vegetate barren cuts and work areas as soon after the work has been completed as is practical. Apply topsoil on all vacant sites as soon as practical	Negligible	All components except BRT	Basically complied with. The constructors submitted CEMPs including soil erosion prevention measures.
	Damage to soil through compaction at temporary work areas such as storage areas and transport routes.	- Medium	Strip off topsoil initially and then de-compact and reinstate topsoil for effective reinstatement in accordance with Government requirements.	Negligible	All components except BRT	
	Contamination of soil from fuel and lubricants.	- Medium	All fuels and oils stored in accordance with international practice; bunded and impervious flooring.	Negligible	All components except BRT	
Flora	Loss or damage to vegetation	- Medium	Replanting of trees and restoration of impacted areas by de-compaction and reinstatement of topsoil.	Negligible	All components	Complied with. The ADB loan review mission in May 2016 reviewed the ecological design and confirmed compliance. The details please see the **para. 11** in **Chapter I** of this report and **Appendix 4** of the **6th EMR** dated January 2017.

Aspect	Potential impact and source	Significance[a]	Mitigation	Residual impact[b] comments	Component	Implementation Status And Compliance with EMP
	Failure to properly manage/store topsoil, leading to degraded and substandard site reclamation and re-vegetation.	- Medium	Cleary defined topsoil storage and handling in contract specifications, and follow up with regular inspection, monitoring and reporting.	Negligible	All components	Complied with.
Fauna	Loss, damage or disruption to fauna due to unnecessary and un-approved expansion in construction working areas, soil compaction.	- Low	Contractor will be directed not to disrupt or damage the fauna and their habitats.	Negligible	All components except BRT	Complied with.
Social: Community economic activity	Community loses access to homes and businesses, affecting income generating activities.	- Medium	Consult with local officials to establish an adequate detour plan and sufficient access to areas cut off or constrained by the construction work	Medium and will depend of effectiveness of the plans implemented.	All components	To be reflected in the resettlement monitoring report.
Social: Construction camps	Community tension and disruption.	- Medium	Community members and contractors to meet and discuss issues. Evaluate locations for camps. Develop camp management rules. Develop and implement a Project Induction training course that is mandatory for all workers; this will contain health and safety, environmental and social context components.	Minor	All components	Complied with.
Archaeology and cultural heritage	Potential loss and damage to cultural resources not defined in EIA	- Low	Develop and implement a Chance Finds Protocol, including maintaining a watching brief during works, with clear procedures for protection and documentation. The EIA indicated that there were no cultural or archaeological remains, but some evidence may be found during construction activities and should be recorded.	Medium	All components except BRT	Not applicable so far
Land: Agriculture	Damage to agricultural crops and lands, including drainage and irrigation infrastructure.	- Medium	Liaise effectively with affected persons before start of construction, maintain dialogue, develop a grievance procedure, strictly control machinery and vehicle access and reinstate all affected areas.	Minor	All components except BRT	Complied with.

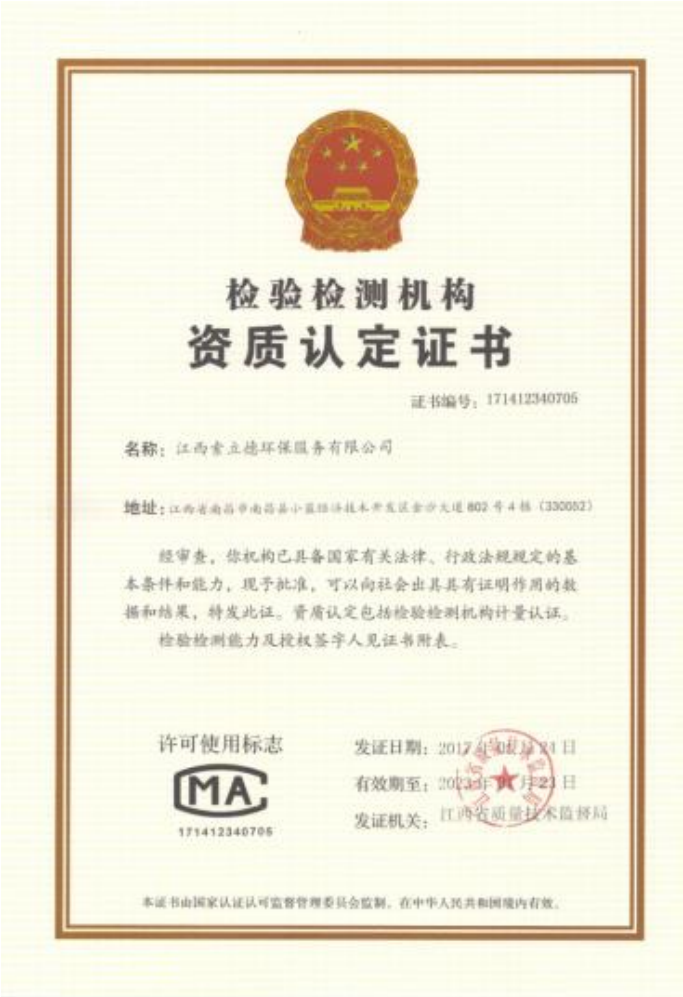
Aspect	Potential impact and source	Significance[a]	Mitigation	Residual impact[b] comments	Component	Implementation Status And Compliance with EMP
Land: Livestock	Livestock resources damaged by machinery and vehicles.	- Medium	Liaise effectively with affected persons before start of construction, maintain dialogue, develop a grievance procedure, strictly control machinery and vehicle access, consider fencing for protection, and discuss livestock crossing points.	Minor	All components except BRT	Complied with.
Land: Property loss	Damaged properties and those required to be demolished to facilitate the construction works.	- High	Develop and implement a compensation scheme that is compliant with ADB procedures (Resettlement Action Plan). Provide for compensation and emergency management for any accidental damage due to close proximity of works to properties. See Resettlement Plan.	Potential medium or low adverse effect, depending on the success of the compensation arrangements.	All components	To be reflected in the resettlement monitoring report.
Traffic	Traffic disruption and diversion	- High	Develop and implement effective traffic management plans and make them publically available. Give advance notice of any diversions and closures. Install warning signs.	Negligible	All components	Complied with.
Traffic: Community safety	Residents injured or disturbed by construction activities in proximity to residences and businesses.	- High	Conduct safety awareness campaigns, focusing on schools and children. Develop an effective method statement for construction, in consultation with residents.	Residual impacts will depend on the effectiveness of the campaigns.	All components	Complied with.
Traffic management	Both through traffic and local traffic disrupted due to road closures and restrictions during lifting and overhead works	- Medium	Develop an effective traffic management plan for through traffic that also minimizes disruption to residents.	Potential medium or low adverse effect, depending on the success of the traffic arrangements.	All components	Complied with.
Waste	Contamination of soil or water resources.	- Medium	Contaminated or hazardous waste such as bitumen waste to be disposed of in selected areas & approved by supervision consultants. All waste disposal to comply with a Waste Management Plan to be developed at the start of construction.	Minor.	All components	Complied with.

Aspect	Potential impact and source	Significance[a]	Mitigation	Residual impact[b] comments	Component	Implementation Status And Compliance with EMP
	Construction waste not being disposed of appropriately	-Medium	Where reuse and recycling not possible all construction waste to be taken off site in accordance with local requirements and national regulations		All components	Complied with.
Hazardous material use and storage	Soil and water pollution.	- Medium	Construction vehicles and equipment will be maintained and refueled at protected refueling stations. All storage and handling sites located away from Fenggang river and sensitive uses.	Negligible		Complied with.
Worker HSE	Workers injured during construction	- Medium	Implement international HSE standards in all contracts.	Minor	All components	Complied with.
Workers camps	Spread of disease (including STIs)	- Low	Conduct awareness campaigns for camp workers, and if relevant, nearby communities.	Minor	All components	Complied with.
	Water and soil pollution from sewage.	- Medium	The sewage system for such camps will be properly designed and built so that no water pollution takes place. Such facilities will be decommissioned at end of the construction period. All waste to be disposed off site at approved and managed landfills.	Minor		Complied with.
Encroachment by contractor	Land resources damaged by contractor using additional land illegally.	- Medium	Identify work areas with contractor(s) and describe system of approvals for extensions and fines for violations.	Negligible	All components	Complied with.
Service and utilities disruption.	Services disrupted by large scale construction works.	- Low	Develop an effective method statement for construction, in consultation with the residents, local administration and owner companies.	Potential low adverse effect	All components	Complied with.

[a]Significance is assessed assuming no implementation of mitigation measures.

[b]Residual impact is the remaining impact assuming that mitigation measures have been successfully implemented

APPENDIX 4 Certificate of local environmental monitoring agency (for field sampling and lab testing), Jiangxi Solid Environmental Services Co., Ltd.; its automatic surface water quality sampling process (self-flying monitor) and original environmental monitoring data source (scanned copy)



检验检测机构

资质认定证书

证书编号：171412340705

名称：江西省立德环保服务有限公司

地址：江西省南昌市南昌县小蓝经济技术开发区金沙大道802号4栋（330052）

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许可使用标志

171412340705

发证日期：2017年08月23日

有效期至：2023年08月22日

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江西索立德环保服务有限公司

JiangXi Solid Environmental Services Co.,Ltd.

检 测 报 告

TEST REPORT

（SLD-HJ-18060062Z）

项目名称：抚州市亚行贷款城市综合基础设施改善项目环境现状检测

检测类别：委托检测

江西索立德环保服务有限公司

二〇一八年七月七日

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检 测 结 果

一、检测目的

受武汉云海宸工程咨询有限公司委托对抚州市亚行贷款城市综合基础设施改善项目进行环境现状检测。

二、检测内容及结果

2.1 水和废水检测内容及结果

表 1-1 地表水检测内容及结果

单位：mg/L

检测项目	采样点位、频次及测试结果 采样日期：2018-06-25　分析日期：2018-06-27~2018-06-29			
	凤岗河与崇岗大道交界处☆1#	凤岗河与站前大道交界处☆2#	凤岗河与临川大道交界处☆3#	凤岗河汇入抚河处☆4#
悬浮物	22	22	21	22
石油类	0.02	0.03	0.03	0.03
化学需氧量	12	14	15	12
样品状态描述	微黄、无味、无浮油、微浊	微黄、无味、无浮油、微浊	微黄、无味、无浮油、微浊	微黄、无味、无浮油、微浊

续表 1-1

单位：mg/L

检测项目	采样点位、频次及测试结果 采样日期：2018-06-26　分析日期：2018-06-27~2018-06-29			
	凤岗河与崇岗大道交界处☆1#	凤岗河与站前大道交界处☆2#	凤岗河与临川大道交界处☆3#	凤岗河汇入抚河处☆4#
悬浮物	26	21	23	25
石油类	0.04	0.04	0.04	0.04
化学需氧量	13	13	15	12
样品状态描述	微黄、无味、无浮油、微浊	微黄、无味、无浮油、微浊	微黄、无味、无浮油、微浊	微黄、无味、无浮油、微浊

续表 1-1

单位：mg/L

检测项目	采样点位、频次及测试结果 采样日期：2018-06-27　分析日期：2018-06-27~2018-06-29			
	凤岗河与崇岗大道交界处☆1#	凤岗河与站前大道交界处☆2#	凤岗河与临川大道交界处☆3#	凤岗河汇入抚河处☆4#
悬浮物	25	19	26	20
石油类	0.04	0.03	0.03	0.04
化学需氧量	12	13	15	14
样品状态描述	微黄、无味、无浮油、微浊	微黄、无味、无浮油、微浊	微黄、无味、无浮油、微浊	微黄、无味、无浮油、微浊

2.2 环境空气和废气检测内容及结果

表 2-1 环境空气检测内容及结果

单位：mg/m³

采样点位	采样日期	检测项目及测试结果
		分析日期：2018-06-28
		总悬浮颗粒物
公交枢纽O5#	2018-06-25	0.120
	2018-06-26	0.117
	2018-06-27	0.121
郭家岭O6#	2018-06-25	0.122
	2018-06-26	0.113
	2018-06-27	0.118
岭背龚家O7#	2018-06-25	0.115
	2018-06-26	0.117
	2018-06-27	0.123
BRT 站前大道站 O8#	2018-06-25	0.121
	2018-06-26	0.116
	2018-06-27	0.119
BRT 玉茗大道段五峰路口 O9#	2018-06-25	0.120
	2018-06-26	0.114
	2018-06-27	0.125
BRT 玉茗大道段抚临路站 O10#	2018-06-25	0.122
	2018-06-26	0.115
	2018-06-27	0.119

江西索立德环保服务有限公司
江西省南昌市南昌县小蓝经济技术开发区金沙大道 602 号 4 栋　邮政编码 330052

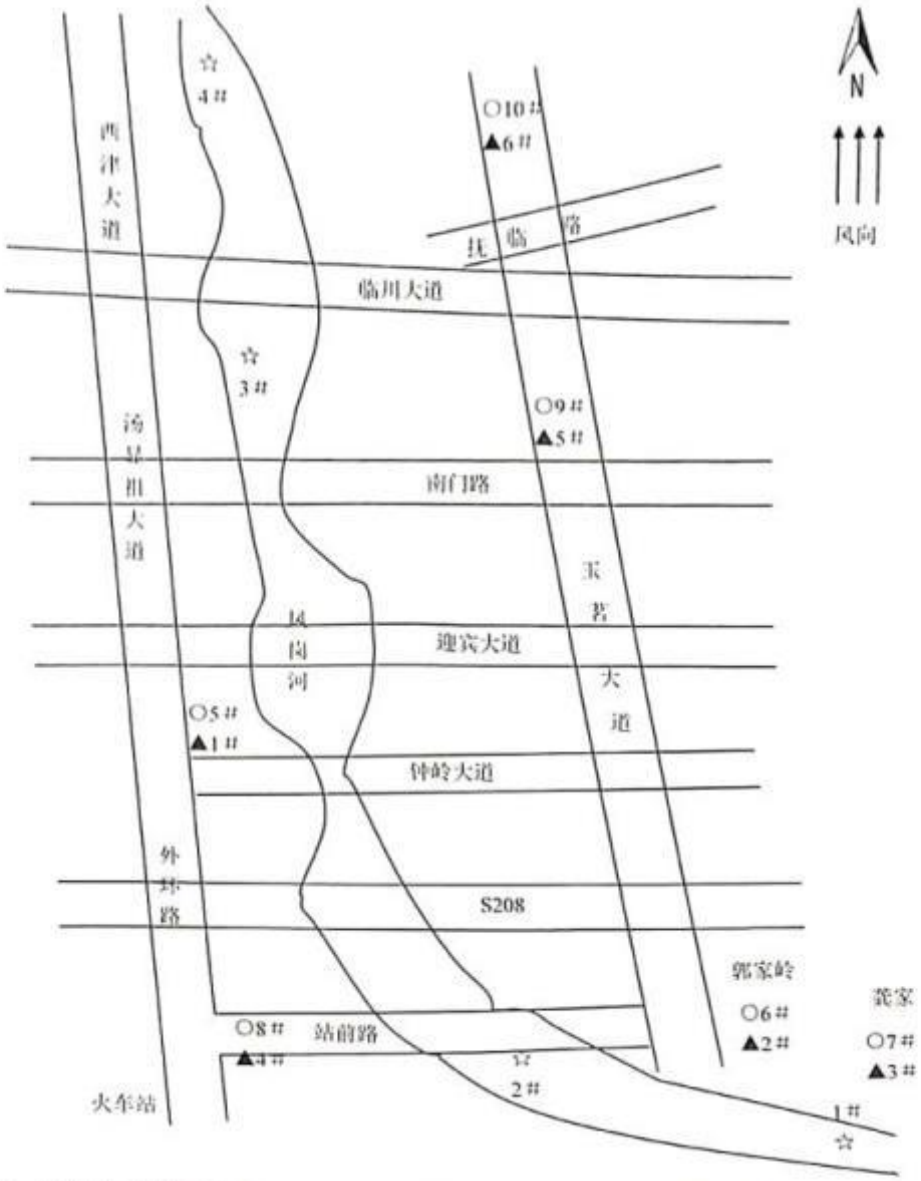
2.3 噪声检测内容及结果

表 3-1 噪声检测内容及结果

单位：等效声级 Leq[dB(A)]

测点编号	采样点位	主要声源	监测日期	监测时间	检测值
▲1#	公交枢纽	社会生活噪声	2018-06-25	昼间（10：01）	57.4
				夜间（22：11）	49.4
			2018-06-26	昼间（09：15）	57.2
				夜间（22：13）	48.4
▲2#	郭家岭	社会生活噪声	2018-06-25	昼间（10：32）	56.3
				夜间（22：35）	48.4
			2018-06-26	昼间（09：43）	53.8
				夜间（22：39）	49.3
▲3#	黄家	社会生活噪声	2018-06-25	昼间（11：00）	57.0
				夜间（23：05）	44.7
			2018-06-26	昼间（10：06）	55.1
				夜间（23：11）	45.4
▲4#	BRT 站前大道站	社会生活噪声	2018-06-25	昼间（12：41）	59.3
				夜间（23：34）	47.9
			2018-06-26	昼间（10：47）	57.1
				夜间（23：34）	47.9
▲5#	BRT 玉茗大道段五峰路口	社会生活噪声	2018-06-25	昼间（13：10）	56.7
				夜间（23：58）	46.4
			2018-06-26-2018-06-27	昼间（11：11）	56.8
				夜间（00：05）	48.7
▲6#	BRT 玉茗大道段扶临路站	社会生活噪声	2018-06-25-2018-06-26	昼间（13：42）	57.6
				夜间（00：14）	48.5
			2018-06-26-2018-06-27	昼间（11：56）	56.9
				夜间（00：32）	43.2

点位分布示意图如下：



注："☆"表示地表水监测点，"○"表示环境空气监测点，"▲"表示噪声监测点。

三、检测方法及仪器附表

附表 1：水和废水检测分析方法及仪器

分析项目	检测方法	检测仪器名称、型号及编号	检出限
悬浮物	《水质 悬浮物的测定 重量法》 GB 11901-89	万分之一天平 Secura224-1CN SLD-CSI-0505	/
石油类	《水质 石油类和动植物油类的测定 红外分光光度法》 HJ 637-2012	红外测油仪 OIL460 SLD-CSI-0529	0.01mg/L
化学需氧量	《水质 化学需氧量的测定 重铬酸盐法》 HJ 828-2017	/	4mg/L

附表 2：环境空气和废气检测分析方法及仪器

分析项目	检测方法	检测仪器名称、型号及编号	检出限
总悬浮颗粒物	《环境空气 总悬浮颗粒物的测定 重量法》 GB/T 15432-1995	万分之一天平 Secura224-1CN SLD-CSI-0505	0.001mg/m³

附表 3：噪声检测方法及仪器

检测项目	检测方法	检测仪器名称、型号及编号	检测范围
社会生活噪声	《声环境质量标准》 GB 3096-2008	多功能声级仪 AWA6228+ SLD-CSI-0112	

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附录 1：气象条件

采样日期	气象条件				
	天气	温度（℃）	气压（kPa）	风向	风速（m/s）
2018-06-25	晴	34.6~36.8	100.4~100.6	南	2.4~2.6
2018-06-26	晴	31.4~33.7	100.4~100.6	南	1.9~2.2
2018-06-27	晴	31.4~33.3	100.2~100.6	南	2.1

APPENDIX 5: Public and Agency Comments and Responses

The independent environmental consultant received comments on the project environmental impacts from the agencies, organizations and individuals listed below. The comments are reproduced in their entirety on the following pages (following the list of commenters) with responses provided opposite each comment. The public concerns received in the May 2018 public opinion surveys were transcribed for inclusion into this EMR with the response provided on the opposite page.

Written letters of comment were received from the following:

No.	Person	Organizations	Date Received	Corresponding Comment No.
1	ADB	Forwarded by Mr. Fan from the IA(FIDC)	5 Jul 2018	**1-5**

Individual comments were received at the public consultation meetings from the following:

A6-A7	May 2018 public opinion surveys	23 May 2018	**IN1-IN5**

No	Name	Gender	Minorities	Age	Designation	Dept.: / Organization	Education	Corresponding Comment No.
May 2018 public opinion surveys (mainly for contract C2- BRT civil works)								
A6	Ms. Wang	Female	Han	Around 30	Staff	'2008' hotel nearby Fulin road station (Yuming ave. BRT section)	High school	**IN1-IN3**
A7	Mr. Wang	Male	Han	Around 50	Shopper	Aohua decoration company-intersection of Wufeng road (Yuming ave. BRT section)	High school	**IN4-IN5**

Re: Environmental Concerns extracted from the *Memorandum of Understanding Of ADB Project Loan Review Mission During 29–31 May 2018* (dated 31 May 201)

Para. 14 This project is classified as Category A for environment by ADB. The Mission reviewed the institutional setup for EMP and project GRM implementation and supervision, and found adequate. During the site visits and the meetings, it was confirmed that no environmental complaint or grievance has been received so far. As this project's physical completion date has been extended to 30 June 2019, per requirement in the Project Agreement and Loan Agreement, the PMO has extended the contract to the new closing date 31 July 2019 (including engagement of local environmental sampling and test institute) in order to keep up external environmental monitoring until project completion.

❶ No environmental complaint or grievance was received during this reporting period. The detailed GRM implementation status is reported in the **Chapter VI**. In December 2017, the extended contract was signed. The external environmental monitoring continues as scheduled.

Para. 15 During the mission conducted in November 2017, site environmental management issues were observed. As reported in the 7th EMR, PMO immediately urged the constructors and contractors to improve onsite environmental management to address those comments. The PMO and contractors organized relevant training to the onsite construction workers in order to raise their environmental awareness and facilitate sound construction practice based on the EMP; and strengthen supervision and environmental monitoring. In December 2017, FIDC and the independent external environmental consultant undertook further training and inspected all the construction sites and confirmed general compliance and reported to ADB. The Mission visited construction sites associated with Contract C1.4: Gandong Road, the Xianxiyao resettlement communities, Contract C2: BRT civil works, Contract C3: urban transport hub, and Contract C4: Fenggang River greenway on 29 May 2018. No significant environmental impacts were observed during the field visit.

❷ Onsite environmental management is highlighted in line with sound construction practice based on the CEMPs; supervision and environmental monitoring are strengthened. In May 2018, FIDC and the independent external environmental consultant undertook further trainings and inspected all the construction sites and confirmed general compliance (for more details please see the **paras. 32 to 35** in the **section D** of **Chapter V** below, **Appendix 2 Site Visit Notes** and **Appendix 3**).

Para. 16 The seventh environmental monitoring report (EMR) covering the period January to December 2017 was disclosed in February 2018. The schedule for future semiannual EMRs submission was confirmed (semiannually, 30 July in progress report and 30 December in stand-alone EMR, until completion of the whole project).

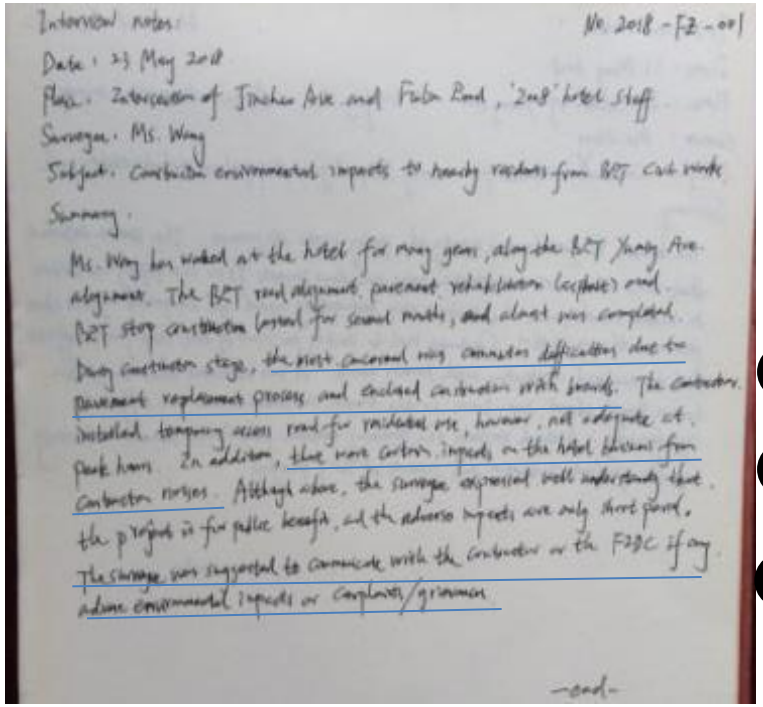
❸ The schedule for future semiannual EMRs submission was confirmed (semiannually, 31 July in progress report and 30 December in stand-alone EMR, until completion of the whole project). This is the eighth EMR including comprehensive monitoring results and analysis (**Chapters IV to VII**).

Para. 17 To strengthen the deployment of BRT, the addition of power supply for all the BRT stations, relocation of underground high-voltage power cables along Yuming Road and changes around the beginning point along BRT corridor may be considered. The first two proposed power supply subcomponents remain located under the current BRT alignment, so the incremental environmental impact is expected insignificant. However, the FMG has not decided which additions will be applied for the potential ADB loan saving. Therefore, if needed, the addendum to EIA will be prepared for ADB's review once the decision is made. It was agreed that the external environmental monitoring consultant will prepare the environmental due diligence on the minor scope change and have it enclosed to the future environmental monitoring reports.

❹ FMG has not decided which additions will be applied for the potential ADB loan saving. Therefore, safeguard impact assessment documents (especially environment) will be prepared for ADB's review once the design is revised or the decision is made. For details, please see the **paras. 10 to 12** of **Chapter I**.

Para. 18 The mission reiterated that the Project benefits data are often difficult to accumulate at project completion review (PCR) stage in short notice. Since the three components (including some station access roads, Fenggang river improvement, and urban public transport hub) will be finished by mid-2018, the mission agreed that the environmental mitigation cost and benefits data be collected and reported in the future EMRs and project progress reports. The external environmental monitoring consultant provided related training to the contractors and CSCs in May 2018, and will report the domestic completion check and acceptance preparation status in a timely manner.

❺ In May 2018, the external environmental monitoring consultant provided related training and disseminated the sample contract completion environmental data list to the contractors and CSCs. In the next (9th) reporting period, the external environmental monitoring consultant will further collect environmental mitigation cost and benefits data, and report those with the domestic completion check and acceptance preparation status in the 9th EMR due 31 January 2019.



Interview notes: No. 2018 - FZ - 001

Date: 23 May 2018

Place: Intersection of Jincheng Ave and Fuda Road, '208' hotel staff

Surveyor: Ms. Wong

Subject: Construction environmental impacts to nearby residents from BRT Construction

Summary:

Ms. Wong has worked at the hotel for many years, along the BRT Xiang Ave. alignment. The BRT road alignment, pavement rehabilitation (asphalt) and BRT stop construction lasted for several months, and almost was completed. During construction stage, the most concerned issue remains difficulties due to pavement replacement process and enclosed construction with barrels. The contractor installed temporary access road for residents use, however, not adequate at peak hours. In addition, the more serious impacts on the hotel business from construction noises. Although above, the surveyor expressed well understanding that the project is for public benefit, and the adverse impacts are only short period. The surveyor was suggested to communicate with the Contractor or the FIDC if any adverse environmental impacts or complaints/grievances

-end-

IN1

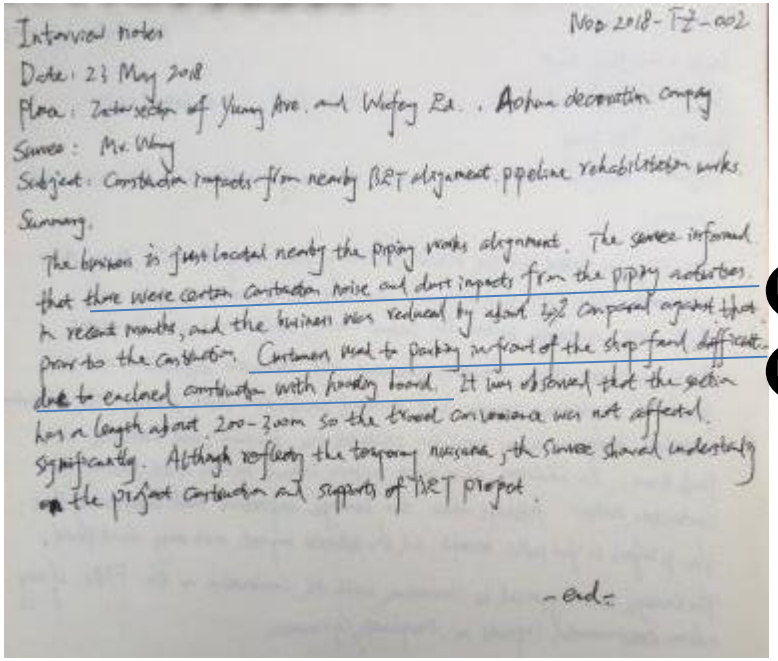
IN2

IN3

IN1 **Inconveniences of travel during construction**. Traffic control plan during construction is approved by local traffic police department. Public notice was issued. Fence is erected to ensure safety and facilitate detour. Construction schedule is optimized to avoid impacts at peak hour. Traffic police direct communication at key intersections and peak hour. For details please see the **Appendix 3**.

IN2 **Construction noises during afternoon or night.** FIDC communicated with the contractor. Night construction is prohibited strictly. Construction activities are conducted by sections, and at each section last for about 1~2 months so with limited impacts. Fence is erected to mitigate noise and construction schedule is optimized to avoid impacts at normal rest time or important exam days. For details please see the **Appendix 3**.

IN3 **Availability of GRM channel**. During the public consultation, the FIDC and independent environmental consultant informed the phone numbers of PCC and the government hotlines (0794-12345 or 12369). Onsite signbords were being erected nearby the shop along Huancheng south road (see below figure). For details please see the **Chapter VI**.



Interview notes No. 2018-TZ-002

Date: 23 May 2018

Place: Intersection of Yiang Ave. and Wufeng Rd. , Aohua decoration company

Source: Mr. Wang

Subject: Construction impacts from nearby BRT alignment pipeline rehabilitation works

Summary.

The business is just located nearby the piping works alignment. The source informed that there were certain construction noise and dust impacts from the piping activities in recent months, and the business was reduced by about 1/2 compared against that prior to the construction. Customers used to parking in front of the shop faced difficulties due to enclosed construction with hoarding board. It was observed that the section has a length about 200-300m so the traffic conveyance was not affected significantly. Although reflecting the temporary nuisance, the source showed understanding on the project construction and supports of BRT project.

-end-

IN4

IN5

IN4 **Construction noises during afternoon or night.** Same for the above IN2.

IN5 **Inconveniences of travel during construction**. Same for the above IN1.

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