Project Administration Manual

Project Number: 45021-002
January 2014

People's Republic of China: Anhui Intermodal Sustainable Transport Project

Asian Development Bank

Contents

APPENDIX

Project Administration Manual Purpose and Process

The project administration manual (PAM) describes the essential administrative and management requirements to implement the project on time, within budget, and in accordance with Government and Asian Development Bank (ADB) policies and procedures. The PAM should include references to all available templates and instructions either through linkages to relevant URLs or directly incorporated in the PAM.

The Anhui Provincial Department of Transport (APDOT) is wholly responsible for the implementation of ADB financed projects, as agreed jointly between the borrower and ADB, and in accordance with Government and ADB's policies and procedures. ADB staff is responsible to support implementation including compliance by APDOT of their obligations and responsibilities for project implementation in accordance with ADB's policies and procedures.

At Loan Negotiations the borrower and ADB shall agree to the PAM and ensure consistency with the loan agreement. Such agreement shall be reflected in the minutes of the Loan Negotiations. In the event of any discrepancy or contradiction between the PAM and the Loan Agreement, the provisions of the Loan Agreement shall prevail.

After ADB Board approval of the project's report and recommendations of the President (RRP) changes in implementation arrangements are subject to agreement and approval pursuant to relevant Government and ADB administrative procedures (including the Project Administration Instructions) and upon such approval they will be subsequently incorporated in the PAM.

Abbreviations

ADB	=	Asian Development Bank
ACAPEPD	=	Appraisal Center of Anhui Provincial Environmental Protection Department
APDOT	=	Anhui Provincial Department of Transport
APDOF	=	Anhui Provincial Department of Finance
APEPD	=	Anhui Provincial Environmental Protection Department
APG	=	Anhui Provincial Government
APHAB	=	Anhui Provincial Highway Administration Bureau
APPNAB	=	Anhui Provincial Port & Navigation Administration Bureau
APPSCIG	=	Anhui Port & Shipping Construction Investment Group Co. Ltd
APSCD	=	Anhui Provincial Survey and Design Institute Company Ltd.
APTPDRI	=	Anhui Provincial Transport Planning, Design and Research Institute
APTSDI	=	Anhui Provincial Transport Survey & Design Institute
APWRD	=	Anhui Provincial Water Resource Department
dwt	=	deadweight ton
EA	=	executing agency
EIA	=	environmental impact assessment
EIR	=	environmental impact report
EMP	=	environmental management plan
EMS	=	environmental monitoring station
ESE	=	environmental supervision engineer
GDP	=	gross national product
GRM	=	grievance redress mechanism
IA	=	implementing agency
ICB	=	international competitive bidding
km	=	Kilometer
km/h	=	kilometer per hour
LAR	=	land acquisition and resettlement
LIBOR	=	London interbank offered rate
LPMO	=	local project management office
M&E	=	monitoring and evaluation
MOF	=	Ministry of Finance
NCB	=	national competitive bidding
pm	=	person-month
PPMO	=	provincial project management office
PPTA	=	project preparatory technical assistance
PRC	=	People’s Republic of China
RP	=	resettlement plan
SDAP	=	social development action plan
SPS	=	Safeguard Policy Statement
SSU	=	Social Safeguards Unit
SRWIP	=	Shuiyang River Waterway Improvement Project
SSSRI	=	Shanghai Ship & Shipping Research Institute
TOR	=	terms of reference
WDZ	=	Wangjiang Demonstration Zone
XMSA	=	Xuancheng Maritime Safety Administration
XPSAB	=	Xuancheng Port and Shipping Administration Bureau

I. PROJECT DESCRIPTION

1. Development in the central PRC province of Anhui has lagged behind the neighboring eastern and coastal provinces. About 56% of the province's 59.7 million people lived in rural areas in 2011, but population density, at 430 inhabitants per square kilometer, is much higher than the national average (138) and land availability is limited. Despite economic growth, the province's gross domestic product per capita remains much lower than those of the adjacent coastal provinces of Jiangsu and Zhejiang.[1] Anhui has had some success in its efforts to capitalize on the advantages of its physical proximity to these more affluent provinces owing to its large, skilled, and less costly labor force. It is gradually attracting new investments, and maintained double-digit annual gross domestic product (GDP) growth during 2011–2012. Production has grown faster than the national average, and Anhui's consumption per capita reached 77% of the national average in 2011, up from 70% in 2005.

2. To harness Anhui's geographical advantage and cost competitiveness and promote new investment in manufacturing and services, the PRC State Council approved a plan in January 2010 to create the Wanjiang Demonstration Zone (WDZ). The plan aims to attract equipment manufacturing, textile, information technology, and agricultural industries to the urbanized areas along the Wanjiang River, which is the name given to the stretch of the Yangtze River that flows through Anhui. The WDZ covers fifty nine counties and nine cities, including Hefei and Wuhu, and is expected to facilitate the expansion of existing Anhui-based companies as well as encourage companies to relocate from elsewhere in the Yangtze River Delta, including Anhui's neighboring provinces.

3. The city of Xuancheng is the nearest point in the WDZ to the Yangtze River Delta, and borders Jiangsu and Zhejiang provinces. Only 283 kilometers (km) west of the city of Shanghai, it is the closest major center in the WDZ, making it a favorable destination for industries relocating from the coast.

4. Xuancheng is developing an industrial park to capitalize on Anhui's comparative advantages and to attract industries that are seeking to move from neighboring provinces.[2] For the city and the WDZ to succeed in these efforts, however, the Xuancheng industrial park and the WDZ need to be served by a well-developed transport network.

5. Anhui's inadequate transport network is currently a major obstacle to rapid industrial and economic development and, as a result, to poverty reduction. The capacity and quality of the province's roads need significant improvement to meet growing requirements and to link Anhui to the Yangtze River corridor. Most roads have only two lanes and some should be upgraded to four or six. Of the 149,535 km of roads at the end of 2011, expressways and high-standard class I and II highways comprised only 9.5% (14,276 km), which is lower than the national average of 11.5%. The percentage of paved roads provides an indication of the general quality of the road infrastructure, and in Anhui this is lower than in the six surrounding provinces (44.2%).

6. Any expansion of the province's road network must be accompanied by carefully designed measures to enhance the level of road safety and prevent traffic accidents. Particularly important is the need for road designs to contribute to the safety of NMT by

[1] In 2011-2012 Anhui had a GDP per capita of $4,200, much lower than the adjacent provinces of Jiangsu ($11,000) and Zhejiang ($10,200).

[2] The development of Xuancheng industrial park is supported by a World Bank loan. World Bank. 2013. *China - Anhui Xuanchang Infrastructure for Industry Relocation Project*. Washington DC.

providing segregated pedestrian and cycling lanes. An estimated 210,000 crashes led to 62,000 traffic fatalities in the PRC in 2011, making road safety a national concern. Accidents and injuries have risen rapidly along with the expansion of the road network and the growth in the number of motor vehicles. During 2000–2005, more than 600,000 people were killed and around 3 million injured in road crashes—equivalent to a fatality every 5 minutes. These accidents are estimated to have affected the lives of more than 20 million people in the country, either directly or as family members of the victims involved. The most vulnerable road users—pedestrians, motorcyclists and cyclists—account for the majority of deaths.

7. Like the PRC in general, Anhui has great potential for the development of inland waterway transport (IWT), which is clean, safe, and the most energy efficient of all the major mode of transport. The PRC has more than 5,600 navigable rivers and an inland waterway system of 119,000 km in total navigable length. IWT can provide a cost effective alternative to road transport for moving freight, and thereby help alleviate the traffic congestion on the country's highways, reduce energy consumption, and avoid rapidly growing emissions that are exacerbating local air pollution and contributing to global climate change. Despite recent fast growth, IWT is still greatly underused. Its share in total transport in the PRC, measured in ton-kilometers, was only 4% in 2008.

8. Most of the PRC's navigable waterway network is located within the courses of the Heilongjiang, Huaihe, Yangtze, and Zhujiang rivers. The Yangtze River and its tributaries alone account for one-half the national total, or 58,000 km. The Yangtze runs through Anhui, and provides a high-class deep river channel for IWT. Its network of small associated river and tributary channels also offer potential for IWT, but past underinvestment in navigation has left many of them navigable only by small vessels during the wet season. Investments to upgrade the river channels to enable year-round IWT by larger vessels at lower unit operating costs can play an important role in achieving the WDZ's aim of attracting industries from coastal and neighboring provinces to cities along the Yangtze in Anhui.

9. The 44 km Shuiyang River connects the Xuancheng industrial park within the WDZ to the Wushen Canal,[3] which in turn connects to Shanghai. This would offer potential investors in the industrial park the effective transport route they want and need, except that the Shuiyang's current shallow depth, sharp bends, and flooding during the wet season prevent it from accommodating vessels above a very low capacity of 300 deadweight tons (dwt). This not only discourages more extensive use of the waterway, but also increases unit transport costs for shippers that have no better option. Rehabilitation of the Shuiyang River channel under the project will allow passage for vessels of up to 1,000 dwt, and provide a much shorter route for transporting goods from Anhui to the Yangtze River Delta.[4] The river port to be built by the project will facilitate a shift from road to inland waterway transport for cargo moving to and from the Xuancheng industrial park.

10. By supporting IWT, the project will also help the PRC develop the low-carbon transport modes needed to stem the rapid growth in the country's emissions that contribute to global climate change. The PRC is now the world's largest producer of greenhouse gases. These emissions, including those related to constantly expanding use of motorized transport, will continue to increase for the foreseeable future. Given the priority accorded to the challenge of climate change internationally, providing assistance to the country for developing low-carbon

[3] The Wushen canal is an ancient waterway that branches off from the Yangtze River and provides a connection between the city of Wuhu in Anhui Province and Shanghai.

[4] The Yangtze River delta comprises Shanghai, southern Jiangsu Province, and northern Zhejiang Province.

transport is a matter of urgency. The project's planned flood control measures, including flood walls and river bank protection, integrate protection and resilience into the design and construction of vulnerable infrastructure investments. This will meet the need to adapt to effects of climate change such as changing precipitation patterns, more frequent and intense storms, and flash floods.

11. The scope of the project's inland waterway component and the need for it to include an intermodal port at Xuancheng to serve the industrial park emerged from policy dialogue between ADB and the government during project preparation. The project preparation also included a study on climate change resilience, which helped in identifying the need for project flood protection works and developing preliminary designs of embankments on the Shuiyang River. Assessments of the project roads led to recognition of the road safety issues that are to be addressed through the project's design features, which will include segregated lanes for pedestrians and cyclists.

12. This will be the second ADB project to support IWT in the PRC, and follows approval in 2012 of the Hunan Xiangjiang Inland Waterway Transport Project, now in the early stages of implementation.[5] The project design incorporates lessons from recent road projects in the PRC, one of which was the need to include capacity building support for implementation units, particularly in procurement and safeguards.[6] During project preparation, ADB provided guidance to the executing agency (EA) and the implementing agencies (IAs) on ADB's safeguards and procurement procedures. Further capacity building on resettlement is planned for the IAs.

13. The project is consistent with ADB's country partnership strategy for the PRC for 2011-2015.[7] The emphasis on traffic safety issues and the development of IWT are in line with ADB's Sustainable Transport Initiative Operational Plan, which includes road safety and addressing climate change in transport development (including mitigation and adaption) as two major opportunities for scaled-up ADB support.[8]

14. **Impact and Outcome.** The project's impact will be the establishment of an environmentally sustainable multimodal transport system in Anhui Province. The outcome will be the development of a more efficient, safe, and affordable multimodal transport system in the WDZ.

15. **Outputs.** The proposed project will include five outputs for ADB financing: (i) road network and safety improvement; (ii) public transport improvement of highways; (iii) inland waterway network upgrade; (iv) intermodal port; and (v) institutional strengthening and capacity building.

(i) **Output 1: Road network and safety improvement.** The project will (i) upgrade approximately 31 km of the S319 road (Erba–Wuwei section) from class II to class I and add a new 5.77 km road section; (ii) upgrade approximately 47 km of the S367 Ma'anshan North Passage Road from class IV to class II; and (iii) improve the safety of these roads by introducing such measures as central dividers, pedestrian bridges, road markings, signage, and speed-controlled junction design.

[5] ADB. 2012. *Report and Recommendations of the President: Proposed loan to People's Republic of China for the Hunan Xiangjiang Inland Waterway Transport Project*. Manila.
[6] ADB. 2011. *Project Completion Report Guangxi Road Development II Project.* Manila.
[7] ADB. 2012. *Country Partnership Strategy: People's Republic of China, 2011-2015*. Manila.
[8] ADB. 2010. *Sustainable Transport Initiative Operational Plan.* Manila.

(ii) **Output 2: Highways and public transport improvement.** The project will (i) construct approximately 16 km of a new class I highway section (G206) between Dongliu and Yaodu, and (ii) upgrade approximately 22 km of G318 and the S320 Yimu Highway from class II to class I. The improvements on these highways will include will include provisions for public transport and NMT, such as priority bus lanes and bus stops, and segregated and dedicated lanes for pedestrians and cyclists.

(iii) **Output 3: Inland waterway network improvement.** The project will (i) widen, dredge, and provide bend realignment and slope protection for approximately 44 km Shuiyang River channel; (ii) build and install two low-water rubber dams;[9] (iii) construct one ship lock;[10] and (iv) build a new road bridge over the channel at Xiaohekou.

(iv) **Output 4: Intermodal port.** The project will build (i) a new intermodal port northeast of Xuancheng industrial park, and (ii) four 1,000 dwt berths. This Shuiyang River inland port will cater to the future traffic demand from the Xuancheng industrial park, and facilitate a shift from the transport of cargo by road to use of the inland waterway network.

(v) **Output 5: Institutional strengthening and capacity building.** The project will provide (i) consulting services and equipment for intelligent shipping, (ii) road safety audits, and (iii) domestic and overseas training. The consulting services and equipment for intelligent shipping will help develop automatic river traffic data collection systems, search and rescue technologies, and systems to monitor pollution by marine vessels.

[9] Rubber dams are inflatable, cylindrical rubber fabrics placed across channels to raise the upstream water level when inflated.
[10] A lock is a device for lowering and raising vessels between stretches of channel that have different water levels.

II. IMPLEMENTATION PLANS

A. Project Readiness Activities

Table 1: Project Readiness Activities

Indicative Activities	Months	Who is Responsible
	2013: Qtr 3 (7, 8, 9); Qtr 4 (10, 11, 12) — 2014: Qtr 1 (1, 2, 3); Qtr 2 (4, 5, 6); Qtr3 (7, 8, 9)	
1. Establish Project Implementation Arrangements		APDOT
2. Approval of Feasibility Study by the Government		APDOT
3. Advance Procurement Action		APDOT
4. ADB Board Approval		ADB
5. Loan Signing		APDOT, MOF
6. Government Legal Opinion		APDOT
7. Government Budget Inclusion		APDOT, MOF
8. Loan Effectiveness		APDOT, MOF

B. Overall Project Implementation Plan

Table 2: Overall Project Implementation Plan

Indicative Activities	Task Name	Start	Finish	2013				2014				2015				2016				2017				2018			
				1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Output 1	**Road Network and Safety Improvement**																										
1.1.	Procurement	May 2014	Mar 2015																								
1.2.	Land acquisition and resettlement implemented	Apr 2014	Jun 2015																								
1.3.	Civil works (S319)	Apr 2015	Jun 2017																								
1.4.	Civil works (S367)	May 2015	Jun 2018																								
Output 2	**Highways and public transport improvement**																										
2.1.	Procurement	Nov 2013	Jan 2015																								
2.2.	Land acquisition and resettlement implemented	Apr 2014	Jun 2015																								
2.3.	Civil works (G206)	Aug 2014	Dec 2016																								
2.4.	Civil works (G318 and S320)	Mar 2015	Jun 2017																								
Output 3	**Inland Waterway Channel and Improvement**																										
3.1.	Procurement	May 2014	Dec 2015																								
3.2.	Land acquisition and resettlement implemented	Apr 2014	Jun 2015																								
3.3.	Civil works (Dredging)	Mar 2015	Jun 2017																								
3.4.	Civil works (Rubber dam 1 & 2)	Mar 2016	Dec 2017																								
3.5.	Civil works (Bridge)	Mar 2015	Jun 2017																								
3.6.	Equipment (Installation and Commissioning)	Jul 2015	Jun 2018																								
Output 4	**Intermodal Port**																										
4.1.	Procurement	Apr 2014	Apr 2015																								
4.2.	Land acquisition and resettlement implemented	Feb 2014	Apr 2015																								
4.3.	Civil works (Port and house construction)	Jan 2015	Jun 2017																								
4.4.	Equipment (Installation and commissioning)	Apr 2015	Jun 2017																								
Output 5	**Institutional Strengthening/Capacity Building**																										
5.1.	Consultant Recruitment – Intelligent Shipping	Apr 2014	Jul 2014																								
5.2.	Consultant Services – Intelligent Shipping	Aug 2014	Mar 2015																								
5.3.	Consultant Recruitment –Road Safety Audit	Feb 2014	Jun 2014																								
5.4.	Consultant Services – Road Safety Audit	Jul 2014	Jun 2015																								

Recruitment / Design and Bid Period

Implementation

Source: Asian Development Bank and Government estimates.

III. PROJECT MANAGEMENT ARRANGEMENTS

A. Project Implementation Organizations – Roles and Responsibilities

16. The EA will be the Anhui provincial government (APG) acting through the Anhui Provincial Department of Transport (APDOT). The existing Foreign Funds Project Management Office of the APDOT will serve as the provincial project management office (PPMO), oversee overall project implementation, and represent the APDOT. The county governments of Dongzhi, Hanshan, Hexian, Nanling, and Wuwei will be the IAs for the road sector outputs. Anhui Provincial Port and Shipping Construction Investment Group Co. Ltd (APPSCIG) will be the IA for the IWT Output. The project will be implemented over 5 years.

17. For the road components, each project county will have a local project management office (LPMO). The responsibilities of LPMOs include: (i) manage and coordinate the implementation of the entire components in their city or county; (ii) ensure the provision of the counterpart funding; (iii) engage the environmental and social safeguards institutes; (iv) consolidate and submit to ADB the quarterly progress reports and other reporting requirements through the APDOT PPMO.

Table 3: Project Implementation Organizations – Roles and Responsibilities

Project Implementation Organizations	Management Roles and Responsibilities
Anhui Provincial Department of Transport (APDOT), the executing agency (EA)/PPMO	➢ Responsible for the overall project implementation; ➢ Signing the Relending Agreement with APFB for the project; ➢ Ensure project's sustainability and report to ADB on agreed development outcome and impacts; ➢ Monitor and evaluate project activities and outputs, including periodic review, preparation of review reports reflecting issues and time-bound actions taken (or to be taken); ➢ Provide guidance to IA on project implementation; ➢ Prepare and ensure project budget approval; ➢ Establish strong financial management system, review submission of withdrawal applications to ADB and conduct financial audits as per agreed timeframe and taking recommended actions; ➢ Oversee the procurement activities; ➢ Ensure involvement of beneficiaries and civil society representatives in all stages of project design and implementation; ➢ Review regular periodic progress reports, monitoring reports, project completion report, and material actions agreed and their timely submission to ADB; ➢ Ensure compliance with the loan covenants; ➢ Provide assistance to the IAs in: (i) conducting construction supervision, (ii) preparing procurement documents, (iii) preparing withdrawal applications, and (iv) providing other administrative functions as needed; ➢ Signing the onlending and/or Relending Agreements for the project; ➢ Processing and submitting to ADB, through the Ministry of Finance, any request, when required, for matters pertaining to Loan or Project Agreements;

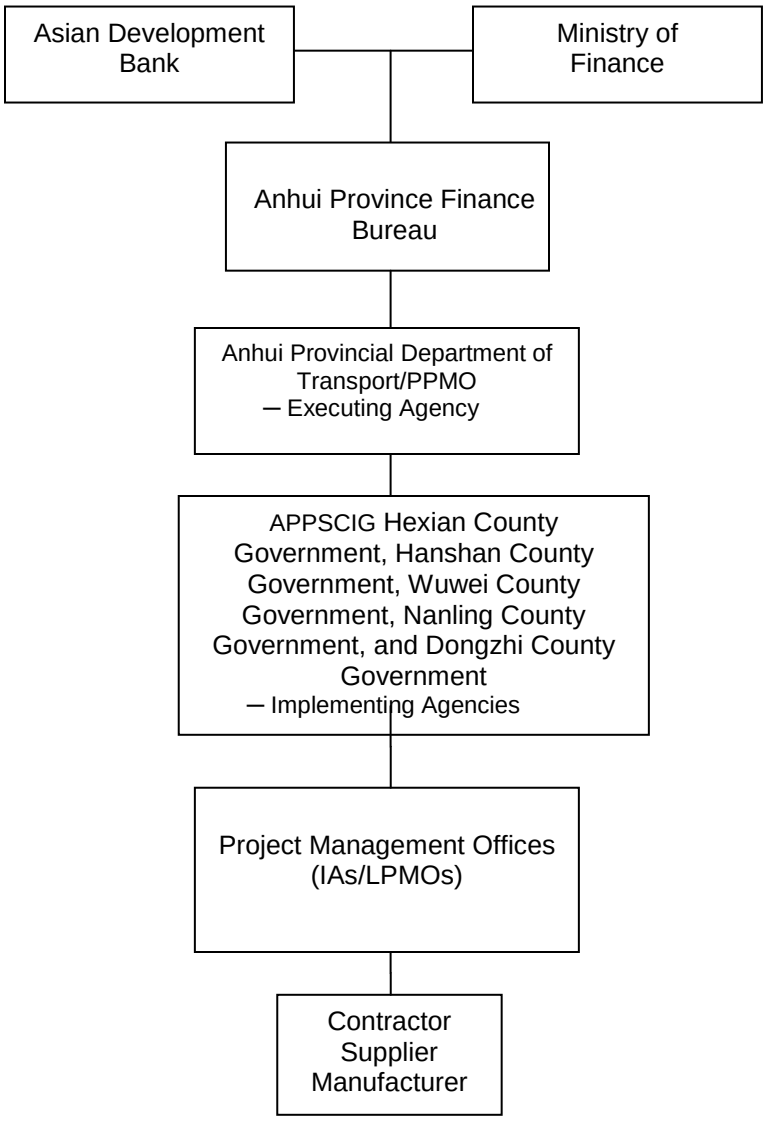
Project Implementation Organizations	Management Roles and Responsibilities
	➢ Recruit procurement agent, design institute, project implementation consultant, and CSP supervisor engineering firm; ➢ Responsible for evaluation of bids, award and signing of contracts; and ➢ Monitoring of the project implementation and providing coordination and facilitation as needed.
IA/LPMO	➢ Responsible for the day to day implementation of their components, including construction supervision, preparation of procurement documents and withdrawal applications; ➢ Monitoring of the project implementation and providing respective coordination and facilitation as needed; ➢ Preparing the semi-annual progress reports and contribute to the preparation of the project completion report; and ➢ Internal monitoring of the implementation of EIA, mitigation measures and RP, and assist in external monitoring of safeguards as required, and the compliance monitoring to ADB.
APFB	➢ Timely processing matters pertaining to utilizing of loan proceeds and/or Relending Agreement, and provision of agreed counterpart funds for project activities, allocating and releasing counterpart funds; ➢ Monitoring of the project implementation and providing respective coordination and facilitation as needed; ➢ Endorsing to ADB the authorized staff with approved signatures for disbursement of loan proceeds; and ➢ Responsible for establishing/maintaining the imprest account.
Ministry of Finance (MOF)	➢ Supervise the EA in the implementation of the project; and representative of the Government of the PRC; and ➢ Provide guidance to the EA on ADB documentation requirements, such as legal opinion and fulfill loan effectiveness conditions, as needed.
Asian Development Bank (ADB)	➢ Provide guidance to the EA and IA to ensure smooth project implementation and achieve the desired development impacts and their sustainability; ➢ Conduct regular loan review missions, including midterm and project completion review missions; ➢ Review and approve procurement actions; ➢ Review and submit for processing withdrawal applications; ➢ Monitor compliance with all loan covenants including safeguards; ➢ Review annual audit reports and follow-up on audit recommendations; ➢ Regularly update the project performance review reports in coordination with both the EA and IA; and ➢ Regularly update the project information documents for public disclosure at ADB website, including the safeguard documents.

B. Key Persons Involved in Implementation

Executing Agency	
Anhui Provincial Department of Transport	Officer's Name:Cheng Yuehui Position: Deputy Director General Tunxi Road, 528 Hefei, Anhui, China Fax: +86 551 6362 3530 Telephone: +86 551 6362 3515 Email: cyh@ahjt.gov.cn 2300222
Anhui Provincial Department of Transport (Foreign Fund Project Management Office)	Officer's Name: Luo Jie Position: Deputy Director Telephone: +86-551 63756197 PPMO email address: apcdpeo@vip.com Office Address: 12 Flr,Port & Shipping Mansion 98 South Wanghu Road, Hefei, Anhui, China,230001
ADB	
Transport Division	Staff Name: Tyrrell Duncan Position: Director, EATC Telephone No.+63 2 632 6383 Email address: tduncan@adb.org
Mission Leader	Staff Name: Sharad Saxena Position: Senior Transport Specialist Telephone No.: + 63 2 632 4052 Email address: ssaxena@adb.org

C. Project Organization Structure

Figure 1: Organization Structure



Source: Anhui Provincial Department of Transport.

IV. COSTS AND FINANCING

18. The total project cost is estimated at about $634.1 million, including taxes and duties (Table 4).

Table 4: Project Investment Plan
($ million)

Item		Amount[a]
A.	**Base Cost**[b]	
	1. Road network and safety improvement	224.1
	2. Highways and public transport improvement	215.2
	3. Inland waterway network improvement	66.5
	4. Intermodal port	29.0
	5. Institutional strengthening and capacity building	1.5
	Subtotal (A)	**536.3**
B.	**Contingencies**[c]	**80.6**
C.	**Financing Charges During Implementation**[d]	**17.2**
	Total (A+B+C)	**634.1**

[a] Includes taxes and duties of $18 million, which will be partly financed by the Asian Development Bank (ADB) loan.
[b] In mid-2013 prices.
[c] Physical contingencies computed at 5% for civil works, field research and development, training, surveys, and studies. Price contingencies computed at 8.1% on foreign exchange costs and 10.4% on local currency costs.
[d] Includes interest and commitment charges. Interest during construction for ADB loan has been computed at the 5-year (corresponding to implementation period) US dollar fixed swap rate plus a spread of 0.4% and a maturity premium of 0.1%. Commitment charges for an ADB loan are 0.15% per year to be charged on the undisbursed loan amount.
Source: ADB estimates.

19. **Lending Terms.** The Government of the PRC has requested a loan of $200.0 million from ADB's ordinary capital resources to help finance the project. The loan will have a 23-year term, including a grace period of 5 years, an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility, a commitment charge of 0.15% per year (the interest and other charges during construction to be capitalized in the loan), and such other terms and conditions set forth in the draft loan and project agreements. Based on the loan terms and the government's choice of 5% annuity repayment option, the average loan maturity is 15.57 years and the maturity premium payable to ADB is 0.10% per annum. The government will finance contingencies to cover any shortfall in the finances that may arise during implementation, including non-availability of domestic bank loan. ADB's loan will cover civil works, equipment, institutional strengthening and capacity building, financing charges during implementation, and taxes and duties on the expenditures financed by ADB.[11] The Ministry of Transport, APDOT, APPSCIG, and the five county governments will provide $434.1 million to finance civil works, resettlement, detailed design, supervision, and contingencies.

20. The funding will also be provided in part through borrowing from the Bank of Communications, and the loan will have an interest rate of 6.55% and a term of 15 years.

[11] The amount of taxes and duties to be financed in the project has been determined based on the principles that (i) the amount of taxes and duties financed by the ADB loan does not represent an excessive share of the project; and (ii) taxes and duties apply only with respect to ADB-financed expenditures.

21. The borrower will be the Government of the PRC. The Ministry of Finance will make the loan proceeds available to the APG. The Anhui Provincial Department of Finance, on behalf of APG, will on-lend the proceeds to APDOT and the IAs. The APDOT and the IAs will assume the risk of foreign exchange and interest rate variation for the ADB loan. The financing plan is in Table 5.

Table 5: Financing Plan ($ million)

Source	**Amount** ($ million)	**Share of Total** (%)
Asian Development Bank		
Ordinary capital resources (loan)	200.0	31.5
Government[a]	393.1	62.0
Bank of Communications	**41.0**	**6.5**
Total	**634.1**	**100.0**

[a] Includes domestic loans for the Inland Waterway component.
Source: Asian Development Bank estimates.

A. Detailed Cost Estimates by Expenditure Category

Table 6: Detailed Cost Estimates by Expenditure Category

Item			(CNY million)			($ million)			
			Foreign Exchange	**Local Currency**	**Total Cost**	**Foreign Exchange**	**Local Currency**	**Total Cost[a]**	**% of Total Base Cost**
A.	**Investment Costs**[b]								
	1	Civil Works	392.98	2,226.91	2,619.90	64.51	365.55	430.06	67.82%
	2	Mechanical and Equipment	13.43	20.14	33.57	2.20	3.31	5.51	0.87%
	3	Environment and Social Mitigation	19.66	373.61	393.27	3.23	61.33	64.56	**10.18%**
	4	Consultants							
		a. Project Management	30.02	185.23	215.25	4.93	30.41	35.33	5.57%
		b. Capacity Development	2.09	3.14	5.24	0.34	0.52	0.86	0.14%
		Subtotal (A)	**458.20**	**2,809.03**	**3,267.23**	**75.21**	**461.11**	**536.32**	**84.58%**
B.	**Contingencies**[c]								
	1	Physical	22.91	139.75	162.66	3.76	22.94	26.70	4.21%
	2	Price	37.49	290.66	328.15	6.15	47.71	53.87	8.50%
		Subtotal (B)	**60.40**	**430.41**	**490.81**	**9.91**	**70.65**	**80.57**	**12.71%**
C.	**Financing Charges During Implementation**[d]								
	1	Interest During Implementation	54.90	45.76	100.67	9.01	7.51	16.52	2.61%
	2	Commitment Charges	4.14	0.00	4.14	0.68	0.00	0.68	0.11%
		Subtotal (C)	**59.04**	**45.76**	**104.81**	**9.69**	**7.51**	**17.20**	**2.71%**
Total Project Cost (A+B+C)			**577.64**	**3,285.20**	**3,862.85**	**94.82**	**539.27**	**634.10**	**100.00%**

[a] Includes taxes and duties of $18 million, which will be partly financed by the Asian Development Bank (ADB) loan.
[b] In mid-2013 prices.
[c] Physical contingencies computed at 5% for civil works, field research and development, training, surveys, and studies. Price contingencies computed at 8.1% on foreign exchange costs and 10.4% on local currency costs.
[d] Includes interest and commitment charges. Interest during construction for ADB loan has been computed at the 5-year (corresponding to implementation period) US dollar fixed swap rate plus a spread of 0.4% and a maturity premium of 0.1%. Commitment charges for an ADB loan are 0.15% per year to be charged on the undisbursed loan amount.

Source: ADB estimates

B. Allocation and Withdrawal of Loan Proceeds

Table 7: Allocation and Withdrawal of Loan Proceeds

ALLOCATION AND WITHDRAWAL OF LOAN PROCEEDS (Anhui Intermodal Sustainable Transport Project)				
Number	**Item**	**Total Amount Allocated for ADB Financing ($)**		**Basis for Withdrawal from the Loan Account***
		Category	**Subcategory**	
1	Works	186,150,000		
1A	Highway Construction		142,700,000	40% of total expenditure claimed
1B	Inland Waterway & Port Construction		43,450,000	59% of total expenditure claimed
2	Equipment**	3,400,000		
2A	Inland Waterway & Port Equipment		3,000,000	59% of total expenditure claimed
2B	Intelligent Shipping Equipment		400,000	100% of total expenditure claimed
3	Consulting Services and Training	750,000		
3A	Loan-financed Consulting Services		250,000	100% of total expenditure claimed
3B	Management and Technical Training		500,000	100% of total expenditure claimed
4	Finance Charges During Implementation	9,700,000		100%
	Total	200,000,000		

* Including taxes and duties.
** Including insurance and transportation costs.

C. Detailed Cost Estimates by Financier

Table 8: Detailed Cost Estimates by Financier
($ million)

Item		ADB		Government		
		Amount	% of Cost Category	Amount	% of Cost Category	**Total Cost[a]**
A.	**Investment Costs**[b]					
	1 Civil Works	186.15	43.28%	243.91	56.72%	430.06
	- Highway Construction	*142.70*	*39.97%*	*214.29*	*60.03%*	*356.99*
	- Inland Waterway & Port Construction	*43.45*	*59.46%*	*29.62*	*40.54%*	*73.07*
	2 Mechanical and Equipment	3.40	61.70%	2.11	38.30%	5.51
	- Inland Waterway & Port Equipment	*3.00*	*58.70%*	*2.11*	*41.30%*	*5.11*
	- Shipping Exchange Equipment	*0.40*	*100.00%*	*0.00*	*0.00%*	*0.40*
	3 Environment and Social Mitigation	0.00	0.00%	64.56	100.00%	64.56
	4 Consultants					
	a. Project Management	0.25	0.71%	35.08	99.29%	35.33
	- Design and supervision	*0.00*	*0.00%*	*35.08*	*100.00%*	*35.08*
	- Loan-financed consultants	*0.25*	*100.00%*	*0.00*	*0.00%*	*0.25*
	b. Capacity Development	0.50	58.56%	0.36	41.44%	0.86
	- Overseas Training	*0.50*	*100.00%*	*0.00*	*0.00%*	*0.50*
	- Domestic Training	*0.00*	*0.00%*	*0.36*	*100.00%*	*0.36*
	Subtotal (A) (Base Cost)	**190.31**	**35.48%**	**346.02**	**64.52%**	**536.32**
B.	**Contingencies**[c]	**0.00**	**0.00%**	**80.57**	**100.00%**	**80.57**
C.	**Financing Charges During Implementation**[d]	**9.70**	**56.38%**	**7.50**	**43.62%**	**17.20**
	Total Project Cost (A+B+C)	**200.01**	**31.54%**	**434.09**	**68.46%**	**634.10**
	% Total Project Cost		**31.54%**		**68.46%**	

[a] Includes taxes and duties of $18 million, which will be partly financed by the Asian Development Bank (ADB) loan.
[b] In mid-2013 prices.
[c] Physical contingencies computed at 5% for civil works, field research and development, training, surveys, and studies. Price contingencies computed at 8.1% on foreign exchange costs and 10.4% on local currency costs.
[d] Includes interest and commitment charges. Interest during construction for ADB loan has been computed at the 5-year (corresponding to implementation period) US dollar fixed swap rate plus a spread of 0.4% and a maturity premium of 0.1%. Commitment charges for an ADB loan are 0.15% per year to be charged on the undisbursed loan amount.
Source: ADB estimates.

D. Detailed Cost Estimates by Outputs/Components

Table 9: Detailed Cost Estimates by Outputs/Components
($ million)

Item	Total Cost[a]	Output 1 Amount	Output 1 % of Cost Category	Output 2 Amount	Output 2 % of Cost Category	Output 3 Amount	Output 3 % of Cost Category	Output 4 Amount	Output 4 % of Cost Category	Output 5 Amount	Output 5 % of Cost Category
A. Investment Costs[b]											
1 Civil Works	430.06	173.02	40.23%	183.97	42.78%	56.00	13.02%	17.07	3.97%	0.00	0.00%
2 Mechanical and Equipment	5.51	0.00	0.00%	0.00	0.00%	1.65	29.91%	3.46	62.83%	0.40	7.26%
3 Environment and Social Mitigation	64.56	39.13	60.62%	18.32	28.39%	0.85	1.32%	6.25	9.68%	0.00	0.00%
4 Consultants											
a. Project Management	35.33	11.93	33.76%	12.90	36.51%	8.02	22.69%	2.24	6.33%	0.25	0.71%
b. Capacity Development	0.86	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.86	100.00%
Subtotal (A)	**536.32**	**224.08**	**41.78%**	**215.20**	**40.12%**	**66.52**	**12.40%**	**29.02**	**5.41%**	**1.51**	**0.28%**
B. Contingencies[c]											
1 Physical	26.70	11.16	41.78%	10.71	40.12%	3.31	12.40%	1.44	5.41%	0.08	0.28%
2 Price	53.87	22.51	41.78%	21.61	40.12%	6.68	12.40%	2.91	5.41%	0.15	0.28%
Subtotal (B)	**80.57**	**33.66**	**41.78%**	**32.33**	**40.12%**	**9.99**	**12.40%**	**4.36**	**5.41%**	**0.23**	**0.28%**
C. Financing Charges During Implementation[d]											
1 Interest During Implementation	16.52	3.38	20.43%	3.38	20.48%	6.47	39.17%	3.25	19.66%	0.05	0.27%
2 Commitment Charges	0.68	0.25	37.45%	0.26	37.55%	0.12	18.10%	0.04	6.40%	0.00	0.50%
Subtotal (C)	**17.20**	**3.63**	**21.10%**	**3.64**	**21.15%**	**6.60**	**38.33%**	**3.29**	**19.13%**	**0.05**	**0.28%**
Total Project Cost (A+B+C)	**634.10**	**261.37**	**41.22%**	**251.16**	**39.61%**	**83.11**	**13.11%**	**36.67**	**5.78%**	**1.79**	**0.28%**

[a] Includes taxes and duties of $18 million, which will be partly financed by Asian Development Bank (ADB) loan.
[b] In mid-2013 prices.
[c] Physical contingencies computed at 5% for civil works, field research and development, training, surveys, and studies. Price contingencies computed at 8.1% on foreign exchange costs and 10.4% on local currency costs.
[d] Includes interest and commitment charges. Interest during construction for ADB loan has been computed at the 5-year (corresponding to implementation period) US dollar fixed swap rate plus a spread of 0.4% and a maturity premium of 0.1%. Commitment charges for an ADB loan are 0.15% per year to be charged on the undisbursed loan amount.

Source: ADB estimates.

E. Detailed Cost Estimates by Year

Table 10: Detailed Cost Estimates by Year
($ million)

Item			2013	2014	2015	2016	2017	2018
A.	**Investment Costs**[b]							
	1 Civil Works		0.00	42.15	129.02	132.67	108.37	17.85
	2 Mechanical and Equipment		0.00	0.17	0.87	2.55	1.88	0.03
	3 Environment and Social Mitigation		5.83	39.05	19.68	0.00	0.00	0.00
	4 Consultants							
	a. Project Management		0.00	3.42	10.60	11.11	8.95	1.25
	b. Capacity Development		0.00	0.09	0.26	0.26	0.21	0.04
	Subtotal (A) (Base Cost)	**536.32**	**5.83**	**84.88**	**160.43**	**146.59**	**119.41**	**19.18**
B.	**Contingencies**[c]		0.39	8.33	20.74	23.59	23.15	4.37
C.	**Financing Charges During Implementation**[d]		0.00	0.25	1.71	3.45	5.27	6.52
	Total Project Cost (A+B+C) [a]	**634.10**	**6.22**	**93.46**	**182.88**	**173.63**	**147.82**	**30.07**
	% Total Project Cost	**100%**	**1%**	**15%**	**29%**	**27%**	**23%**	**5%**

[a] Includes taxes and duties of $18 million, which will be partly financed by the Asian Development Bank (ADB) loan.
[b] In mid-2013 prices.
[c] Physical contingencies computed at 5% for civil works, field research and development, training, surveys, and studies. Price contingencies computed at 8.1% on foreign exchange costs and 10.4% on local currency costs.
[d] Includes interest and commitment charges. Interest during construction for ADB loan has been computed at the 5-year (corresponding to implementation period) US dollar fixed swap rate plus a spread of 0.4% and a maturity premium of 0.1%. Commitment charges for an ADB loan are 0.15% per year to be charged on the undisbursed loan amount.

Source: ADB estimates.

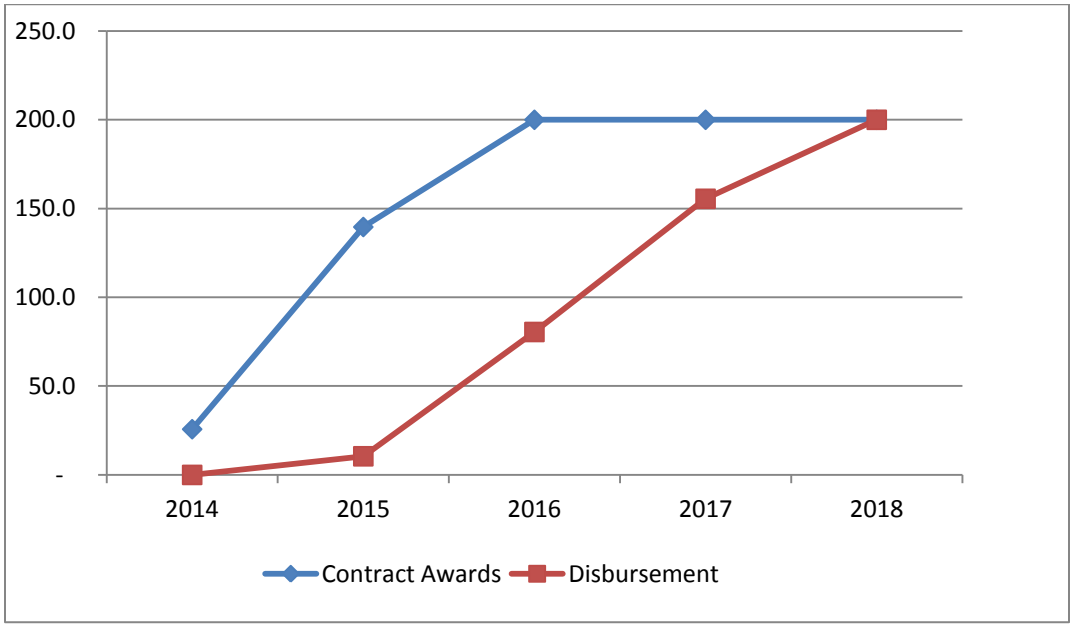
F. Contract and Disbursement S-curve

Table 11: Contract Awards and Disbursement Projections

	2014	2015	2016	2017	2018
Contract Awards	25.80	113.90	60.40	0.00	0.00
Cumulative	**25.80**	**139.60**	**200.00**	**200.00**	**200.00**
Disbursement	0.00	10.50	70.00	75.00	44.50
Cumulative	**0.00**	**10.50**	**80.50**	**155.50**	**200.00**

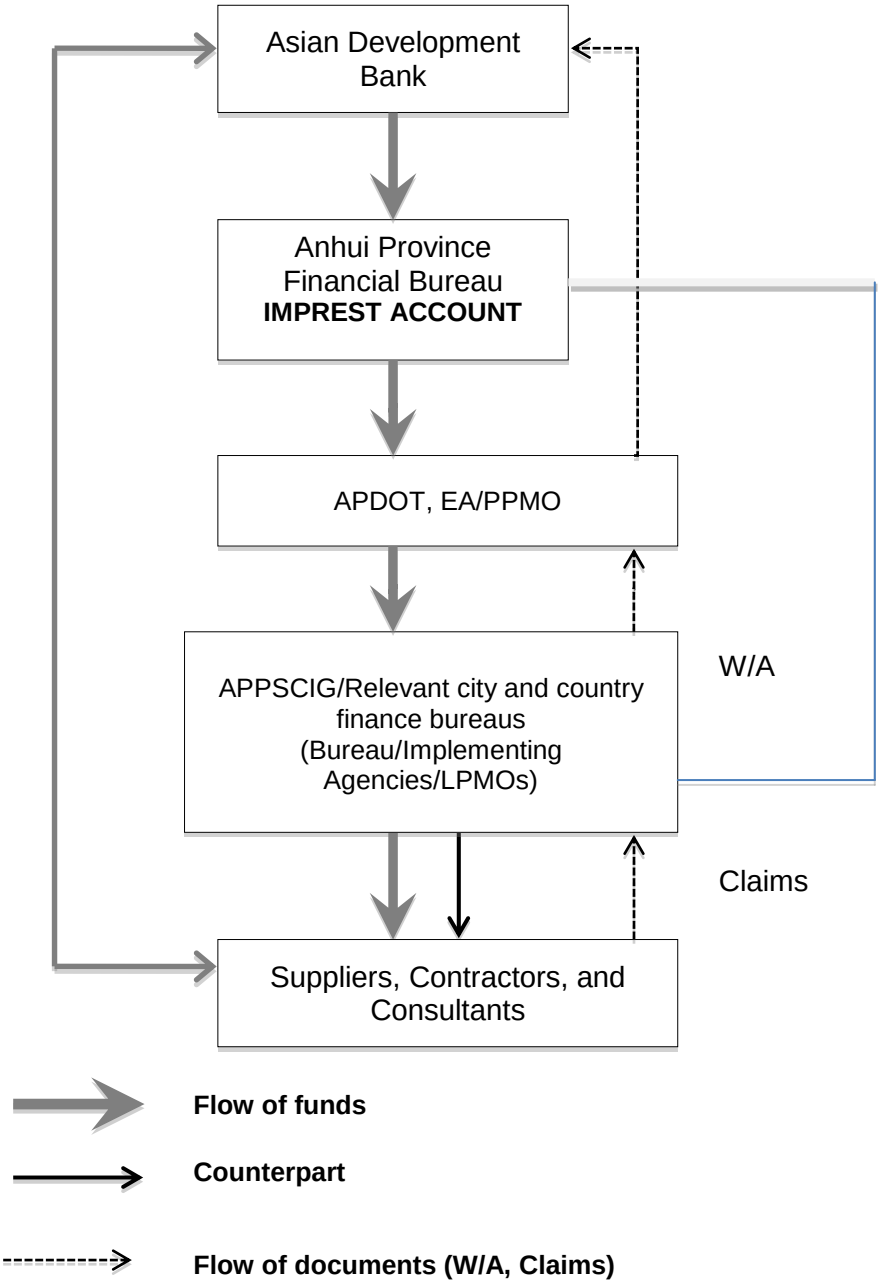
Source: Asian Development Bank estimates.

Figure 2: S-Curve Projections



G. Fund Flow Diagram

Figure 3: Tentative Fund Flows



APDOT = Anhui Provincial Department of Transport, APPSCIG = Anhui Port & Shipping Construction Investment Group Co. Ltd., EA = executing agency LPMO = local project management office, PPMO = provincial project management office, W/A = withdrawal applications.

V. FINANCIAL MANAGEMENT

A. Financial Management Assessment

22. Financial management assessment (FMA) of the EA and IAs has been conducted for the Project in accordance with ADB's *Guidelines for the Financial Management and Analysis of Projects*[12] and the publication Financial Due Diligence – A Methodology Note.[13] The FMA includes review of executing agency/implementing agency, funds flow arrangement, the staff of finance, accounting policies and procedures (segregation of duties, budgeting system, payments, policies and procedures, cash and banking, safeguarding assets, other Offices and implementing agencies), internal and external auditing, reporting and monitoring, and information systems. The instrument used for the assessment was ADB's financial management assessment questionnaire.

23. The assessment concluded that while the EA and IAs have general experience in managing foreign-financed projects, significant training and support will be required on ADB policies and procedures, including disbursement and project management. The assessment indicated that (i) there are established financial management policies in the PRC, which are followed strictly by the EAs and IAs; and (ii) APDOT, CMHAB and APPSCIG have sound financial management capability and are experienced in managing foreign-funded and locally-funded projects as WCTB, NCTB, and MMHAB only have experience in locally-financed projects. Anhui Provincial Department of Finance (APDOF), which will operate and administer the imprest account has experience administering foreign-financed project including ADB-financed projects.

24. The FMA recommended capacity development measures to ensure that the executing and implementing agencies are able to meet the project's financial management requirements. It was proposed that the executing and implementing agencies would strengthen their financial management capability to manage the project, including (i) undertaking training, particularly on ADB policy and procedural requirements; (ii) seeking internal and external financial management assistance as needed; (iii) developing a software of financial management and reporting for the project linking the EA and IAs when the project commences; (iv) updating existing finance management policies to meet the requirement of ADB.

25. The loan repayment to ADB would be done level-by-level as shown in Figure 3, the opposite direction of the lending and on-lending. Figure 3 presents the tentative flow of funds for the project. This arrangement might be revised after finalization of the financial arrangements for the project.

B. Disbursement

26. The loan proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2012),[14] and detailed arrangements agreed upon between the Government and ADB.

27. Pursuant to ADB's *Safeguard Policy Statement* (2009) (SPS),[15] ADB funds may not be applied to the activities described on the ADB Prohibited Investment Activities List set forth at

[12] *Financial Management and Analysis of Projects*. ADB. 2005.
[13] *Financial Due Diligence A Methodology Note*. ADB. 2009.
[14] Available at: http://www.adb.org/documents/loan-disbursement-handbook.
[15] Available at: http://www.adb.org/Documents/Policies/Safeguards/Safeguard-Policy-Statement-June2009.pdf.

Appendix 5 of the SPS. All financial institutions will ensure that their investments are in compliance with applicable national laws and regulations and will apply the prohibited investment activities list to subprojects financed by ADB.

28. The PPMO on behalf of APDOT will be responsible for (i) collecting supporting documents and (ii) preparing and sending withdrawal applications from the APFB to ADB.[16]

29. To facilitate project implementation and funds flow, an imprest account may be set up in a commercial bank acceptable to ADB upon loan effectiveness. The account will be in USD.[17] The account will be managed by APFB. The maximum ceiling of the imprest account will not exceed 10% of the loan amount. The imprest account is to be used exclusively for ADB's share of eligible expenditures. The APFB who established the imprest account in its name is accountable and responsible for proper use of advances to the imprest account. The government may request for initial and additional advances to the imprest account based on 6 months estimated expenditures to be financed through the imprest account. The imprest account will be established, managed, and liquidated in accordance with ADB's *Loan Disbursement Handbook* and detailed arrangements agreed by the Government and ADB. ADB's *Loan Disbursement Handbook* describes which supporting documents should be submitted to ADB and which should be retained by the government for liquidation and replenishment of an imprest account.

30. Before the submission of the first withdrawal application, the borrower should submit to ADB sufficient evidence of the authority of the person(s) who will sign the withdrawal applications on behalf of the borrower, together with the authenticated specimen signatures of each authorized person. The minimum value per withdrawal application is US$200,000 equivalent under reimbursement and imprest fund procedures, unless otherwise approved by ADB. Individual payments below this amount should generally be paid from the imprest account, or by the EA and subsequently claimed to ADB through reimbursement. ADB reserves the right not to accept WAs below the minimum amount.

31. For large contracts, direct payment procedures will be used to withdraw the loan funds. If the government funds are used first for eligible expenditures, ADB's reimbursement procedure will be used. Statement of expenditures (SOE) will be used for liquidation and replenishment of the imprest account and to reimburse eligible expenditures for any individual payment not exceeding $100,000 equivalent to expedite fund flows. Payments in excess of the SOE ceiling will reimbursed, liquidated, or replenished based on the full supporting documentation process. Statement of expenditure records should be maintained and made readily available for review by ADB's disbursement and review mission or upon ADB's request for submission of supporting documents on a sampling basis, and for independent audit.[18]

C. Accounting

32. Each IA should maintain separate project accounts for their respective components and have them audited. Each IA should submit individual project financial statements in accordance

[16] Follow the format provided in Appendix 30 of the *Loan Disbursement Handbook.*

[17] The bank charges on the imprest account will be financed from the proceeds of the loan.

[18] Checklist for SOE procedures and formats are available at:
http://www.adb.org/documents/handbooks/loan_disbursement/chap-09.pdf
http://www.adb.org/documents/handbooks/loan_disbursement/SOE-Contracts-100-Below.xls
http://www.adb.org/documents/handbooks/loan_disbursement/SOE-Contracts-Over-100.xls
http://www.adb.org/documents/handbooks/loan_disbursement/SOE-Operating-Costs.xls
http://www.adb.org/documents/handbooks/loan_disbursement/SOE-Free-Format.xls.

with the Government's accounting laws and regulations which are consistent with international accounting principles and practices.

D. Auditing

33. The APG, through the APDOT will cause the detailed consolidated project financial statements to be audited in accordance with International Standards on Auditing and with the Government's audit regulations, by an independent auditor acceptable to ADB. The audited project financial statements will be submitted in the English language to ADB within six months of the end of the fiscal year by the APG through the APDOT.

34. The APG, through the APDOT will also cause APPSCIG to be audited in accordance with International Standards on Auditing and with the Government's audit regulations, by an independent auditor acceptable to ADB. The audited entity-level financial statements, together with the auditor's report and management letter, will be submitted in the English language to ADB within one month after their approval by the competent authority.

35. The annual audit report for the project accounts will include an audit management letter and audit opinions which cover (i) whether the project financial statements present a true and fair view or are presented fairly, in all material respects, in accordance with the applicable financial reporting framework; (ii) whether loan and grant proceeds were used only for the purposes of the project or not; (iii) the level of compliance for each financial covenant contained in the legal agreements for the project; (iv) use of the imprest fund procedure; and (v) the use of the statement of expenditure procedure certifying to the eligibility of those expenditures claimed under SOE procedures, and proper use of the SOE and imprest procedures in accordance with ADB's Loan Disbursement Handbook and the project documents.

36. Compliance with financial reporting and auditing requirements will be monitored by review missions and during normal program supervision, and followed up regularly with all concerned, including the external auditor.

37. The Government, APDOT and the IAs have been made aware of ADB's policy on delayed submission, and the requirements for satisfactory and acceptable quality of the audited project financial statements.[19] ADB reserves the right to require a change in the auditor (in a manner consistent with the constitution of the borrower), or for additional support to be provided to the auditor, if the audits required are not conducted in a manner satisfactory to ADB, or if the audits are substantially delayed. ADB reserves the right to verify the project's financial accounts to confirm that the share of ADB's financing is used in accordance with ADB's policies and procedures.

[19] ADB Policy on delayed submission of audited project financial statements:

(i) When audited project financial statements are not received by the due date, ADB will write to the executing agency advising that (a) the audit documents are overdue; and (b) if they are not received within the next six months, requests for new contract awards and disbursement such as new replenishment of imprest accounts, processing of new reimbursement, and issuance of new commitment letters will not be processed.

(ii) When audited project financial statements have not been received within 6 months after the due date, ADB will withhold processing of requests for new contract awards and disbursement such as new replenishment of imprest accounts, processing of new reimbursement, and issuance of new commitment letters. ADB will (a) inform the executing agency of ADB's actions; and (b) advise that the loan may be suspended if the audit documents are not received within the next six months.

(iii) When audited project financial statements have not been received within 12 months after the due date, ADB may suspend the loan.

38. Public disclosure of the project financial statements, including the audit report on the project financial statements, will be guided by ADB's Public Communications Policy (2011)[20]. After review, ADB will disclose the project financial statements for the project and the opinion of the auditors on the financial statements within 30 days of the date of their receipt by posting them on ADB's website. The Audit Management Letter will not be disclosed.

[20] Available from http://www.adb.org/documents/pcp-2011?ref=site/disclosure/publications.

VI. PROCUREMENT AND CONSULTING SERVICES

A. Advance Contracting and Retroactive Financing

39. All advance contracting and retroactive financing will be undertaken in conformity with ADB's *Procurement Guidelines* (2013, as amended from time to time)[21] and ADB's *Guidelines on the Use of Consultants* (2013, as amended from time to time).[22] The issuance of invitations to bid under advance contracting and retroactive financing will be subject to ADB's approval. ADB's approval of advance contracting will not commit ADB to subsequently approve the project or to finance the procurement costs; and ADB will not finance expenditures paid by the borrower prior to loan or grant effectiveness, even if advance contracting is approved, unless retroactive financing has also been approved by ADB. Advance contracting will include advertisement, evaluation of bids and up to the recommendation of contracts award. Retroactive financing[23] could only apply up to the equivalent of 20% of the total ADB loan, with respect to expenditures incurred before loan effectiveness but not more than 12 months before the signing of the Loan Agreement. The contracts proposed for advance contracting and retroactively financing are shown in the procurement plan (Appendix 1).

B. Procurement of Goods, Works and Consulting Services

40. All procurement of goods and works where there is any ADB funding will be undertaken in accordance with ADB's Procurement Guidelines (2013, as amended from time to time).[24] International competitive bidding (ICB) procedures will be used for civil works contracts estimated to exceed US$10 million, and goods contracts estimated to exceed US$1 million. Contracts for works estimated to cost less than the ICB threshold values above, but more than US$200,000 and contracts for goods estimated to cost less than the ICB threshold values above, but more than US$100,000 will be procured on the basis of national competitive bidding (NCB) procedures in accordance with the PRC Tendering and Bidding Law (1999), subject to modifications agreed with ADB. Shopping will be used for contracts for procurement of works worth less than US$200,000 and equipment worth less than US$100,000.

41. Procurement under ICB procedures will use the single-stage one-envelope modality. Procurement shall use the latest ADB standard bidding documents which can be downloaded from ADB's website.

42. For procurement under NCB, the following provisions will apply i) the advertisement may be limited to the national press, an official gazette or an open access website; ii) bidding shall follows the standard bidding documents issued by MOF and approved by ADB; ii) bidding documents may be only in the Chinese language, and RMB may be used for the purpose of bidding and payment. Procurement under NCB will be subject to the provisions of the NCB annex.

43. All consultants will be recruited according to ADB's *Guidelines on the Use of Consultants* (2013, as amended from time to time). The terms of reference (TOR) for consulting services is provided in Appendix 2

[21] Available at: http://www.adb.org/Documents/Guidelines/Procurement/Guidelines-Procurement.pdf.
[22] Available at: http://www.adb.org/Documents/Guidelines/Consulting/Guidelines-Consultants.pdf.
[23] Will be applied to civil works packages and consulting services under advance procurement action.
[24] Available at: http://www.adb.org/Documents/Guidelines/Procurement/Guidelines-Procurement.pdf.

C. Procurement Plan

44. An 18-month procurement plan indicating thresholds and review procedures, goods, works, and consulting service contract packages and NCB guidelines is provided in Appendix 1 including the NCB annex for PRC.

VII. SAFEGUARDS

A. Safeguards

45. **Safeguards Classification.** The project is classified as A for environment and A for involuntary resettlement.

46. **Grievance Redress Mechanism.** APDOT through PPMO will establish a grievance redress mechanism (GRM) prior to any earthworks, land acquisition and resettlement. The GRM will be acceptable to ADB, consistent with the requirements of the ADB Safeguards Policy Statement (2009) and the project EIA, EMP, and RPs.

47. The GRM provides a clear and transparent mechanism for receiving, managing, recording and reporting on complaints. The GRM will be publicized to affected persons. The GRM process will be utilized for all project related grievances. The GRM will:

(i) review and document eligible complaints of Project stakeholders;
(ii) proactively address grievances;
(iii) provide the complainants notice of the chosen mechanism/action to redress the grievance; and
(iv) prepare periodic reports to summarize the number of complaints received and resolved, and final outcomes of the grievances and chosen actions and make these reports available to ADB upon request.

48. The APDOT PPMO will have overall responsibility for implementation of the project GRMs. IAs (through LPMOs) and Contractors will be required to report complaints received, handled, resolved and unresolved to the APDOT PPMO on a monthly basis. The APDOT PPMO will report on the GRMs in the quarterly project progress reports and semi-annual safeguard monitoring reports for ADB.

B. Environment

49. The project is category A for environment. A consolidated environmental impact assessment (EIA) and an environmental management plan (EMP, Appendix 3) have been prepared for the project roads and the waterway. These documents comply with the PRC regulatory requirements and ADB Safeguard Policy (2009) and were disclosed on the ADB website on 31 July 2013. Public consultation was carried out to inform the project design and EIA process and will continue throughout project implementation. The EIA shows that anticipated environmental impacts and risks are modest and can be limited to an acceptable level through the implementation of the EMP and compliance with loan covenants. The EMP addresses potential impacts of the project outputs, sets out mitigation and monitoring measures, institutional arrangements, training requirements and budgets for implementation of the EMP. The budget for implementation of the EMP is 1.95% of the project budget. The bid documents will indicate the requirement for implementation of the EMP and also state that all environmental mitigation and monitoring measures should be included in the bid price. Capacity development and institutional strengthening are proposed to minimize environmental risks. Environmental complaints will be handled through a grievance redress mechanism established for the project.

50. The responsibilities for environmental management and supervision during the various stages of implementation of the project are summarised in Table 12:

Table 12: Environmental Responsibility

Phase	Responsible Agency	Environmental Responsibility
Project preparation	Design Institutes on behalf of APDOT PPMO	Prepare project Feasibility Study Reports (FSRs), EIR and EMP, Resettlement Plans (RPs), conduct public consultation
	APEPD and Municipal EPB	Review and approve the project EIR and EMP
	PPTA consultant	Provide technical assistance, review EIR, prepare EIA report
	ADB	Review and approve the EIA and EMP and disclose
	APDOT	Recruit ESE through competitive tendering
Engineering detail design	Design Institutes on behalf of APDOT PPMO	Incorporate mitigation measures defined in the EMP into engineering detailed designs; Update the EMP in cooperation with the APDOT PPMO and ESE.
	APDOT PPMO	Recruit ESE through competitive tendering
	APDOT PPMO, ESE	Review updated EMP, confirm that mitigation measures have been included in engineering detail design.
	ADB	Approve updated EMP and disclose.
Tender & contracting	APDOT PPMO, ESE	Incorporate EMP clauses in tender documents
	APDOT PPMO	Recruit environmental monitoring station(s) through tendering
	Contractors	Prepare tenders for the construction contracts, to include staffing and costs for environmental management to comply with the EMP
	ADB, APDOT PPMO, ESE	Review bidding documents; confirm project's readiness
Construction	Each IA	Establish an LPMO who appoints one staff environment specialist; supervises contractors and ensures compliance with the EMP; approves method statements; coordinates construction supervision and quality control; coordinates periodic environmental quality monitoring in compliance with the approved monitoring plan; acts as local entry point for the project grievance redress mechanism (GRM); submits quarterly monitoring results to APDOT PPMO.
	APDOT PPMO	Appoint one staff environment specialist; supervise the effective implementation of the EMP; coordinate the project level GRM; prepare quarterly project progress and semi-annual environment progress reports and submit them to ADB; conduct public consultation and inspect implementation of mitigation measures.
	ESE	Advise on the mitigation measures; provide comprehensive technical support to PPMO and APDOT for environmental management; assist with preparation of tender/contract documents; conduct training; conduct semi-annual EMP compliance review; prepare corrective action plans; support PPMO in preparing quarterly project progress reports and semi-annual environmental progress reports for ADB. Review domestic environmental acceptance reports and prepare environmental completion report.
	Contractors	Assign EMP implementation responsibilities; ensure health and safety; implement mitigation measures; prepare method statements
	EMSs (contracted by APDOT)	Undertake environmental quality monitoring
	APEPD and local EPBs depending on the subproject	Conduct periodic inspections of all construction projects relative to compliance with PRC regulations and standards.
	ADB	Review quarterly project progress reports, semi-annual environmental monitoring reports and completion report. Undertake review missions. Advise on compliance issues, as required. Disclose semi-annual environmental monitoring reports on ADB project website.
Operation	O&M Units	Ensure proper operation of component facilities according to design standards, implement mitigation measures and conduct post-construction public consultation.

Phase	Responsible Agency	Environmental Responsibility
	APDOT PPMO, ESE	Conduct EMP compliance review, instruct APDOT and O&M units on environmental management requirements; prepare quarterly project progress reports and semi-annual environmental monitoring report for first year of operation Coordinate environmental quality monitoring
	EMSs (contracted by ADPOT)	Undertake environmental quality monitoring for the first year of operation
	APEPD and local EPB	Undertake periodic and random environmental monitoring and inspect environmental compliance with PRC regulations and standards.
ADB = Asian Development Bank; EMS = Environment Monitoring Station; ESE = Environmental Supervision Engineer APEPD = Anhui Province Environmental Protection Department; O&M Units = Operation and Maintenance Units; APDOT = Anhui Province Department of Transport; PPMO = Provincial Project Management Office, LPMO = Local Project Management Office.		

51. **Environmental Management and Supervision.** The EA through the APDOT PPMO is responsible for environmental management and supervision of the implementation of the EMP. APDOT PPMO will contract an external supervision agency (independent Environmental Supervision Engineer) who will be responsible for managing and supervising the implementation of the EMP. Each of the IAs will establish an LPMO. APDOT PPMO and each of the five IAs will appoint one staff environmental specialist for management and coordination of environmental safeguards for the project and respective sub-projects. The independent Environmental Supervision Engineer and PPMO/LPMO staff environmental specialists should be in place before the start of the construction.

52. The Environmental Supervision Engineer will supervise implementation of the EMP during the construction phase and the first year of the operational phase with support from assigned staff environmental specialists in the PPMO and IA LPMO implementation teams. Environmental supervision activities will include:

(i) environmental surveillance and monitoring of the implementation of all mitigation measures and monitoring requirements outlined in the EMP,
(ii) preparation of reports for submission to the IA and EA to support the environmental management of the project, and
(iii) assistance to the PPMO with preparation of semi-annual environmental monitoring reports for submission to ADB.

53. Contractor Environmental Specifications will be included in all civil works contracts. The Contractor Environmental Specifications[25] are standard environmental clauses and sub clauses that are applicable to all general infrastructure construction projects. The objective of these clauses is to reduce and manage all potential environmental impacts caused by the construction activities. The custom clauses (those that mention specific project activities and/or locations, e.g. protection of water intake works, drainage from dredged spoil sites, etc.) have been developed in close association and agreement with government agencies and will need to be converted to tender clauses by the local design institute or the tender company, then confirmed by the Environmental Supervision Engineer. They are applicable (with any necessary modifications made by the Environmental Supervision Engineer and responsible environmental management staff) to all infrastructure development activities included in Anhui Intermodal Sustainable Transport Project. These specifications should be included into the standard

[25] The Contractor Environmental Specifications can be found in Annex 1 of Appendix 2 of the Project Administration Manual.

Contractor Specifications included in the Contract between the Implementing Agency and the Contractor.

54. **Environmental Quality Monitoring.** The EMP provides for monitoring of air quality, noise, water quality, vegetation, and soil erosion. Local environmental monitoring stations (EMS) will be contracted by the APDOT to carry out air, water and noise monitoring for each sub-project according to the EMP requirements. These agencies should be in place before the start of the construction. Monitoring for assessing re-vegetation success and soil erosion may require a separate consulting services package if the local environmental monitoring station is not qualified to undertake soil erosion monitoring.

55. **Grievance Redress Mechanism.** The APDOT PPMO will establish a public complaints center for the project. Other entry points will include the contractors, IAs and local Environmental Protection Bureaus. Contact details of the various entry points will be publicly disseminated on information boards at construction sites and nearby communities and villages. The steps for grievance redress are described in full in the EIA/EMP. The APDOT PPMO will track and document grievance resolution and report on this to ADB in the quarterly project progress reports and semi-annual environmental monitoring reports.

56. **Semi-Annual Environmental Monitoring Reporting.** The APDOT PPMO will submit semi-annual environmental monitoring reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission. If any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the project that were not considered in the EIA and the EMP, the APDOT PPMO should promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan. The Environmental Supervision Engineer will support the APDOT PPMO with the preparation of the semi-annual environmental monitoring reports in co-ordination with the IA LPMO implementation teams and the local Environmental Monitoring Stations.

C. Land Acquisition and Resettlement (LAR)

57. The Project consists of five Sub-projects that include four road Sub-projects and one inland waterway (including intermodal port). Project Output 1 consists of two road Sub-projects S319 highway Erba to Wuwei Section Improvement Component and S367 Ma'anshan North Passage Road while Output 2 consists of G206 Highway Dongliu to Yaodu Section and G318 and S320 Yimmu Highway. These 4 road Sub-projects will be implemented by 4 different IAs and 4 RPs have been prepared to address the number 4 intermodal port. Sub-project 5 consists of Output number 3 Inland waterway network and safety improvement and Output number 4 Intermodal port. This Sub-project is implemented by one single IA and one RP is prepared to address the LAR impacts.

58. **Involuntary Resettlement Impacts.** The project will result in substantial involuntary resettlement including permanent land acquisition and relocation of residential houses and non-residential structures. The Project will affect a total of 51 villages of 15 townships in 6 counties/districts. It will permanently acquire 285.1 hectares of land that includes 251.7 hectare of collective land and 33.5 hectares of state owned land. Land acquisition and house demolition will affect 4,408 households with 17,342 people that include 877 households with 3,605 people affected by house demolition. The project will also result in relocation of 33 enterprises affecting 111 persons. The project will significantly affect 2,496 households with 9,584 people with physical displacement or the loss of more than 10% of their land and other productive assets.

Table 13 summarizes LAR impact of the project while the number of significantly affected persons is presented in Table 14.

Table 13: LAR Impact of the 5 Sub-Projects

No	Category		Road components					IWT	Total
			S367	G206	S319	S320	Subtotal		
1.	Affected counties/districts	nos	2	1	1	1	5	1	6
2.	Affected towns	nos	4	2	4	2	12	3	15
3.	Affected villages	nos	16	7	16	10	49	8	57
4.	Permanent collective land acquisition	mu	1131.12	710.3	354.01	1149.9	3345.33	429.8	3775.13
5.	Permanent state-owned land acquisition	mu	0	322.7	10.7	169.2	502.6	0	502.6
6.	Rural residential house demolition	m^2	114500	2546.1	8333	11811.6	137190.7	18244	155434.7
7.	Rural non-residential house demolition	m^2	1333.1	0	977	3004	5314.1	200	5514.1
8.	Temporary land occupation	mu	260	73.23	48	45	426.23	1501	1927.23
9.	Land occupied by borrow bits	mu	988.9	107.8	151	890	2137.7	0	2137.7
10.	*Affected Persons-households*								
	—by land acquisition only	HH	926	679	1468	437	3510	21	3531
		person	3828	2386	5802	1648	13664	73	13737
	—by house demolition only	HH	598	7	26	49	680	20	700
		person	2630	33	101	209	2973	48	3021
	—by both land acquisition and house demolition	HH	9	7	34	8	58	119	177
		person	30	29	130	26	215	369	584
	Subtotal	HH	1533	693	1528	494	4248	160	4408
		person	6488	2448	6033	1883	16852	490	17342
11.	*Persons affected by non-residential house demolition - enterprises and institutions, and shops*								
	Relocation of enterprises and institutions, and shops	HH	5	0	2	25	32	1	33
		person	9	0	45	49	103	8	111
12.	*Total of affected persons*	*person*	*6497*	*2448*	*6078*	*1932*	*16955*	*498*	*17453*
HH=household									

Table 14: Significantly Affected Persons

Component		X032&X004	G206	S319	S320	IWT	Total
Losing more than 10% of land	HH	300	660	214	318	122	1,614
	person	1,237	2,324	845	1,179	385	5,970
House demolition	HH	612	14	60	57	139	882
	person	2,669	62	231	235	417	3,614
subtotal	HH	912	674	274	375	261	2,496
	person	3,906	2,386	1,076	1,414	802	9,584

59. **Resettlement Plans.** To address the land acquisition and resettlement impacts, 5 draft resettlement plans (RPs) based on feasibility study report have been prepared. The draft RPs are prepared in accordance of ADB's SPS (2009), particularly SR – 2, for safeguard requirements on involuntary resettlement (IR) and relevant national and provincial/local policies of the PRC. These draft plans have been endorsed by the respective implementing agencies (IAs) and disclosed to the project-affected persons (APs) and on the ADB website. Compensation for lost assets and resettlement allowance will be paid to the APs prior to the land acquisition and demolition. The focus of resettlement planning is to ensure that the APs are adequately compensated, their livelihood restored and they benefit from the new employment and income generation opportunities. Households affected by permanent land acquisition will be compensated in cash. Households affected by relocation will have options of cash compensation for constructing their own houses or property exchange based on the principle of replacement cost. To ensure that the 'transition period' for people affected by house demolition does not exceed the limits set in the RP, the EA will ensure that the 5 IAs coordinate and liaise with other responsible agencies to finalize the relocation process in a speedy and timely manner. The EA will ensure that each IA organizes relocation of the affected households in a concentrated manner so that their social and community characteristics and networks remain functional. APDOT will ensure that the plans are implemented effectively and in consultation with resettled and host communities wherever applicable.

60. APDOT will ensure that the draft RPs are finalized based on design and census of APs. Finalized RPs will be submitted to ADB for review and approval, prior to the award of civil contracts. Finalization of draft RP will follow the "detailed measurement survey" procedure incorporating a full census of the APs and a complete inventory of lost assets. The finalized RPs will be disclosed to the APs and on the ADB website. APDOT will ensure that no civil work is awarded prior to the finalization of the RP.

61. **Policy Framework and Implementation Arrangements.** The draft RPs are prepared in accordance with policies at national, provincial, and municipal levels related to land acquisition and resettlement in the PRC and ADB's SPS (2009). The resettlement principles established for the project include (i) avoid involuntary resettlement wherever possible; (ii) minimize involuntary resettlement by exploring project and design alternatives; (iii) enhance, or at lease restore, the livelihoods of all displaced persons in real terms relative to pre-project levels; (iv) improve the standards of living of the displaced poor and other vulnerable groups (at least to minimum standards); (v) compensation will be based on replacement cost of lost assets; (vi) compensation and entitlements provided to APs will be adequate to improve their living standard; (vii) all APs will be provided with resettlement assistance and fair compensation; (viii) all APs will be informed of the eligibility, compensation standards, livelihood, and income restoration plans, and project schedule to ensure that they will be able to participate in the RP implementation process; (ix) no land should be acquired unless replacement land or sufficient

compensation for resettlement is provided to AP; (x) the IA and an independent third party will monitor compensation and resettlement work; (xi) vulnerable groups should receive special assistance to ensure they can live a better life and the APs will benefit from the project; and (xii) the resettlement budget covers all aspects of compensation and rehabilitation assistance and is part of the overall project budget. APDOT will ensure that these policy requirements are complied with through an effective implementation of the resettlement plan. Any significant changes in project scope/design will be reported to the ADB, and the resettlement plan will be updated and submitted for ADB concurrence prior to the commencement of work on the changed scope of the project.

62. **Entitlements and Compensation Standards.** For people affected by the project, the resettlement objective is to achieve equal or better income and living standards in line with the PRC Land Administration Law (2004), State Council Document No. 28, and the ADB's *Safeguard Policy Statement* (2009). Any people losing land, housing, other assets or income sources will be assisted to fully restore their income and living standards. The entitlements are based on the principle of "replacement cost" for lost assets. Land compensation standards are determined by the relevant national and local policies and existing social and economic conditions of the project affected areas. The permanent land acquisition will be compensated in cash based on the multiples of average annual output value (AAOV) which are deemed to be adequate to replace income losses.

63. For rural residential houses affected by demolition, the main compensation packages that will be negotiated with the affected households are as follows: self-construction with cash compensation or house exchange can be opted by APs. These options are based on the principle of 'replacement cost' without taking into account the depreciation value. The affected people are also entitled to salvage the material from the house affected by demolition. APs will also be entitled to compensation for decoration, movement subsidies, transition subsidies, and compensation for auxiliaries.

64. The affected enterprises, shops and institution will also be appraised according to the market value by the qualified real-estate appraisal institute. Compensation fees will be paid directly to the proprietors and income losses arising from the project will also be included in such appraisal. In case of relocation they will be entitled for full compensation covering their business losses during the relocation period. The workers will be retained as far as possible. If workers are laid off, they will be informed 1 month before the demolition and receive 3 months wages and assistance to find new jobs. The workers will also be eligible for trainings and jobs created by the project.

65. The compensation standards, as per the entitlement matrix of the various RPs, are provided in the following tables:

Table 15: Compensation Standards for Affected County/Town

Type of compensation		S367		G206		S319		S320		IWT	
Affected county/ town		Hexian county	Hanshan county	Dongliu town	Raodu town	Erba town	Tanggou town	Jishan Town	Gongshan town	Shuiyang Town	Liqiao town and yangxian town
Collective land	farmland	32865	32886	32780	36800	34100	33000	36300	32130	33580	30800
	Construction land and waste land	16433	16443	16390	18400	17050	16500	18150	16065	16790	15400
	Compensation for young crops	800	800	600	600	800	800	1650	1530	800	800

Table 16: Compensation Standard for Rural Residential Houses to be Demolished

Component Ref		S367		G206	S319	S320	IWT
County/ district		Hexian County	Hanshan County	Dongzhi County	Wuwei County	Nanling County	Xuanzhou district
Rural residential house	Frame structure	1220	1400	735	/	/	/
	Concrete and brick structure	965	1075	645	1180	920	850
	Brick and timber structure	765	885	510	930	860	750
	Timber and earth structure	/	/	/	380	/	/
	Simple structure	305	380	/	/	180	/

Table 17: Compensation Standard for Rural Non-residential House to be Demolished

Structure		S367	IWT	S320
		Hexian County	Xuanzhou District	Nanling County
Rural non-residential house	Concrete and brick structure	1075	850	920
	Brick and timber structure	885	750	860

Table 18: Compensation Standard for Temporary Land Occupation

category		S367	S319	S320		IWT
				Jishan town	Gongshan town	
Borrow pit	Collective cultivated land	/	1500	/	/	/
	Collective non-cultivated land	1500	1500	/	/	/
Dredging disposal area	Collective land	/	/	/	/	1200
Other	Collective land	/	1500	1650	1530	/
	State-owned unused land	1500	/	/	/	/

Note: The G026 component will only occupy wasteland temporarily, the compensation is not needed.

66. **Resettlement investment and fund management.** Calculating at the price of first half year of 2013, the cost of land acquisition and resettlement under this Project, including contingencies and related taxes and duties, is estimated to be CNY 423.6 million. The detailed resettlement cost will be estimated after the compensation policy is finalized. The cost of land acquisition and resettlement has been included in the total cost of each component. The EA will ensure that adequate counterpart funding will be made available for land acquisition and resettlement.

67. In the design finalization stage of the Project, the IAs will carry out a detailed survey of the physical quantities in each affected village, each affected HH and each affected organization. On this basis, corresponding adjustments will be made to the resettlement budget.

68. In the implementation stage, the compensation contract will be negotiated and signed with the affected villages, affected HHs and affected organizations. Therefore, the final resettlement cost may be subject to further adjustment.

69. **Resettlement and income restoration.** Losses of cultivated land suffered by the affected villages and households have been checked in detail and negotiations on income restoration plan have been conducted with the APs. Findings and results of participation have been incorporated in the RPs.

70. According to the survey and participation activities implemented, the key actions of economic restoration include: 1) Using the compensation fund in agricultural restructuring and increasing cash crop growing area and greenhouses; 2) Providing employment opportunities in the construction and operation stages of the Project, 3) Promoting and developing new secondary and tertiary industries (e.g. small shops) 4) Providing free technical training to increase the skills of the APs, 5) endowment insurance for persons whose land is acquired. The main restoration measures for each component are shown in Table 19.

Table 19: Main Livelihood Restoration Measures for each Component

No.	Component Ref	Main measures
1	S319	1） agriculture restructuring, including non-polluted vegetable cultivation and aquaculture, 2) promoting employment and technical training, and 3） endowment insurance
2	G206	1) cash compensation for slightly affected households, 2) agriculture restructuring, 3) technical training and outside working, and 4) endowment insurance
3	S320	1) cash compensation, 2) providing job opportunities, and 3) endowment insurance
4	S367	1) cash compensation, 2) agriculture restructuring, 3) technical training and tertiary industry operation, and 4) endowment insurance
5	IWT	1) catering operation, 2) vegetable trader, 3) technical training and 4) endowment insurance

71. For relocation of rural residential houses, the affected households will get compensation at the replacement price of the original house structure and ground attachment. The resettlement options offered to the affected households include: (i) cash compensation; (ii) property exchange in provided resettlement communities; and (iii) allocating a house plot, building house by AP. The proposed resettlement options of each component are shown in Table 20. Detailed measures in this regard have been included in the RPs.

Table 20: Proposed Options for Resettlement Housing of each Component

No.	Component Ref	Resettlement options
1	S319	1） cash compensation and 2） property exchange
2	G206	1） cash compensation and allocating a house plot, building house by AP
3	S320	1） cash compensation and 2) property exchange
4	S367	1） cash compensation and allocating a house plot, building house by AP
5	IWT	1） cash compensation, 2) property exchange

72. Regarding relocation of rural non-residential house, two options cash compensation and property exchange will be provided. The APs could opt for either cash compensation or property exchange based on their real situation and wills.

73. **Implementation Arrangement and Schedule.** In order to implement the RP in a smooth and effective manner, a resettlement organizational network from higher to lower governmental levels will be established and will be responsible for detailed planning, coordination, implementation and monitoring of resettlement activities. The APDOT is the executing agency (EA) and will establish a resettlement implementation unit (IU) that will have overall responsibility for coordination of resettlement plan measures and will act as focal point to coordinate with the 5 IAs involved in the RP implementation. The IU through the 5 IAs will be responsible to ensure that the resettlement process is in accordance to the RPs developed for each sub-project. The unit will be provided with one suitably qualified and experienced resettlement staff and required support staff and office facilities and the unit will work closely with the 5 IAs. The 5 implementing agencies (IAs) will assume responsibility on behalf of APDOT for the implementation of their respective resettlement plans, including planning, implementation, financing, and reporting. Each IA will appoint a full time qualified and experienced staff who will act as the focal point for implementation of the RP and will be assisted by suitable support staff as required. The IA focal point will coordinate with the relevant

line agencies involved in RP implementation. The IA focal point will also be responsible for coordination with the IU at the PMO and for timely reporting of the progress of resettlement plan implementation. APDOT through each IA will ensure that the project implementation follows the implementation schedule prepared for land acquisition and resettlement activities. There will be no land acquisition and house demolition without the payment of compensation and no civil works shall commence without payment of compensation to the affected persons and signing of land acquisition agreements. APDOT shall also ensure that in case of relocation, housing land is identified and acquired prior to the commencement of house demolition.

74. **Affected Persons' Participation and Consultation.** APDOT through each IA will ensure that the APs are informed and consulted about the project benefits, project adverse impacts, compensation and entitlements, livelihood restoration programs, and the procedures set out to redress affected peoples' grievances and will follow consultation and participation schedule (C&P) as outlined in the RPs indicating timings, methods, objective, documentation procedures and incorporation of affected peoples' opinions on resettlement and implementation.

75. **Vulnerable Groups.** APDOT through respective IAs will ensure that each Sub-project pays special attention to the vulnerable groups' resettlement. Vulnerable people category includes elderly living alone, disabled, female headed households, and poverty households. This category of households are already poor and vulnerable and their vulnerability will be enhanced by impacts and risks caused by LAR. To the vulnerable category of affected households, the project will provide additional financial and material support, priority in training and in finding employment. The vulnerability conditions of these groups will be assessed during the detailed measurement survey and specific type of assistance will be determined. The specific entitlements are reflected in the RPs and will be included in the household agreement.

76. **Grievance Redress Mechanism.** APDOT will ensure that, under each Sub-project, an effective mechanism is established to deal with project related grievances of the affected persons. Such grievances may derive from measurement of asset losses; surveying, statistics and computation errors; compensation standards and entitlements including the methodology used for calculating these entitlements; preparedness and suitability of resettlement sites; and delays faced during the implementation of RP. The agreed GRM will provide a clear and transparent mechanism and has been publicized to the affected persons. If the GRM process does not meet the requirements of APs, at any time they may take their case to the civil courts, in accordance with the Civil Procedures Act. The GRM process may be utilized for other project related grievances. IAs should maintain a record of grievances received and resolved and report monthly on this to the PMO. IAs will make grievance records available for review by the external monitors and ADB review missions upon request.

77. **Resettlement Plan Finalization.** The APDOT through the 5 IAs will ensure that the 5 draft RP will be finalized based on final project design and detailed measurement survey (DMS). The DMS process will include undertaking a full census of the affected persons and preparing a complete inventory of lost assets. The DMS details will become appendices of the final RP. The final RP will be submitted to the ADB for review and approval, disclosed to affected persons (APs) and uploaded on ADB's web site prior to the award of civil contracts.

78. **Resettlement capacity building.** Adequate and trained staff is essential to undertake the implementation of RPs. APDOT has experience of working with the projects financed by the ADB and other multilateral development agencies. APDOT will provide a full time staff, experienced in resettlement implementation and ADB involuntary resettlement policy, to undertake overall coordination and implementation of their RPs. The 5 IAs require capacity building to effectively implement their respective resettlement plans. Each IA will appoint a full

time staff who will be responsible to manage, coordinate and implement the RP. EA and each IA will also provide other support staff as necessary and office resources for this purpose. To ensure that the 5 IAs have sufficient capacity, APDOT will ensure that each IA will be provided required training by resettlement specialists on implementing RPs to meet ADB social safeguards requirements. The cost for such training is budgeted under capacity building—domestic training.

79. **Record Keeping.** APDOT will ensure that the PPMO and each IA LPMO keep the relevant records of the resettlement plan implementation process. These include records of household agreements signed on land acquisition demolition, records of compensation paid, public participation and consultation records and integration of outcomes of these consultation process, grievances received and resolved. On request these records will be made available for review to external monitor and ADB missions.

80. **Monitoring and Evaluation.** The plan for internal and external M&E is included in each RP. Each IA will be responsible for internal monitoring and supervision, and reporting to the IU at the APDOT PPMO. The IU at the PPMO will be responsible for collating internal monitoring from each IA and submit consolidated reports ADB annually. APDOT will ensure that the each IA is provided training on effective internal monitoring and reporting as part of the capacity building training. The RP implementation is also monitored and its effectiveness evaluated by an external monitor. Each IA will engage an independent external monitor in accordance with the ADB procedures. The detailed TOR for the external monitor is included in the RP and as Appendix 2 of PAM. The external monitor will be engaged prior to the commencement of land acquisition and resettlement activities. The monitor will conduct a baseline survey prior to resettlement and will provide ADB and PPMO copies of the M&E reports twice a year during resettlement implementation and once a year after resettlement completion. These reports will be disclosed on ADB website and made available to the APs.

D. Indigenous Peoples

81. The project will not adversely impact any ethnic minority communities and remains a Category C for indigenous peoples' safeguards. No further actions are required.

VIII. GENDER AND SOCIAL DIMENSIONS

82. **Social Development Action Plan.** To address various impacts caused by the project and enhance benefits for local affected communities, a SDAP has been prepared jointly by APDOT, the 5 IAs and related government agencies, and local governments, with the assistance of the PPTA consultants. The SDAP was reviewed by key stakeholders including various government agencies, such as local human resources and social security bureau, health bureau, poverty alleviation office, and representatives of local communities.

83. The purpose of the SDAP is to ensure that (i) important social, poverty and gender issues are addressed during the implementation of the project; (ii) any possible adverse impacts are avoided or mitigated; and (iii) project benefits are equitable and inclusive. Measures formulated to address these issues are based on poverty and social and gender analysis and consultation with stakeholders. APDOT has overall responsibility to ensure that the activities outlined in the SDAP are implemented, monitored and reported. Each IA will be responsible for implementation of SDAP within their respective sub-project component and will coordinate and collaborate with various line agencies required for successful implementation of the SDAP.

84. The SDAP will be internally monitored by each IA and progress will be reported annually. APDOT shall ensure that the SDAP reporting data is sex disaggregated. The internal monitoring reports of the IA will be verified by PIU, and the external monitor for resettlement and the results will be included in the annual PPMS reports.

85. **Other Social Aspects.** HIV/AIDS and Other Communicable Diseases: Project assurances require dissemination of information about HIV/AIDS transmission and prevention to be carried out on construction sites for the employees at time of their mobilization. In addition, the capacity building will be undertaken with respect to advocating behavioral change. APDOT will be responsible that each IA includes these provisions in the award of contract agreements with the contractors.

86. **Labor market impact.** At the construction and operation stages of the two project components, temporary or permanent jobs will be created. It is expected that approximately 6,533 skilled and unskilled jobs will be generated from the civil works during construction; and approximately 565 jobs will be generated at the operation stage including traffic wardens, road cleaning and landscaping. In addition, the Project will facilitate the Wangjiang Demonstration Zone Plan and will also lead to the development of secondary and tertiary industries, which will create additional employment. Each IA will collaborate with Labor and Social Security Bureau to ensure the contractors employ local labor and target percentages of poor and women.

87. The contractors will be required to meet core labor standards as outlined in national, provincial and municipal laws and regulations specified in project assurances. APDOT shall ensure that the principle of ‘equal pay for equal standard of work’ is implemented and no discrimination is made on the basis of gender and ethnicity. APDOT shall also ensure that no child labor is allowed during implementation and operation of the project.

88. Specific targets for employment have been included in the SDAP. APDOT is responsible for ensuring that IAs implement, monitor and report on the progress of SDAP.

89. Various activities planned under the SDAP are shown in the Table 21.

Table 21: Social Development Action Plan

Proposed action	Target population	Responsible and assisting agencies	Time	Funding requirement	Monitoring indicators
Measures to Enhance Project Benefits					
A. Design Features:					
1. *Socially Inclusive Road Improvement Component* • Priority bus lanes and bus stops; • Providing safe entries and exits on the proposed roads for local vehicles; • Providing streetlamps and other lighting facilities in key segments and populated areas of the proposed roads; and • Providing traffic monitoring facilities, including monitoring and e-police systems.	1,420,000 in Wuwei; 540,000 in Dongzhi; 550,000 in Nanling; 440,000 in Hanshan and 660,000 in He County	Agencies responsible: EA, IAs, traffic police Assisting agencies: design agency, local governments, contractor	2013-2017	Construction costs of the Road Improvement Components	1. Number of bus stops constructed 2. Number of entries and exits allowed for local population 3. Lighting facilities provided in key segments of the roads 4. Number of traffic monitoring facilities such as speed cameras provided 5. Included in the design
2. *Non-Motorized Transport Component* • Segregated pedestrian footpaths and bicycle lanes, for all road segments passing through urban areas (16.58 km); and • Pedestrian footpaths (14.692 km) close to population centers in the rural areas (to be assessed during final design).	Wuwei, Dongzhi, Nanling, Hanshan and Hexian Counties	Agencies responsible: EA, IAs Assisting agencies: design agency, local governments, local community contractor	2013-2017	Construction costs of the Road Improvement Components	1. Km. of NMT constructed 2. Km. of pedestrian footpaths constructed 3. Included in the design
3. *Shuiyang River IWT Component* • Improving the flood protection capacity of the channel to protect residents' life and property by dredging and improving the embankment; Mitigating the drought impacts during the dry season by ensuring perennial water supply to channel side population;	5 townships people living along the River	Agencies responsible: EA, IAs Assisting agencies: design agency, local governments, local community , contractor		Construction costs of the Shuiyang River IWT Component	1. Statistics on flood damages along the channel 2. Statistics on drought conditions during dry season
4. Gender sensitive and universally inclusive design features • User friendly bus stops with seating arrangement; ramp facilities for physically challenged people or mothers with prams/shopping trollies;	Wuwei, Dongzhi, Nanling, Hanshan and Hexian Counties	EA/5 IAs/Design Institute		Construction costs of roads and Shuiyang River (1.4 million for docks construction)	1. Number of bus stops with ramps and seating arrangements as per design specification 2. Number of user friendly safety features (zebra crossing,

Proposed action	Target population	Responsible and assisting agencies	Time	Funding requirement	Monitoring indicators
• Safety features designed to cater to the needs of people with slow mobility such as pregnant women, elderly, or people with disability; and • Seven docks for public ferries along the Shuiyang River designed with ramp, seating facilities and shelter considering needs of people with disability, women and elderly persons.	5 townships people living along the River				pedestrian crossing lights) installed 3. Number of docks with ramp, seating facilities and shelter constructed as per design specifications.
B. Traffic Safety:					
• Set up Pilot Community Civil Traffic Action Team (CCTAT) (one for each IA for roads and IWT) for traffic safety awareness and monitoring • Consulting CCTATs on road safety design (e.g., pedestrian crossings) and monitoring operations • Setting up deceleration strips and signs near villages, schools and populated areas • Road safety training and awareness to local communities including elderly people, disabled people, women (40% participants) and school-age children; and • Adding necessary channel safety signs near docks for local ferries.	1,420,000 in Wuwei; 540,000 in Dongzhi; 550,000 in Nanling; 440,000 in Hanshan and 660,000 in He County ,and866,000 residents in Xuanzhou District	Agencies responsible: EA, IAs, traffic police Assisting agencies: design agency, local governments, contractor	2013-2017	Project funds for safety works, and local government finance budgets.	1. No. of the CCTAT set up – (at least half the members to be women/ frequency and effectiveness of activities undertaken 2. No of traffic safety signs, traffic signals and deceleration signs 3. Incidence of traffic accidents—provided by the local traffic police 4. Frequency of community traffic safety awareness publicity and degree pf public participation 5. Frequency of road safety training provided; number of participants disaggregated by age and gender; 6. Number of safety signs along the Suyang river
C. Generating Economic Opportunities					
• Strengthening skill and training of farmers on techniques on agricultural, aquaculture and agri-tourism to promote local economic development; • Strengthening Vocational Training program to local labors, such as	Local residents; especially APs, the poor, vulnerable groups and	Agencies responsible: local related department such as: tourism bureau, agricultural committee, labor &	2013-2017	Routine management funds of agencies concerned (CNY150,000/ye	1. Number of training and skill enhancement programs organized 2. Frequency, forms and men-times of a training 3. Frequency of information

Proposed action	Target population	Responsible and assisting agencies	Time	Funding requirement	Monitoring indicators
cooking, guestroom service, shoe making, aquatic product processing, food processing, sewing, stockbreeding, property management, etc. • Providing training on labor law, contract law and rights to migrant workers; • Providing nonagricultural employment information to help local laborers find jobs in nearby enterprises; • Priority on using local building materials and resources; and • Using local products and services (e.g., houses, food, drinks and other daily necessities).	women	social security bureau, women's federations, Assisting agencies: IAs contractor, village committees		ar per subproject area); funds under the construction contract	dissemination on non-farm employment 4. Purchase of local raw materials 5. Additional income brought to local people from the lease of local houses, and purchase of local food and other daily necessities at the construction stage
D. Generating Employment Opportunities					
• Creation of 5283 jobs by roads components including 1,160 skilled and 3,608 unskilled jobs during construction and 515 public service jobs during operation • Creation of 1300 jobs by Shuiyang component (estimated) – 550 skilled and 700 unskilled during construction and 50 public service jobs during operation ; • Making 40% of 3608 unskilled jobs generated by roads component and 700 jobs by the Shuiyang River component first available to local residents with women and poor receiving 40% of these priority jobs， • Providing 40% of total of 565 public welfare jobs during operations to the local people with women and poor receiving 40% of these priority jobs.	Local residents; especially APs, the poor, vulnerable groups and women	Agencies responsible: local governments Assisting agencies: EA, IAs, agricultural committee, labor & social security bureau, village committees	2013-2017	Project Funds	1. No. of jobs opportunities by the project 2. No. of the jobs to local residents 3. No. of the Jobs to women and poor 4. Wages paid to local residents (for construction and operation stages

Proposed action	Target population	Responsible and assisting agencies	Time	Funding requirement	Monitoring indicators
Measures to Reduce Potential Risks					
A. Health publicity and training, including HIV/AIDS prevention training for workers and trainees at the construction stage					
• Including AIDS prevention training in the civil works contract as a construction safety requirement; • Setting up health facilities and a temporary infirmary on the construction sites; • CDCs to educate local residents and construction workers on the self-protection awareness against AIDS and other communicable diseases; • Giving education on schistosomiasis to local residents and construction workers along the channel, and providing protective articles to construction workers; and • Conducting various publicity activities on AIDS/ schistosomiasis, e.g., brochures, posters and picture albums (using a gender-sensitive language).	All construction workers	Agencies responsible: IAs, local sanitation agencies Assisting agencies: contractor, local governments	2013-2017	Funds under the construction contract; Budget of the CDC (CNY10,000/year per subproject area) and Project Funds (Environmental Management Plan)	1. Terms of construction contract and implementation 2. Health measures for construction workers (e.g., setting up a temporary infirmary) 3. AIDS prevention training courses and number of trainees 4. Number of educational/awareness building sessions organized by the CDCs 5. Frequency and forms of health education, and protective measures available to construction workers 6. Forms of publicity on AIDS prevention at the construction stage, e.g., number of brochures, posters and picture albums distributed
B. Mitigating construction interference and applying safe construction methods					
• Controlling dust to avoid pollution, restricting overnight construction, and complying with noise, dust and vibration standards strictly; • Strengthening construction safety, and providing safe roads/channel conditions, and suitable warning signs; and • Avoiding damages to public water supply, power supply, drainage and irrigation facilities.	Villages near the proposed roads and the Shuiyang River channel	Agencies responsible: EA Assisting agencies: contractor, environmental protection bureau, local governments	2013-2017	Project funds (Environmental Management Plan)	1. Number of complaints on environmental pollution at the construction stage (including dust and noise) and disposition 2. Number of announcements and warning signs installed during construction 3. Number of damaged public facilities repaired timely; number of complaints
C. Pubic Consultations and GRM					
1. *Consultation and public participation*	Local	Agencies responsible:	2013-2016	Routine	1. Number of such consultation

Proposed action	Target population	Responsible and assisting agencies	Time	Funding requirement	Monitoring indicators
• Informing and consulting with the local population on project impacts and benefits (at least 40% participants to be women and poor and vulnerable • Involving CCTATs in design options for road safety, NMV lanes and pedestrian crossings/accessibility • Status and progress of civil works including possible construction related interruptions and disturbances; • Road safety awareness; and • Economic benefits–employment and income generation opportunities. 2. *Grievance redress mechanism* • Redress of project related general grievances through the established GRMs (Resettlement or Environment) handling appeals and keeping appeal and remedy records.	residents	EA, IAs, local governments Assisting agencies: PMO, labor & social security bureau, land & resources bureau		management funds of agencies concerned (CNY50,000/year) GRMs under RPs or EMP	held and degree of public participation desegregated by gender, poor and vulnerable 2. Number of complaints received and disposition (relevant records) 3. Degree of satisfaction based on community monitoring and feedback (by component)

IX. PERFORMANCE MONITORING, EVALUATION, REPORTING AND COMMUNICATION

A. Project Design and Monitoring Framework

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
Impact An environmentally sustainable multimodal transport system is established in Anhui Province	By 2020 The total traffic carried by the inland waterway system in Anhui Province measured in tons and ton-km increases by 20% from levels in 2012. The traffic accident rate, measured by road crash fatalities per 10,000 vehicles in Anhui, is reduced from 2.61 in 2012 to 1.50.	Anhui Provincial Department of Transport statistics Anhui Provincial Department of Public Security	**Assumptions** Traffic law enforcement is effective. The WDZ develops as planned by the national government.
Outcome An efficient, safe, and affordable multimodal transport system developed in the WDZ	By 2018 Vessel handling capacity on Shuiyang River increased from 300 dwt in 2012 to 1,000 dwt Average travel time on project roads reduced by one-third from a total of 147 minutes in 2012.	Data from Anhui Provincial Port and Shipping Construction Investment Group Co. Ltd. Traffic speed and commuter surveys	**Assumption** Work to improve sections of the Wushen Canal is completed.
Outputs 1. Road network and safety improvement	5.77 km of new class I highway (S319) built Approximately 31 km of highways upgraded from class II to class I (S319) Approximately 47 km of highways upgraded from class IV and III to class II (S367) Road safety assessment recommendations incorporated in road design (with particular attention to needs of women, children, and the elderly)	Project implementation progress reports Crash statistics from the provincial government	**Risk** Implementing agencies lack capacity to comply with ADB procurement procedures.
2. Highways and public transport improvement	Approximately 16 km of new class I road constructed with bus stops, a bus priority lane, and segregated cycle and pedestrian lanes (G206) Approximately 22 km of highways upgraded from class II to class I with bus stops, bus priority lane, segregated cycle and pedestrian lanes (Yimu)	Project implementation progress reports	**Risk** Implementing agencies have difficulties complying with ADB safeguards. Inter-provincial coordination for implementing IWT component.
3. Inland waterway network improvement	Approximately 44 km of inland waterway upgraded from class VI to restricted class IV channel 1 shiplock built	Project implementation progress reports	

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
	2 rubber dams installed		
4. Intermodal Port	New intermodal port built Four 1,000 dwt berths built	Project implementation progress reports	
5. Institutional strengthening and capacity building	Staff in the executing agency and implementing agencies trained in intelligent shipping and road safety		
Activities with Milestones **1. Road network and safety improvement** 1.1. Complete road safety audit (by Nov 2013) 1.2. Draft detailed design (May 2014–Jul 2014) 1.3. Complete final design and bidding documentation (Jun 2014–Mar 2015) 1.4. Carry out land acquisition and resettlement (Apr 2014–Jun 2015) 1.5. Award contract (Mar 2015–Jun 2015) 1.6. Undertake and complete civil works (Apr 2015–Jun 2018) **2. Highways and public transport improvement** 2.1. Conduct road safety audit (by Dec 2013) 2.2. Develop public transport master plans (by Jan 2014) 2.3. Draft detailed design (Nov 2013–May 2014) 2.4. Complete final design and bidding documentation (Dec 2013–Jan 2015) 2.5. Carry out land acquisition and resettlement (Apr 2014–Jun 2015) 2.6. Award contract (Jul 2014–Feb 2015) 2.7. Undertake and complete civil works (Aug 2014–Jun 2017) **3. Inland waterway network improvement** 3.1. Draft detailed design (Jul 2014–Dec 2014) 3.2. Complete final design and bidding documentation (Aug 2014–Dec 2015) 3.3. Carry out land acquisition and resettlement (Apr 2014–Jun 2015) 3.4. Award eight civil, earthworks, M&E, and other contract over extended period (Feb 2015–Mar 2016) 3.5. Undertake and complete civil works (Mar 2015–Jun 2018) **4. Intermodal port** 4.1. Draft detailed design (Apr 2014–Jul 2014) 4.2. Carry out land acquisition and resettlement (Feb 2014–Apr 2015) 4.3. Complete final design and bidding documentation (May 2014–Apr 2015) 4.4. Award two civil and one M&E contracts (Dec 2014–Mar 2015) 4.5. Undertake and complete civil works (Jan 2015–Jun 2017) **5. Institutional strengthening and capacity building** 5.1. Recruit consultants (Feb 2014–July 2014) 5.2. Provide project management support (Jan 2014–Oct 2018) 5.3. Oversee detailed design and ensure that safeguard measures are implemented, monitored, and reported (Jan 2014–Oct 2018) 5.4. Provide training on road maintenance and road safety (by Jun 2014) 5.5. Provide training on environmental conservation and protection (by Jun 2014) 5.6. Implement EMP, resettlement plans, and SDAP (Apr 2014– Oct 2018)			**Inputs** **Loan** **ADB: $200.0 million (OCR)** **Government: $393.1 million** **Bank of Communications: $41.0 million**

ADB = Asian Development Bank, dwt = deadweight ton, EMP = environmental management plan, IWT = inland waterway transport, km = kilometer, M&E = monitoring and evaluation, SDAP = social development action plan, WDZ = Wanjiang Demonstration Zone.

Source: Asian Development Bank.

B. Monitoring

90. **Project Performance Monitoring.** The project performance monitoring system indicators, their relevance, and monitoring practicalities will be discussed with the PPMOs and LPMOS, IAs, and other project beneficiaries during project implementation. Disaggregated baseline data for output and outcome indicators gathered during project processing will be updated and reported quarterly through the EA's quarterly progress reports and after each ADB review mission. These quarterly reports will provide information necessary to update ADB's project performance reporting system. At the start of implementation of the project, the PMO and the project management teams, with the assistance of the project implementation consultant, will develop comprehensive project performance monitoring system procedures to generate data systematically on the inputs and outputs of the components, as well as the indicators to be used to measure the project impact.

91. **Compliance Monitoring.** The compliance status of loan and project covenants will be reported and assessed through the semi-annual progress reports and verified by ADB review missions.

92. **Safeguards Monitoring Reports.** The 5 IAs must submit semi-annual Environmental and Resettlement Monitoring Reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission. If any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the project that were not considered in the EIA, EMP, and RPs, the IA shall promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan.

93. The 5 IAs will hire qualified and experienced external environment experts under a selection process and TOR acceptable to ADB, to verify the monitoring information in the report. The environmental verifier will visit the site to ensure the EMP implementation. The Environment Verifier’s report including the review activity outline, review results, and its recommendations will be attached to the semi-annual environment report for submission to ADB.

94. The 5 IAs will also hire qualified and experienced external social safeguard experts under a selection process and TOR acceptable to ADB, to monitor the implementation of the RPs and EMDP. The monitor will use a mix of methods such as review of records and internal monitoring reports of the IAs, interviews with the officials responsible for RP implementation, site visits, and consultations with the affected persons. The external monitoring report including recommendations will be submitted to the ADB semi-annually.

C. Evaluation

95. In addition to regular monitoring, project performance will be reviewed at least once a year jointly by ADB, the government, and APDOT. The review will assess implementation performance and achievement of project outcomes and outputs, assess financial progress, identify issues and constraints affecting implementation, and work out a time-bound action plan for their resolution. ADB, the government, and APDOT will conduct a midterm review to assess implementation status and take appropriate measures and the continuing viability of the project. Within 3 months of physical completion of the project, the APDOT will submit a project completion report to ADB.

D. Reporting

96. The EA will provide ADB with (i) quarterly progress reports in a format consistent with ADB's project performance reporting system; (ii) consolidated annual reports including (a) progress achieved by output as measured through the indicator's performance targets, (b) key implementation issues and solutions, (c) updated procurement plan, and (d) updated implementation plan for next 12 months; and (iii) a project completion report within 6 months of physical completion of the project. To ensure projects continue to be both viable and sustainable, project accounts and the EA audited financial statements, together with the associated auditor's report, should be adequately reviewed.

E. Stakeholder Communication Strategy

97. The PMO with support of supervision consultants will undertake consultations with key stakeholders. Communication with stakeholders will be managed by the PMO social and environmental monitoring specialists.

X. ANTICORRUPTION POLICY

98. ADB reserves the right to investigate, directly or through its agents, any violations of the Anticorruption Policy relating to the Project.26 All contracts financed by ADB shall include provisions specifying the right of ADB to audit and examine the records and accounts of the EA and all project contractors, suppliers, consultants, and other service providers. Individuals/entities on ADB's anticorruption debarment list are ineligible to participate in ADB-financed activity and may not be awarded any contracts under the Project.[27]

99. To support these efforts, relevant provisions are included in the loan agreement and the bidding documents for the Project. The ADB's *Anticorruption Policy* (2000, as amended to date) was explained to and discussed with the EA and IA. Consistent with its commitment to good governance, accountability and transparency, ADB reserves the right to investigate directly any alleged corrupt, fraudulent, collusive, or coercive practices relating to the project. In particular, all contracts financed by ADB in connection with the project shall include provisions specifying the right of ADB to audit and examine the records and accounts of the EA and IA, and all contractors, suppliers, consultants, and other service providers related to the project.

[26] Available at: http://www.adb.org/Documents/Policies/Anticorruption-Integrity/Policies-Strategies.pdf.
[27] ADB's Integrity Office web site is available at: http://www.adb.org/integrity/unit.asp.

XI. ACCOUNTABILITY MECHANISM

100. People who are, or may in the future be, adversely affected by the project may submit complaints to ADB's *Accountability Mechanism*. The Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the Accountability Mechanism, affected people should make a good faith effort to solve their problems by working with the concerned ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism.[28]

[28] For further information see: http://www.adb.org/Accountability-Mechanism/default.asp.

XII. RECORD OF PAM CHANGES

101. All revisions/updates during course of implementation should be retained in this section to provide a chronological history of changes to implemented arrangements recorded in the project administration manual.

No.	PAM Changes/Updates	Dates	Notes
1	Initial draft	12 July 2013	Agreed at loan fact-finding mission
2	Revised draft	Dec 2013	Agreed at loan negotiations

PROCUREMENT PLAN

BASIC DATA

Table A1.1: Basic Data

Project Name: Anhui Intermodal Sustainable Transport Project	
Country: People's Republic of China	**Executing Agency**: Anhui Provincial Department of Transport (APDOT)
Loan Amount: $200 million	**Loan (Grant) Number: TBD**
Date of First Procurement Plan: 12 July 2013	**Date of this Procurement Plan**: 5 December 2013

A. Process Thresholds, Review and 18-Month Procurement Plan

A.1. Project Procurement Thresholds

1. Except as the Asian Development Bank (ADB) may otherwise agree, the following process thresholds shall apply to procurement of goods and works.

Table A1.2: Procurement of Goods and Works

Method	Threshold
International Competitive Bidding (ICB) for Works[1]	$10,000,000 and above
International Competitive Bidding (ICB) for Goods[1]	$1,000,000 and above
National Competitive Bidding (NCB) for Works[1]	Below $1,000,000 and not less than $200,000
National Competitive Bidding (NCB) for Goods[1]	Below $1,000,000 and not less than $100,000
Shopping (SHP) for Works	Below $200,000
Shopping (SHP) for Goods	Below $100,000

A.2. ADB Prior or Post Review

2. Except as ADB may otherwise agree, the following prior or post review requirements apply to the various procurement and consultant recruitment methods used for the project.

Table A1.3: Various Procurement and Consultant Recruitment Methods

Procurement Method	Prior or Post	Comments
Procurement of Goods and Works		
ICB Works	Prior	
ICB Goods	Prior	
NCB Works	Post	Prior review for 1st bidding package
NCB Goods	Post	Prior review for 1st bidding package
SHP Works	Post	
SHP Goods	Post	
Recruitment of Consulting Firms		
Consultant Qualification Selection (CQS)	Prior	
Recruitment of Individual Consultants		
Individual Consultants Selection (ICS)	Prior	

A.3. Works Contracts

3. The following table lists goods and works contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

Table A1.4: Contracts for Goods and Works

Package	Contract No	General Description	Contract Value ($ million)	Procu-rement Method	Prequali-fication of Bidders (Y/N)	Adverti-sement Date	Comments
ROAD NETWORK IMPROVEMENT							
NO1	**Road S319 – Erba to Wuwei Road Section**						
	NO1-1	Road section K0+000 – K18+000 Subgrade, bridges & culverts, pavement, transport safety facilities, etc.	57.37	ICB	N	06/2014	• Multiple contracts • Retroactive Financing for N01-3/ • Advance contracting (proposed)
	NO1-2	Road section K18+000 – K30+800 Subgrade, bridges & culverts, pavement, transport safety facilities, etc.	40.80				
	NO1-3	Road section K30+800 – K36+256 Subgrade, bridges & culverts, pavement, transport safety facilities, Xihe Bridge, etc.	39.00				
NO2	**Road G206 –Dongliu to Yaodu**						
	NO2-1	Road section K0+000 – K9+900 Subgrade, bridges & culverts, drainage protection, etc.	39.78	ICB	N	01/2014	• Multiple contracts • Retroactive Financing for N02-1 and N02-2 / Advance contracting (proposed)
	NO2-2	Road section K9+900 – K15+714 Subgrade, bridges & culverts, drainage protection, etc.	41.74				
	NO2-3	Road section K0+000 – K16+500 Pavement,transport facilities, afforestation, etc.	23.31			03/2014	
NO3	**Yimu Highway – Kedian (Nanling County) to Mujiating**						
	NO3-1	Road section K12+400 – K22+200 Subgrade, bridges & culverts, pavement, transport safety facilities, etc.	40.92	ICB	N	06/2014	• Multiple contracts • Advance contracting (proposed)
	NO3-2	Road section K22+200 – K34+760 Subgrade, bridges & culverts, pavement, transport safety facilities, etc.	40.20				
NO4	**Road S367 - Ma'anshan Section**						
	NO4-1	Road section K0+000 – K17+900 Subgrade, bridges & culverts, pavement, transport safety facilities, etc.	21.79	ICB	N	09/2014	• Multiple contracts • Advance contracting (proposed)
	NO4-2	Road section K17+900 – K37+537 Subgrade, bridges & culverts, pavement, transport safety facilities, etc.	19.36				
	NO4-3	Road section K37+537 – K46+874 Subgrade, bridges & culverts, pavement, transport safety facilities, etc.	10.51				
WATERWAY COMPONENT							
HD	**Waterway Dredging & Bank Retaining Works**						
	HD-1	Section K0 – K33 Mud dredging in the water, earthworks on the land, bank retaining, anchor area, etc.	17.63	ICB	N	08/2014	• Multiple contracts • Advance contracting (proposed)
	HD-2	Section K33 – K44 Mud dredging, cofferdam, bank retaining, anchor area, etc.	13.04				

Package	Contract No	General Description	Contract Value ($ million)	Procu-rement Method	Prequali-fication of Bidders (Y/N)	Adverti-sement Date	Comments
ZS	**Low gated Dam (Shiplock)**						
	ZS-1	Ship Lock:Hydraulic structure, earthwork project, sluice valve, etc	13.69	ICB	N	12/2014	
ZD	**Low Gated Dam (Rubrer Dam)**						
	ZD-1	Rubber Dams:Hydraulic structure, earthwork project, fabrication and installation of Rubber dam bags	5.54	NCB	N	12/2014	
QL	**Bridge Project**						
	QL-1	Bridges & connecting works (including dismantling of old bridges, temporary bridges & roads, etc)	5.66	NCB	N	08/2014	• Retroactive Financing/ Advance contracting (proposed)
GW1	**Port Project 1**						
	GW1-1	Dock platform, car approach bridge, etc	4.04	NCB	N	05/2014	
GW2	**Port Project 2**						
	GW2-1	Road, storage yard,building, drainage,afforestation, etc.	13.45	ICB	N	05/2014	

A.4. Goods/Equipment Contracts

4. The following table lists goods and equipment contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

Table A1.5: Contracts of Goods and Equipment

Package	Contract No	General Description	Contract Value ($ million)	Procu-rement Method	Adverti-sement Date	Comments
WATERWAY COMPONENT						
HS	**Signage**					
	HS-1	Section K0 – K44 Project of navigation signage	0.49	NCB	02/2015	
ZH	**Low Gated Dam (Hoists)**					
	ZH-1	Procurement & installation of hoists	0.82	NCB	12/2014	
ZE	**Low Gated Dam (Electric Monitoring Equipment**					
	ZE-1	Procurement & installation of electric, monitoring equipment	0.82	NCB	06/2015	
GE	**Port Project**					
	GE-1	Procurement & installation of cargo work machinery, electric equipment, etc	2.91	ICB	08/2014	
INTELLIGENT SHIPPING COMPONENT						
HY	**Chaohu Intelligent Shipping**					
	HY-1	Hardware equipment and software development of intelligent shipping	0.40	NCB	06/2014	

A.5. Consulting Services Contracts

5. The following table lists consulting services contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

Table A1.6: Contracts for Consulting Services

Pac-kage	General Description	Contract Value ($)	Recruitment Method[1]	Advertisement Date (quarter/year)	International or National Assignment	Comments
CS.1	Road Safety Audits	100,000	CQS	02/2014	National	Retroactive Financing (proposed)
CS.2	Intelligent Shipping Systems	150,000	ICS	04/2014	International	

B. National Competitive Bidding

6. The Borrower's Law of Tendering and Bidding of the People's Republic of China promulgated by Order No. 21 of the President of the People's Republic of China on August 30, 1999, are subject to the following clarifications required for compliance with the Guidelines:

(i) All invitations to prequalify or to bid shall be advertised in the national press, or official gazette, or a free and open access website in the Borrower's country. Such advertisement shall be made in sufficient time for prospective bidders to obtain prequalification or bidding documents and prepare and submit their responses. In any event, a minimum preparation period of thirty (30) days shall be given. The preparation period shall count (a) from the date of advertisement, or (b) when the documents are available for issue, whichever date is later. The advertisement and the prequalification and bidding documents shall specify the deadline for such submission.

(ii) Qualification requirements of bidders and the method of evaluating the qualification of each bidder shall be specified in detail in the bidding documents, and in the prequalification documents if the bidding is preceded by a prequalification process.

(iii) If bidding is preceded by a prequalification process, all bidders that meet the qualification criteria set out in the prequalification document shall be allowed to bid and there shall be no limit on the number of pre-qualified bidders.

(iv) All bidders shall be required to provide a performance security in an amount sufficient to protect the Borrower/Project Executing Agency in case of breach of contract by the contractor, and the bidding documents shall specify the required form and amount of such performance security.

(v) Bidders shall be allowed to submit bids by mail or by hand.

(vi) All bids shall be opened in public; all bidders shall be afforded an opportunity to be present (either in person or through their representatives) at the time of bid opening, but bidders shall not be required to be present at the bid opening.

(vii) All bid evaluation criteria shall be disclosed in the bidding documents and quantified in monetary terns or expressed in the form of pass/fail requirements.

(viii) No bid may be rejected solely on the basis that the bid price falls outside any standard contract estimate, or margin or bracket of average bids established by the Borrower/Project Executing Agency.

(ix) Each contract shall be awarded to the lowest evaluated responsive bidder, that is, the bidder who meets the appropriate standards of capability and resources and whose bid has been determined (a) to be substantially responsive to the bidding documents and (b) to offer the lowest evaluated cost. The winning bidder shall not be required, as a condition of award, to undertake responsibilities for work not stipulated in the bidding documents or otherwise to modify the bid as originally submitted.

(x) Each contract financed with the proceeds of the Loan shall provide that the suppliers and contractors shall permit ADB, at its request, to inspect their accounts and records relating to the performance of the contract and to have said accounts and records audited by auditors appointed by ADB.

(xi) Government owned enterprises in the Borrower's country may be permitted to bid if they can establish that they (a) are legally and financially autonomous, (b) operate under commercial law and (c) are not a dependent agency of the Borrower/Project Executing Agency.

(xii) Re-bidding shall not be allowed solely because the number of bids is less than three (3).

C. Consultant's Terms of Reference

7. Consulting services will be required the following services below. Outline terms of reference (TOR) for all consulting services are provided in Appendix 2. During implementation, EA will provide detailed TOR as required by the request for expressions of interest and request for proposals.

8. The intelligent shipping component will be implemented in 2 phases:
   (i) Phase 1 – consultancy
   (ii) Phase 2 – application of the recommendations of the consultancy

9. The resource allocation for consulting services is as follows:

Table A1.7: Resource Allocation for Consulting Services

Institutional Capacity Building	**ADB US $ ('000)**	**Govt US $ ('000)**
Intelligent Shipping Consultancy (International)	150	
Intelligent Shipping Consultancy (Domestic)		150
Road Safety Audits	100	
Overseas training	500	
Domestic Training		200
Total	750	350

Note: The Consultancy funded through domestic funds will be undertaken by China Waterborne Transport Research Institute. The ADB funded component will be used to hire an international individual consultant to assist the work of the Research Institute.

10. The procurement of consulting services will be implemented as follows:

Table A1.8: Contract Value Consulting Services

General Description	Contract Value($)	International or National Assignment
Road Safety Audits	100,000	National
Intelligent Shipping Systems	150,000	International

11. **Capacity Building – Management and Technical Training and Domestic Training.** The capacity building component will support overseas management and technical training and domestic training in the following areas. Participants in the trainings and studies will be from APDOT, Foreign Fund Project Management Office (PMO) of APDOT, Anhui Provincial Highway Administration Bureau (AHAB), Anhui Port and Shipping Administration Bureau (APPSAB), APPSCIG, city & county governments where highway projects located, project implementation agencies and other project-related key members.

Table A1.9: Cost of Capacity Building

Management and Technical training (US $)	**500,000.0**
Highway Environmental Management	68800.0
Road Safety Management	68800.0
Highway Planning & Design	56000.0
Traffic Engineering Management	68800.0
Financial Management	68800.0
Waterway Information Management	81600.0
Port and Shipping Planning & Design	68800.0
Navigation Safety & Environmental Management	12800.0
Contingency	5600.0
Domestic training (US $)	**200,000.0**
Project Management	16303
Maintenance Management	13043
Resettlement	13043
Environmental Protection	22010
Highway & Bridge Engineering	13858
Road Safety	13043
Traffic Engineering	24455
Financial Management	31792
Port and Shipping Engineering	8152
Quality Supervision & Inspection	17934
Waterway Traffic Safety Management	19564
Transport Management	6805

Source: Asian Development Bank.

OUTLINE TERMS OF REFERENCE

1. All consultant services for the Intelligent Shipping Systems and the Road Safety Audits will be engaged in accordance with *ADB's Guidelines on the Use of Consultants* (2013, as amended from time to time).

A. Intelligent Shipping System (5 person-months, National)

2. **Objective.** To mobilize specialist internationals with expertise to advise the China Waterborne Transport Research Institute (the Institute) on prevailing best international practices related to (i) Automatic river traffic data collection systems, (ii) Search and rescue, and (iii) water pollution monitoring systems.

3. **Scope of Services.** In the performance of their services the individual Consultants will research and advise on international best practice and system design and develop the following deliverables:

(i) Define system performance requirements and develop a Specification for the automatic river traffic data collection system. It is expected that the system will feature fixed video surveillance at the locks where access to the lake is controlled. The software system will assign codes to individual vessels and facilitate the collection of accurate origin and destination information. Provide assistance as required in the preparation of procurement documents.
(ii) Advise on organizational arrangements, equipment and resource requirements for the establishment of a modern and efficient search and rescue system for Chaohu Lake and its tributaries.
(iii) Design and specify a water pollution monitoring system suited to the Chaohu Lake. Provide assistance as required in the preparation of procurement documents.
(iv) Conduct a training needs analysis for the relevant authorities and make recommendations on suitable and available overseas training and capacity building initiatives.

4. The following table enumerates the international consultancy budget:

Table A2.1: International Consultancy Budget

Items		**Amount** (USD)
1.	Travel for site visits	30,000
2.	Seminar budget for inception and final report discussions and interim meetings	20,000
3.	International expert remuneration （USD 20,000*5 month）	100,000
	Total	**150,000**

5. The following table enumerates the implementation budget:

Table A2.2: Implementation Budget

Items	**Amount** (USD)
1. Smart Video Flow Statistics System for Vessels through Chaohu Lock	150,000
2. Chaohu Water Quality Monitoring System	130,000
3. Search and Rescue management system	120,000
Total	**400,000**

B. Road Safety Audits (1 international consultant, 6 person-months). The international Road Safety Auditor's main assignment is to conduct road safety audits for all the roads in the project and should be done according to PRC regulations and ADB Road Safety Audit for road projects – An International Toolkit.

C. Terms of Reference External Monitor – Included in Resettlement Plan Budget

6. .According to ADB's SPS 2009 on involuntary resettlement, the resettlement work of this project will be subject to external M&E. The monitoring will ensure that the resettlement processes are being implemented in accordance with the requirements set out in the RP. The external M&E will also undertake an evaluation of changes in peoples' standard of living as a result of the project and project-related LAR activities. A terms of reference is drafted and a firm/institute with 8-10 years of relevant social and resettlement experience will be engaged under national competitive bidding.

7. M&E reports are submitted to ADB and APDOT regularly twice a year during the implementation period and once a year following LAR completion. Through external M&E, ADB and the EAs can fully understand if the LAR work is implemented on schedule and according to the quality standard, point out existing issues, and propose suggestions for improvement and whether IR objectives have been met.

8. **Scope and Methods of External Monitoring**

1. Baseline survey

9. The external monitoring agency will undertake a baseline survey of the villages affected by land acquisition in the project, and collect baseline data on the production level and standard of living of the displaced households (standard of living, production, and income levels). The survey of production level and standard of living will be conducted semiannually to track variations. The survey methods include follow-up survey of sample households (minimum sample size: 10% of households affected by land acquisition, 20% of households affected by house demolition, 50% of affected villages; the households will be sampled randomly). A statistical analysis will be made on this basis for evaluation.

2. Regular monitoring and evaluation

10. During the RP implementation, the external monitoring agency will perform regular follow-up resettlement monitoring of the following activities twice a year through field observation, follow-up survey of the sample households, and random interview with the displaced persons. The external monitoring agency will monitor:

(i) the progress of disbursement of compensation for LAR and house demolition;
(ii) the progress of selection and preparation of resettlement sites including provisions for civic amenities; construction of new houses and adequacy of construction;
(iii) institutional capacity of the resettlement office —– adequate trained staffing, office space and equipment, and provisions for ongoing training;
(iv) financial capacity of the PMO, particularly the budgetary arrangements and cash flow for resettlement activities;
(v) the process of public participation and consultation, ensuring that the public participation and consultation schedule is being followed and outcomes are being incorporated in resettlement implementation process;
(vi) the functioning of the GRM;
(vii) the progress of livelihood rehabilitation plans and training, restoration of productive assets and livelihood systems;
(viii) rehabilitation of affected shops;
(ix) that the vulnerable groups are being provided support in accordance to the criteria set out in the RP;
(x) the progress of restoration and reconstruction of infrastructure and special facilities;
(xi) implementation schedule for the RP activities; and
(xii) the overall RP implementation process and if any significant involuntary resettlement are identified, the agency will prepare a corrective action plan to address such issues.

11. In addition, the External Monitor will be responsible for verifying the internal monitoring reports of IA on implementation and progress of the RP and SDAP, and will include the findings semiannually for the RP implementation and annually for the SDAP implementation. The monitoring reports of these activities will be summarized in the quarterly project progress reports prepared by the IA.

12. On the basis of the baseline survey, the external M&E agency will evaluate the project impacts and will provide a “before” and “after” project comparative analysis.

3. Monitoring indicators

13. The following indicators shall be monitored and evaluated in accordance with principles, entitlements, and rehabilitation strategies/plans set out in the RP:

(i) Progress: including preparation, implementation of land acquisition, house demolition, resettlement site construction, housing relocation and rehabilitation of livelihoods and living conditions;
(ii) Quality: including resettlement implementation, civil construction quality, timeliness, minimal disturbance/inconvenience and transition time, and degree of APs’ satisfaction;
(iii) Entitlements: timely allocation of full compensation entitlements and proper and timely use of funds, and adequate and timely availability of funds for resettlement site construction;
(iv) Economic/income conditions: household economic development before and after resettlement, including assets, production materials, subsistence materials, income, savings and debts, income generation potential, etc;

(v) Living conditions: living environment before and after resettlement, including traffic, education, sanitation, social services, commercial service facilities, etc. in the new resettlement sites;
(vi) Livelihood/employment: change in livelihood (income sources) and employment, including employment rate, assistance to the different APs, especially for women, and vulnerable APs, and seriously-affected households, such as those at risk of impoverishment due to land loss or housing loss;
(vii) Community development: local economy in resettlement sites, environmental development, neighborhood relations and safety, and public opinions (by gender and age groups) after resettlement; and
(viii) Conditions of the vulnerable groups and seriously-affected households: including before and after situations of those people.

4. Monitoring and evaluation method

14. The external M&E agency will use both quantitative and qualitative methods to undertake the M&E such as:

(i) Surveys – questionnaire based surveys based on random sampling with a minimum sample size of 10% of households affected by land acquisition, 20% of households affected by house demolition and 50% of the affected villages;
(ii) Qualitative interviews and focus group discussions – with project affected persons, village and community representatives, officials in PMO and other government departments that are involved in the resettlement process; and
(iii) Along with written materials, photos, audio and video records, real objects shall also be used.

5. Reporting

15. The RP monitoring report will include:

(i) Findings and conclusion of investigations and evaluation for items under para 8 of this ToR,
(ii) Major problems identified (existing and potential),
(iii) Recommended mitigation or prevention measures which need to be taken, and
(iv) Assessment of previous follow-up actions.

16. Reports will be submitted to ADB every 6 months during the resettlement implementation. After the LAR activities are completed, annual evaluations will be conducted for 2 years, or until all issues have been successfully resolved. The final evaluation report should summarize monitoring results and should clearly establish whether resettlement has been successfully completed.

17. All reports will be provided in English and Chinese. It should be ensured that information on the progress and status on all aspects of LAR activities will be provided by each IA to the external monitor for verification, including records of grievances.

18. Reporting on SDAP. Additionally, the external monitor will also be responsible for verifying and reporting on the implementation of the SDAP on annual basis. The external monitor will ensure that the IA has been collecting the relevant data and including this in the

quarterly progress reports. The external monitor will review and verify these reports and submit an annual report on the implementation of the SDAP.

6. Consultant specifications and inputs

19. The specialist shall have a degree in a relevant subject (sociology, anthropology, or related subject) with 10 years experience in M&E of projects funded by ADB or similar international development funding agencies. The consultant's inputs will be spread intermittently over the life of the project for a total of 12 months

20. M & E Budget and Financing. Each of 5 IAs will engage an external monitor and the budget for external monitoring has been included in the resettlement budget of each RP.

ENVIRONMENTAL MANAGEMENT PLAN

January 2014

People's Republic of China: Anhui Intermodal Sustainable Transport Project

Prepared by the Anhui Provincial Government for the Asian Development Bank (ADB). This is a final version of the draft originally posted in July 2013 available at http://www.adb.org/projects/450221-002/documents

LIST OF ABBREVIATIONS

ADB	Asian Development Bank
APDOT	Anhui Province Department of Transport
APEPD	Anhui Province Environmental Protection Department
APHAB	Anhui Province Highways Administration Bureau
APPSAB	Anhui Province Port Shipping Administration Bureau
APPSCIG	Anhui Province Ports and Shipping Construction Investment Group
DMF	Design and monitoring framework
EA	Executing Agency
EIA	Environmental impact assessment
EIR	Environmental impact report
EMP	Environmental management plan
EMS	Environmental monitoring station
EPB	Environmental Protection Bureaux
ESE	Environmental supervision engineer
FSR	Feasibility study report
GRM	Grievance redress mechanism
IA	Implementing Agency
LPMO	local project management office
MEP	Ministry of Environmental Protection
MEPB	Municipal Environmental Protection Bureau
MG	Municipal government
NOx	Nitrogen oxides
O&M	Operation and maintenance
PAM	Project administration manual
PME	Powered mechanical equipment
PPMO	provincial project management office
PPTA	Project preparation technical assistance
PRC	People's Republic of China
RP	Resettlement plan
SO2	Sulphur dioxide
SPS	Safeguard policy statement
SS	Suspended solids
TSP	Total suspended particulates (dust)
XPSAB	Xuancheng Port and Shipping Administration Bureau

Units

CNY1 = USD 0.16415

USD 1 = CNY6.0919

ENVIRONMENTAL MANAGEMENT PLAN

I. Introduction

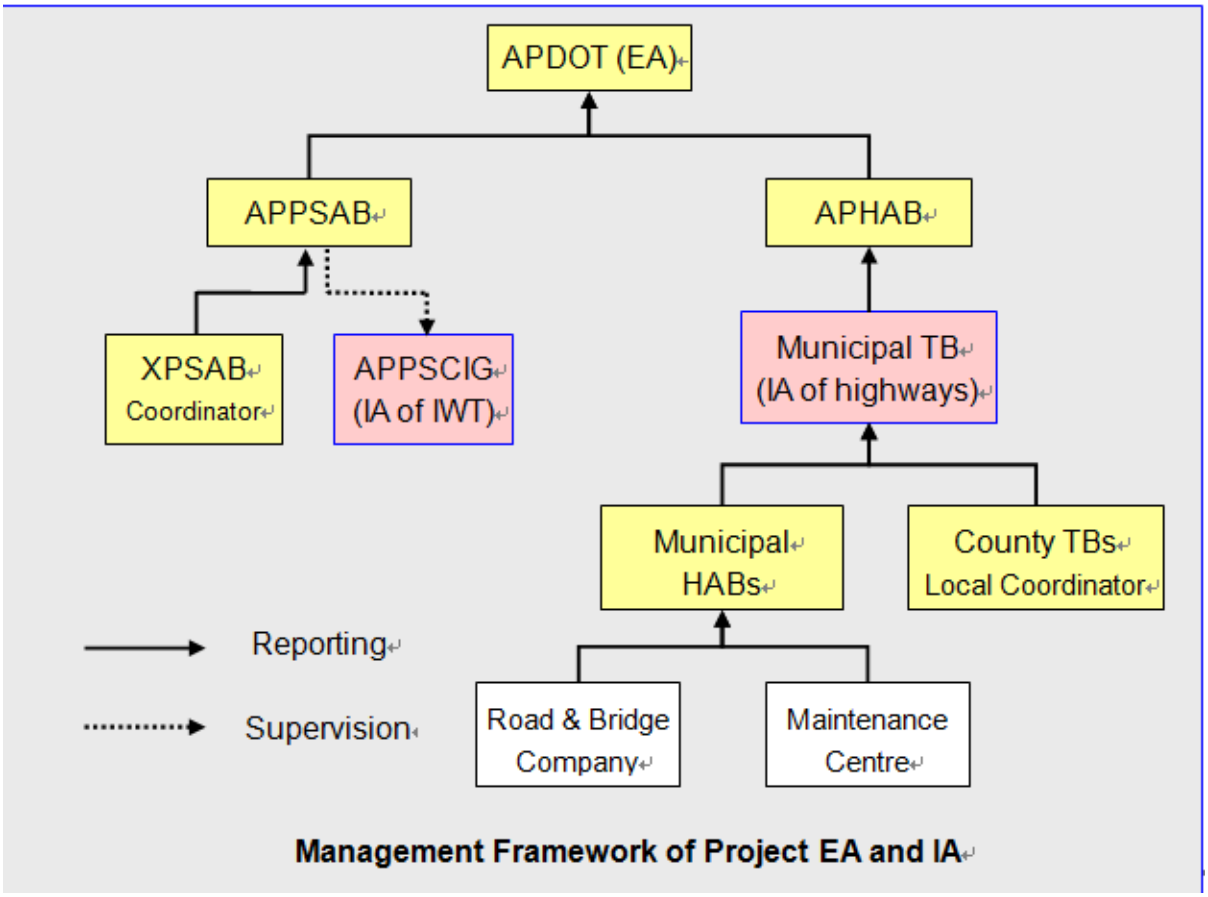
1. This Environmental Management Plan (EMP) has been developed for the Anhui Inter-Modal Transport Project (the Project) and defines all potential impacts of the project components and the mitigation and protection measures with the objective of avoiding or reducing these impacts to acceptable levels. The EMP also defines the institutional arrangements and mechanisms, the roles and responsibilities of different institutions and procedures and budgets for implementation of the EMP. The EMP seeks to ensure effective implementation of environmental protection activities during preconstruction, construction, and operation in order to prevent, reduce, or mitigate adverse impacts and risks. The EMP draws on the findings of the project EIA, the domestic EIR, PPTA and ADB review mission discussions and agreements with the relevant government agencies.

2. The EMP will be reviewed and updated at the end of the detailed design in order to be consistent with the final technical design. The updated EMP will be disclosed on the ADB project website and included in the Project Administration Manual (PAM). The updated EMP will also be included as a separate annex in all bidding and contract documents. The contractors will be made aware of their obligations to implement the EMP and to budget EMP implementation costs in their proposals.

3. Environmental monitoring results will be used to evaluate (i) the extent and severity of actual environmental impacts against the predicted impacts, (ii) the performance of the environmental protection measures and compliance with regulations, (iii) overall effectiveness of the project EMP; and (iv) need for adjustment of the project EMP.

II. Institutional Responsibilities related to EMP implementation

4. As **Executing Agency** (EA), the Anhui Province Department of Transport (APDOT) will be responsible for the overall implementation and compliance with loan assurances and the EMP (including the Environmental Monitoring Plan). The APDOT has two subordinate divisions, the Anhui Province Port Shipping Administration Bureau (APPSAB) and the Anhui Province Highways Administration Bureau (APHAB).



Management Framework of Project EA and IA

5. The APDOT has established a **Provincial Project Management Office (PPMO)**, which will have an over-arching responsibility, on behalf of the EA, for the management of the various subprojects. The PPMO has overall responsibility delegated by the EA for supervising the implementation of environment mitigation measures, coordinating the project level Grievance Redress Mechanism (GRM) and reporting to ADB. The PPMO will engage the technical engineering design institutes, project implementation consultants, and manage the procurement process.

6. The APDOT PPMO will appoint one environment specialist on its staff to supervise the effective implementation of the EMP and to coordinate the project level GRM. They will also appoint a single company through competitive tendering to undertake the environmental supervision for all the subprojects ('Environmental Supervision Engineer') to ensure consistency in environmental management and monitoring. The APDOT will also appoint local Environmental Monitoring Stations (EMS) to undertake environmental quality monitoring for the subprojects according to the environmental monitoring plans (as set out in Tables A.11a-f).

7. To ensure that the contractors comply with the EMP provisions, the PPMO and staff environmental specialist, with the help and technical support of Environmental Supervision Engineer (ESE), will prepare and provide the following documents for incorporation into the

bidding procedures: (i) a list of environmental management requirements to be budgeted for by the bidders in their proposals; (ii) environmental clauses for contractual requirements; and (iii) major items in the EIA and EMP.

8. APDOT will prepare quarterly project progress reports (that include an environment section) and semi-annual environment monitoring reports for submission to ADB. The ESE will support the APDOT and IA staff environmental specialists with the preparation of these reports.

9. **Implementing Agencies (IA).** The IAs will assume the debt servicing responsibility as the end-user of the ADB loan. They will implement project components, administer and monitor contractors and suppliers, and be responsible for construction supervision and quality control, and will establish Local Project Management Offices (LPMOs). The IA LPMOs will ensure that the EMP is implemented proactively and respond to any adverse impacts beyond those foreseen in the EIA. The IA LPMOs will also attend to requests from relevant agencies and ADB regarding the mitigation measures and monitoring program.

10. There will be five IAs as shown in **Table A3.1**. The Anhui Province Ports and Shipping Construction Investment Group Co. Ltd (APPSCIG) will act at the IA for the Shuiyang River Inland Waterway Project and Xuanzhou Multi-purpose Port. Four city or county level transport bureau or highway administration bureau will be the IAs for the four highway subprojects. Each of these five IAs will establish an LPMO which will assign one environment specialist on its staff to (i) supervise contractors and ensure compliance with the EMP; (ii) conduct regular site inspections; (iii) coordinate environmental quality monitoring in compliance with the approved monitoring plan[29]; (iv) act as local entry point for the project grievance redress mechanism (GRM); (vi) submit quarterly monitoring results to the contractors for information, and to the PMO and the province and local EPBs for verification and confirmation.

Table A3.1: Summary of responsibilities

Scheme	Jurisdiction	IA	EPA
SRWIP and Xuanzhou Port	Xuancheng City	APPSCIG	APEPD
S367 Ma'anshan City North Corridor	Hanshan County Hexian County	Ma'anshan City Highway Administration Bureau	Ma'anshan Municipal EPB
Yimu Highway Kedian to Mujiating Section	Nanling County	Nanling County Transport Bureau	Wuhu Municipal EPB
S319 Erba to Wuwei Section	Wuwei County	Wuwei County Transport Bureau	Wuhu Municipal EPB
G206 Dongliu-Yaodu Section	Dongzhi County	Chizhou City Highway Administration Bureau	APEPD

Note: EPA = Environmental Protection Authority, APEPD = Anhui Province Environmental Protection Department, EPB = Environmental Protection Bureau.

11. **Construction contractors** will be responsible for implementing the mitigation measures during construction under supervision of the IA LPMOs and the APDOT PPMO. In their bids,

[29] The Environmental Monitoring Stations have not yet been appointed and will be selected through tendering.

contractors will be required to respond to the environmental management requirements defined in the EMP. Each contractor will be required to develop site specific EMPs and will assign a person responsible for environment, health and safety. After construction completion, environmental management responsibilities will be handed over to the IAs.

12. **Environmental Supervision Engineer (ESE).** The ESE will report directly to the APDOT staff environmental specialist and PPMO and support them in the project with (i) project preparation, including EMP update; (ii) EMP training, (iii) semi-annual EMP compliance verification; (iv) inputs for quarterly project progress reports and semi-annual environment monitoring reporting; (v) identifying environment-related implementation issues and necessary corrective actions to be reflected in an action plan; and (v) undertaking site visits as required. The ESE will:

i. assess environmental readiness of the project components prior to implementation based on the readiness indicators defined in Table A.3;

ii. support APDOT PMO in updating the EMP including monitoring plan to revise or incorporate additional environmental mitigation and monitoring measures, budget and institutional arrangements that may be required based on the detailed design; submit to ADB for approval and disclosure; ensure compliance with the PRC's environmental laws and regulations, ADB's Safeguard Policy Statement (2009) and Public Communications Policy (2011), and the World Bank Group's Environmental, Health and Safety Guidelines;

iii. support the IA LPMOs, APDOT PPMO and procurement companies in preparing tender documents; ensure that the bidding documents and civil works contracts contain provisions requiring contractors to comply with the mitigation measures in the EMP and that relevant sections of the project EMP (or updated EMP, if prepared) are incorporated in the bidding and contract documents;

iv. assist the IA LPMOs, APDOT PPMO and contractors to establish a Grievance Redress Mechanism (GRM), and provide training for the GRM access points;

v. conduct regular EMP compliance assessments, undertake site visits as required, identify any environment-related implementation issues, propose necessary corrective actions, reflect these in a corrective action plan;

vi. assist the APDOT PPMO in preparing semi-annual environmental monitoring and inputs for quarterly project progress reports for ADB;

vii. provide training to the IA LPMOs, APDOT PPMO and contractors on environmental laws, regulations and policies, SPS 2009, EMP implementation, and GRM in accordance with the training plan defined in the EMP; and

viii. assist the APDOT PPMO in conducting consultation meetings with relevant stakeholders as required, informing them of imminent construction works, updating them on the latest project development activities, GRM and environmental quality monitoring work.

13. Overall environmental responsibilities are outlined in **Table A3.2**.

Table A3.2: Environmental Responsibility

Phase	Responsible Agency	Environmental Responsibility
Project preparation	Design Institutes on behalf of APDOT PPMO	Prepare project Feasibility Study Reports (FSRs), EIR and EMP, Resettlement Plans (RPs), conduct public consultation
	APEPD and Municipal EPB	Review and approve the project EIR and EMP
	PPTA consultant	Provide technical assistance, review EIR, prepare EIA report
	ADB	Review and approve the EIA and EMP and disclose
	APDOT	Recruit ESE through competitive tendering
Engineering detail design	Design Institutes on behalf of APDOT PPMO	Incorporate mitigation measures defined in the EMP into engineering detailed designs; Update the EMP in cooperation with the APDOT PPMO and ESE.
	APDOT PPMO	Recruit ESE through competitive tendering
	APDOT PPMO, ESE	Review updated EMP, confirm that mitigation measures have been included in engineering detail design.
	ADB	Approve updated EMP and disclose.
Tender & contracting	APDOT PPMO, ESE	Incorporate EMP clauses in tender documents
	APDOT PPMO	Recruit one environmental monitoring station(s) through tendering
	Contractors	Prepare tenders for the construction contracts, to include staffing and costs for environmental management to comply with the EMP
	ADB, APDOT PPMO, ESE	Review bidding documents; confirm project's readiness
Construction	Each IA	Establish an LPMO who appoints one staff environment specialist; supervises contractors and ensures compliance with the EMP; approves method statements; coordinates construction supervision and quality control; coordinates periodic environmental quality monitoring in compliance with the approved monitoring plan; acts as local entry point for the project grievance redress mechanism (GRM); submits quarterly monitoring results to APDOT PPMO.
	APDOT PMO	Appoint one staff environment specialist; supervise the effective implementation of the EMP; coordinate the project level GRM; prepare quarterly project progress and semi-annual environment progress reports and submit them to ADB; conduct public consultation and inspect implementation of mitigation measures.
	ESE	Advise on the mitigation measures; provide comprehensive technical support to PPMO and APDOT for environmental management; assist with preparation of tender/contract documents; conduct training; conduct semi-annual EMP compliance review; prepare corrective action plans; support PPMO in preparing quarterly project progress reports and semi-annual environmental progress reports for ADB. Review domestic environmental acceptance reports and prepare environmental completion report.
	Contractors	Assign EMP implementation responsibilities; ensure health and safety; implement mitigation measures; prepare method statements
	EMSs (contracted by APDOT)	Undertake environmental quality monitoring
	APEPD and local EPBs depending on the subproject	Conduct periodic inspections of all construction projects relative to compliance with PRC regulations and standards.
	ADB	Review quarterly project progress reports, semi-annual

Phase	Responsible Agency	Environmental Responsibility
		environmental monitoring reports and completion report. Undertake review missions. Advise on compliance issues, as required. Disclose semi-annual environmental monitoring reports on ADB project website.
Operation	O&M Units	Ensure proper operation of component facilities according to design standards, implement mitigation measures and conduct post-construction public consultation.
	APDOT PMO, ESE	Conduct EMP compliance review, instruct APDOT and O&M units on environmental management requirements; prepare quarterly project progress reports and semi-annual environmental monitoring report for first year of operation Coordinate environmental quality monitoring
	EMSs (contracted by ADPOT)	Undertake environmental quality monitoring for the first year of operation
	APEPD and local EPB	Undertake periodic and random environmental monitoring and inspect environmental compliance with PRC regulations and standards.

Notes: **ADB** = Asian Development Bank; **EMS** = Environment Monitoring Station; **ESE** = Environmental Supervision Engineer **APEPD** = Anhui Province Environmental Protection Department; **O&M Units** = Operation and Maintenance Units; **APDOT** = Anhui Province Department of Transport; PPMO = Project Management Office, LPMO = Local Project Management Office.

III. Summary of Potential Impacts and Mitigation Measures

14. General environmental management measures are presented in **Table A3.3**. Potential environmental issues and impacts during the pre-construction, construction and operation phases, as identified in the EIA as well as corresponding mitigation measures designed to minimize the impacts are summarized in **Table A3.4** for the Shuiyang River Improvement Scheme and Xuanzhou Multi-purposed Port and in **Tables A3.5 to 8** for the Highway Subprojects.

15. Mitigation and safeguard measures that will permanently become part of the infrastructure such as landscape planting, road signage and markings should be included within the main civil work contract costs and are not double-counted as part of the EMP costs.

16. The EMP includes costs for temporary construction mitigation measures such as dust suppression. These measures need to be included in the tender documents to ensure they are included in contractor estimations. Estimates for these budgets are provided in **Tables A.9a** and **A.9b** based on costing information provided in the domestic EIRs. Those costs that should have been included in the infrastructure engineering costs such as re-vegetation and landscaping of temporary land take areas were not included in the EMP costs to avoid double counting. The domestic EIRs also included estimated costs for soil and water conservation measures at approximately $4.13 million, which are separately itemized in this report and not grouped under environmental mitigation costs (see Table A.17).

17. The mitigation measures defined in the EMP will be (i) checked and where necessary updated by the design institutes; (ii) incorporated into tender documents (where appropriate), construction contracts, and O&M manuals; and (iii) implemented by contractors, specialist environmental personnel and APDOT and IAs under supervision of the PPMO and relevant LPMOs. The effectiveness of these measures will be evaluated based on the results of the environmental quality monitoring conducted by the EMSs, and through EMP compliance verification conducted by the PPMO and ESE.

Table A3.3: Generic Impacts and Mitigation Measures Item

	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
Detailed Design Stage					
See Project Specific EMPs		Ensure that the mitigation measures are adopted in detailed design	● APDOT PPMO to appoint ESE	APDOT PPMO	ADB
Pre-construction Phase					
Institutional strengthening	-	Lack of environment management capacity within APDOT PPMO	● Appoint one qualified environment specialists to APDOT PPMO. ● Appoint one Environmental Monitoring Station to conduct environment quality monitoring during construction stage. ● ESE to conduct first phase of environment management training for APDOT PPMO staff and environmental specialists. ● ESE to conduct environmental management training for contractors	APDOT PPMO	ADB
	-	Lack of environment management and monitoring capacity within IA LPMOs	● Each IA establishes LPMO and appoints one qualified environmental specialist. ● ESE to conduct initial environment management training for the IA LPMOs. ● ESE to provide follow on training.	APDOT PMO, ESE	ADB
EMP update	-	-	● Review mitigation measures defined in the EMP. ● Update as required to reflect detailed design. ● Submit to ADB/PPMO for approval and disclose updated EMP on project website. ● Prepare an environmental compliance monitoring plan to meet the environmental requirements in the EIA and EMP.	APDOT PPMO, ESE	MG, ADB
Grievance redress mechanism	Social & environmental	Handling and resolving complaints by contractors	● Establish a GRM, appoint a GRM coordinator within APDOT PPMO, each IA LPMO and each	APDOT PPMO, ESE, MHAB,	ADB

	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			contractor. ● Brief and provide training to GRM access points. ● Disclose GRM to affected people before construction begins at the main entrance to each construction site.	NCTB, WCTB, CHAB, Contractor	
Tender documents		Environmental and social impacts	Ensure that the construction-related environmental and social mitigation measures are incorporated into the tender documents. This should include a clause to employ a proportion of locally sourced workforce.	Design Institute	APDOT PPMO, ESE
Construction traffic	Traffic	Construction vehicles causing traffic congestion	● Plan transport routes for construction vehicles. ● Specify approved routes in the tender documents and forbid vehicles from using other roads especially during peak traffic hours. ● Inform drivers of haulage routes ● Separate construction traffic from pedestrians. Do not allow local villages to walk through construction sites.	Design Institute, Local traffic police	APDOT PPMO, ESE
Construction Stage					
Construction site good practice	Soil resources	Soil stripping	● Strip topsoil and subsoil and store the soil horizons separately, protecting the top soil for reuse in restoration. ● Stockpiles are not to exceed 2m with side slopes at the natural angle of repose. ● Topsoil to be stored for a long time may be seeded with grass. ● Windbreaks and tarpaulins may be used to reduce windblown dust and erosion of the stockpile.	Contractors	APDOT PPMO, APPSCIG, MHAB, NCTB, WCTB, CHAB, ESE, APEPD / local EPB

	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
	Soil resources	Soil erosion	● Ensure contractors are aware of all soil erosion requirements as set out in the approved Water and Soil Conservation Plans and have developed appropriate method statements and management proposals. ● Where possible, avoid construction during periods of high rainfall. If necessary, construct berms to direct rainwater runoff away from exposed surface. ● Install drainage ditches and sedimentation pits in temporary construction areas to prevent soil erosion and to manage site run-off. ● Stabilise all cut slopes, embankments and other erosion-prone working areas while works are ongoing. Implement permanent stabilisation measures as soon as possible, at least within 30 days. ● Pay close attention to drainage provision and establishment of vegetation cover on backfilled areas to prevent soil erosion. ● If restoration is carried out during periods of hot or extreme weather, ensure adequate aftercare to maximise survival of plants.	Contractors	APDOT PPMO; APPSCIG; MHAB, NCTB, WCTB, CHAB, ESE, APEPD / local EPBs
	Soil resources	Soil contamination	● Properly store petroleum products, hazardous materials and wastes on an impervious surface and preferably with a tray or bund to contain any leaks. ● Develop spill response plan. Keep a stock of absorbent materials (e.g. sand, earth or commercial products) on site to deal with spillages	Contractor	APDOT PPMO; APPSCIG, MHAB, NCTB, WCTB, CHAB, ESE; EPBs

	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			and train staff in their use. ● If there is a spill, take immediate action to prevent pollution entering drains, watercourses, unmade ground or porous surfaces. Do not hose the spillage down or use any detergents. Use oil absorbents and dispose of used absorbents at a licensed waste management facility. ● Record any spill events and actions taken in environmental monitoring logs and report to ESE; and ● Remove all construction waste from the site to licensed waste disposal sites.		
Construction site good practice	Air quality	Dust (TSP) during construction	● Erect hoarding / screens around dusty activities such as demolition; ● Frequent watering of unpaved areas, backfill areas and haul roads to suppress dust; (at least twice per day and during windy weather, once every two hours) ● Pay particular attention to dust suppression near sensitive receptors such as schools, hospitals, residential areas and natural areas; ● Manage stockpile areas to avoid mobilisation of fine material, cover with tarpaulin and/or spray with water; ● Minimise storage time of construction materials and wastes on site by regularly removing them off site; ● Do not overload trucks transporting	Contractor	APDOT PPMO; APPSCIG; MHAB, NCTB, WCTB, CHAB; ESE; EPBs

	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			earth materials on public roads; ● Equip trucks transporting fine grained materials with covers or tarpaulin to cover loads during transport; ● Bulk materials transported by highway should be compacted and the packing height must not exceed the protective guard on the vehicle; ● Install wheel washing equipment or conduct wheel washing manually at each exit of the works area to prevent trucks from carrying muddy or dusty substances onto public roads; ● Immediately cleanup all muddy or dusty materials on public roads outside the exits of the works areas; ● The main haul roads and access roads should be sealed to prevent dust raising. Unsealed roads should be watered daily; ● Plan the transport routes and timing to avoid busy traffic and heavily populated areas; ● Harden the main construction roads and sites; ● Mud dumping, transport and other construction activities likely to give rise to dust are not permitted during windy weather (level 4 wind); and ● Immediately plant vegetation in all temporary landtake areas upon completion of construction to prevent dust and soil erosion.		

	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
		Fumes and PM from asphalt mixing plant, concrete batching plant and other equipment and machinery	● Locate asphalt plants and mixers at least 300m downwind from residential areas and other sensitive receptors. ● Enclose these plants and equip them with bag house filter or similar air pollution control equipment. ● Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays. ● Regularly inspect and certify vehicle and equipment emissions and maintain to a high standard.	Contractor	APDOT PPMO; APPSCIG; MHAB, NCTB, WCTB, CHAB; ESE; EPBs
	Air Quality	Emissions from vehicles and equipment	● Procurement of new vehicles and plant should take account of low emission alternatives; ● All vehicles and plant to be kept in good order and maintained in compliance with the manufacturer's instructions; ● Minimise movement of construction traffic around the site; ● Impose speed limits of 10 kph on unsurfaced haul roads and working areas and 15kph on surfaced roads and working areas; ● Set up speed limit signs on construction sites; ● On road vehicles are to comply with vehicle emissions standards;	Contractor	APDOT PPMO; APPSCIG; MHAB, NCTB, WCTB, CHAB; ESE; EPBs

	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			● Prohibit the burning of waste on site; and ● Vehicles and plant shall be switched off when not in use.		
	Noise	Noise from powered mechanical equipment and vehicles	● Sensibly schedule construction activities, avoid noisy equipment working concurrently. ● Specify equipment and machinery that conforms to PRC noise standard GB12523-90 and ensure regular maintenance. ● Select advanced quiet equipment and construction method, and tightly control the use of self-provided generators. ● Comply with local requirements in areas with sensitive receptors very close by, avoiding construction works, particularly noisy activities such as piling and compaction from 2200 to 0600. ● If night time construction needed, inform nearby residents beforehand, obtain permission of local government, keep local communities informed through bulletins, avoid using noisy equipment and set up temporary noise barriers. ● Control the speed of bulldozer, excavator, crusher and other heavy plant travelling on site. ● Specify equipment and machinery that conforms to PRC noise standard GB12523-90 and ensure regular maintenance.	Contractor	APDOT PPMO; APPSCIG; MHAB, NCTB, WCTB, CHAB; ESE; EPBs

	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			● Adopt noise reduction devices and measures for works in proximity to sensitive noise receptors to ensure required standards are maintained. ● Locate sites for rock crushing, concrete mixing and other noisy activities at least 300m away from sensitive noise receptors. ● Minimize the use of whistles and horns, and prohibit the use of horns on construction sites at night. ● Maintain regular communication with sensitive receptors such as schools within 200m of the construction sites to avoid noisy activities within sensitive periods, such as examination periods.		
	Natural drainage lines	Control of drainage and flooding on site	● Locate temporary working and storage areas away from drainage lines ● Provide temporary drainage at construction sites ● Provide pollution control such as oil and silt traps at discharge points where hydrocarbons and aggregate may contaminate runoff ● Take measures to reduce the risk of soil erosion on exposed surfaces prior to the start of the heavy summer rains.	Contractor	APDOT PPMO; APPSCIG; MHAB, NCTB, WCTB, CHAB; ESE; EPBs
	Water Quality	Management of works in and adjacent to watercourses	● Programme in channel works during the dry season. ● Use coffer dams for construction of	Contractor	APDOT PPMO; APPSCIG; MHAB, NCTB, WCTB, CHAB;

	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			bridge foundations for ease of construction in the dry and minimize turbidity in the river. ● Construction water is treated via settlement pit prior to re-use or discharge to surface waters ● Erect berms or sandbags during bridge foundation works if necessary to contain runoff polluting the rivers. ● Avoid locating administrative buildings or storage areas on the floodplain during the summer monsoon season ● Maintain adequate flood flow during the rainy season. ● All camps, fuel storage, refuelling and maintenance areas to be located at least 200m from watercourses. ● Construction materials such as aggregate and cement must be protected from rainfall and runoff to prevent erosion ● Scour protection to be provided on the pier footings and on the flood banks on the outside curve of meanders		ESE; EPBs
		Construction site wastewater discharge	● Provide temporary toilets sufficient for the size of the workforce at canteens, construction camps and major construction sites. ● Septic tanks must be emptied periodically and the contents transported to the Municipal wastewater treatment plant for treatment or be spread on agricultural land.	Contractor	APDOT PPMO; APPSCIG; MHAB, NCTB, WCTB, CHAB; ESE; EPBs

	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			● All construction wastewater to be treated to appropriate PRC standard prior to discharge to surface waters. ● Stockpiles should have temporary drainage provisions to minimise run-off. ● Reuse equipment and wheel wash wastewater for dust suppression. ● Install sedimentation tanks on site to treat process water and muddy runoff.		
	Solid waste	Spoil	● Balance cut and fill on construction sites to minimize the amount of spoil to be disposed; ● Ensure that spoil is disposed of carefully at dump sites, to create stable landforms; ● Spoil disposal sites must be approved in advance; ● Re-vegetate spoil disposal sites at the earliest opportunity.	Contractor	APDOT PPMO; APPSCIG; MHAB, NCTB, WCTB, CHAB; ESE; EPBs
		Construction site refuse	● Set up centralized domestic and construction waste collection point(s). ● Sort material on site, for reuse, recycling and disposal. ● Identify final disposal routes and approved sites. ● Use covered dump truck to remove construction and demolition waste. ● Appoint a named individual to	Contractor	APDOT PPMO; APPSCIG; MHAB, NCTB, WCTB, CHAB; ESE; EPBs

	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			manage the waste disposal. ● Prohibit the burning of waste on construction sites.		
	Ecology	Protection of vegetation and restoration of disturbed areas	● Demarcate the construction working area to prevent encroachment and damage to adjacent areas. ● Ensure any valuable trees that are being retained are protected with fencing and/or put conspicuous markings and warning signs on these trees to prevent workers from inadvertently damaging or destroying them. ● Ensure sufficient aftercare for landscape planting to maximise survival.	Contractor	APDOT PPMO; APPSCIG; MHAB, NCTB, WCTB, CHAB; ESE; EPBs
		Protected species	● Prohibit any injury to key protected animals, such as the Asiatic toad and turtle. ● If any injured animals are found, report to local wildlife protection department.	Contractor	APDOT PPMO; APPSCIG; MHAB, NCTB, WCTB, CHAB; ESE; EPBs
			● Qualified ecologist will be on site prior to start of construction to check construction sites for protected species and translocate any discovered on site	ESE	APDOT PMO
		Greening	● Implement the revegetation plans, which may include seeding with grass and planting trees and shrubs.	Contractor	APDOT PPMO; APPSCIG; MHAB, NCTB, WCTB, CHAB; ESE; EPBs
	Physical cultural resources	Destruction of cultural relics	● Contractor to comply with PRC's Cultural Relics Protection Law and Cultural Relics Protection Law Implementation Regulations	Contractor	APDOT PPMO; APPSCIG; MHAB, NCTB, WCTB, CHAB;

	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			● If relics are discovered, stop work immediately and protect the site; notify the supervising entities and the local Cultural Relics Bureau; and only start construction after approval by the Cultural Relics Bureau; ● Educate workforce on these procedures.		ESE; Cultural Relics Bureau
Health and Safety	Occupational health and safety	Construction site sanitation	● Effectively clean and disinfect the site, including disinfection of toilets and waste disposal sites, and ensure timely removal of solid waste; ● Exterminate rodents on site at least once every 3 months, and exterminate mosquitoes and flies at least twice each year; ● Provide public toilets in accordance with the requirements of labor management and sanitation departments in the living areas on construction site, ● Appoint designated staff responsible for cleaning and disinfection.	Contractor	APDOT PPMO; APPSCIG; MHAB, NCTB, WCTB, CHAB; ESE; EPBs
		Occupational safety	● Appoint Environment, Health and Safety Officer to develop and implement environmental, health and safety management plan, maintain records concerning health, safety and welfare and regularly report on accidents, incidents and near misses. ● Train all construction workers in general health and safety matters and on emergency preparedness and response procedures.	Contractor	APDOT PPMO; APPSCIG; MHAB, NCTB, WCTB, CHAB; ESE; EPBs

	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			● Provide personal protective equipment (hard hats, shoes, eye goggles, respiratory masks, and high visibility vests) to all construction workers and enforce their use. ● Provide goggles and respiratory masks to workers doing asphalt road paving. ● Provide ear plugs to workers working near noisy powered mechanical equipment (PME), especially during piling of bridge foundations. ● Ensure safe handling, transport, storage and application of explosives for blasting. ● Provide a clean and sufficient supply of fresh, potable water for all camps and work sites. ● Provide an adequate number of latrines and other sanitary arrangements at the site and work areas and ensure that they are cleaned and maintained in a hygienic state. ● Safe working in confined spaces for foundations such as the ship lock. ● Measures to prevent the collapse of walls, such as the chambers for the ship lock ● Provide adequate waste receptacles and ensure regular collection and disposal. ● Ensure that Contractors have adequate worker and third party insurance cover. ● No children (less than 14 years of age) to work on any contract.		

	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
		Food safety	● Provide a secure source for drinking water at the construction camps ● Inspect and supervise food hygiene in canteens on site regularly. ● Canteen workers must have valid health permits. ● Once food poisoning is discovered, implement effective control measures immediately to prevent it from spreading	Contractor	APDOT PPMO; APPSCIG; MHAB, NCTB, WCTB, CHAB; ESE; EPBs
		Disease prevention and safety awareness	● Construction workers must have physical examination before start working on site. ● Provide annual health checks. ● If infectious disease is found, the patient must be isolated for treatment to prevent the disease from spreading. ● Establish health clinic at location where workers are concentrated, which should be equipped with common medical supplies and medication for simple treatment and emergency treatment for accidents. ● Specify the person responsible for health and epidemic prevention responsible for the education and propaganda on food hygiene and disease prevention to raise the awareness of workers. ● Regularly inspect works to ensure there are no areas of stagnant water that could provide breeding grounds for malaria, encephalitis and dengue fever mosquitoes.	Contractor	APDOT PPMO; APPSCIG; MHAB, NCTB, WCTB, CHAB; ESE; EPBs

	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			● Regularly inspect works to ensure that there are no breeding grounds for the host snail for schistosomiasis ● Provide training to the workforce on disease prevention and safety awareness ● Undertake checks every six months for workforce working in areas / tasks with a moderate to high risk of contact with schistosomiasis and medicate if the disease is found. ● Inform the local Schistosomiasis Prevention and Treatment Office and report the incidence to the local Health Administrative Department		
	Community health and safety	Temporary traffic management	A traffic control and operation plan will be prepared together with the local traffic management authority prior to any construction. The plan shall include provisions for identifying preferred haul routes, diverting or scheduling construction traffic to avoid morning and afternoon peak traffic hours, regulating traffic at road crossings with an emphasis on ensuring public safety through clear signs, speed controls and planning in advance.	Contractor, local traffic police, IA LPMOs	APDOT PPMO, APPSCIG; MHAB, NCTB, WCTB, CHAB, ESE
		Information disclosure	Residents and businesses will be informed in advance through publicity about the construction activities and provided with the dates and duration of expected disruption.	APPSCIG; MHAB, NCTB, WCTB, CHAB	APDOT PPMO, ESE
		Access to construction sites	● Clear signs will be placed at construction sites in view of the public, warning people of potential dangers such as moving vehicles, hazardous materials, excavations and	Contractor	APDOT PPMO; APPSCIG; MHAB, NCTB, WCTB, CHAB, ESE

	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			raising awareness on safety issues. ● All sites will be made secure, discouraging access by members of the public through fencing or security personnel, as appropriate.		
		Utility services interruptions	● Assess construction locations in advance for potential disruption to services and identify risks before starting construction. ● If temporary disruption is unavoidable, develop a plan to minimize the disruption in collaboration with relevant local authorities such as power company, water supply company, water bureau (for irrigation canals), and communication company. ● Communicate the dates and duration in advance to all affected people.	Contractor, local service providers	APDOT PPMO; APPSCIG; MHAB, NCTB, WCTB, CHAB; ESE
Demobilisation	Site cleanup	Site remediation and restoration	● Contractor to keep a schedule of all temporary land prior land use, and land occupiers ● At the end of construction, all buildings, stockpiles, and litter on temporary land is to be removed. ● Temporary land is to be restored to its original land use, unless agreed otherwise with the land occupier. ● Borrow pits and spoil disposal sites are to be restored according to the approved plans and will be subject to approval by APEPD / local EPB during the environmental acceptance review on completion.	Contractor	APDOT PPMO; APPSCIG; MHAB, NCTB, WCTB, CHAB; ESE; APEPD / local EPB

	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			● Latrines must be removed and the site disinfected and infilled. Sewage sludges may be spread on agricultural land.		
Grievance redress mechanism	Social & environmental	Handling and resolving complaints by contractor, IA LPMOs and APDOT PPMO	● Disclose GRM to affected people before construction begins at the main entrance to each construction site. ● Maintain and update a Complaints Register to document all complaints. ● Ensure satisfactory resolution of complaints within specified timescales.	APDOT PPMO, APPSCIG; MHAB, NCTB, WCTB, CHAB, Contractor	ADB
Operational Stage					
Environmental management	Operation activiteies	EMP	● Prepare an EMP to address potential impacts, mitigation and monitoring needs, and institutional requirements for the operations phase	APPSCIG; MHAB, NCTB, WCTB, CHAB	APDOT PPMO, ESE
		Emergency planning	● Prepare an emergency response plan		

Notes: **ADB** = Asian Development Bank; EIR = Environmental Impact Report; **O&M** = operation & maintenance; **APEPD** = Anhui Province Environmental Protection Department; **EPB** = Environmental Protection Bureau **MG** = Municipal Government; **APDOT PPMO** = Anhui Province Department of Transport Project Management Office; **APPSCIG** = Anhui Province Ports and Shipping Construction Investment Group; **MHAB** = Ma'anshan Highway Administration Bureau; **NCTB** = Nanling County Transport Bureau; **WCTB** = Wuwei County Transport Bureau; **CHAB** = Chizhou Highway Administration Bureau; **ESE** = Environmental Supervision Engineer; **ESE** = Environmental Supervision Engineer **LPMO** = Local Project Management Office,

Table A3.4: Specific Mitigation Measures for the Shuiyang River Improvement Scheme and Xuanzhou Port

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
Detailed Design Stage					
Dredging Works on the Shuiyang River	Capital dredging	Volume of spoil to be disposed of and river bank protection	● Confirm the reaches that need to be dredged and the estimates of volumes of dredged spoils ● Detailed design for plan form of the new meanders ● Detailed design for the bank protection works, including species of plants to be used	Design Institute	APPSCIG, ESE
	Land resources	Selection of dredged sludge disposal sites	● Minimise the area of permanent and temporary land-take required ● Verify ponds for disposal of dredged sludges and restore to agricultural land.	Design Institute	APPSCIG, ESE
Design of rubber dams and ship lock	Operational impacts	Fisheries	● Develop operating rules for the two rubber barrages, including description of environmental constraints and environmental mitigation measures such as lowering the barrage in the event of fish migrations	Design Institute	APPSCIG, ESE
Removal of ship building yard	Delay in the construction program for the ship lock and rubber dam	Contaminated land	● Relocate ship building yard from the proposed ship lock site to a new location and conduct an EIR for the relocation and environmental impact to the new site. ● Sample the soils and assess the level of soil contamination ● On the basis of the results of the contaminated land assessment, develop and implement a remedial action plan	Xuancheng WRB, APPSCIG,	APDOT PPMO, ESE

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			● Clean up the site, including the removal of all wastes and litter ● Collect and treat or dispose contaminated soils at a designated site to be agreed with the APDOT, WRB and APPSCIG ● The following MEP guidelines will be followed: *a. Guidelines for Risk Assessment of Contaminated Sites (consultation document)* *b. Guidelines for Soil Remediation of Contaminated Sites (consultation document)* ***c.** Temporary Method for Environmental Management of Soil on Contaminated Sites (consultation document)* *d. Technical Guidelines for Environmental Monitoring of Sites (consultation document)*		
Design of Xiaohekou Bridge	Extreme weather events due to climate change	Extended dry season, more frequent high flows due to higher summer rainfall	● Design vertical alignment of Xiaohekou Bridge sufficient to allow for Class IV navigation plus an allowance for increased conveyance of stormwaters due to more frequent extreme weather during wet season ● Review the design for scour protection on bridge piers and re-formed channel banks for more frequent, high magnitude flows. ● Provide piped drainage off the bridge	Design Institute	APDOT PPMO; APPSCIG

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
	Health and Safety	Promote access for non-motorised transport and pedestrians	● Design must ensure public health and safety. ● Promote non-motorized traffic with 2m lane for NMT along both carriageways.	Design Institute	APDOT PPMO; APPSCIG
Xuanzhou Multipurpose Port	Soil resources	Land raising	● Confirm volume of spoil required for land-raising and the capacity of the donor site	Design Institute	APPSCIGAPPSCIG
	Air quality	Dust	● Design the port layout so the bulk loading facilities are screened by other buildings or permanent fences, and located away from sensitive receptors ● Select loading / unloading equipment that minimizes the entrainment of fine grained materials ● Include measures such as screening and dust suppression into the design of the facility	Design Institute	APPSCIG
	Noise	Noisy activities during construction and operation	● Calculate construction noise during typical and noisy activities, and identify further mitigation required to attenuate noise levels ● Plan the layout of the site and the scheduling of construction, so that buildings and other features on site shield sensitive receptors from noise during construction and operation activities ● Select plant and equipment with low noise levels. ● Site noisy operational equipment in acoustic housing and away from sensitive receptors	Design Institute;	APPSCIG; APDOT PPMO; ESE

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			● Design fencing and landscaping around the port perimeter		
	Solid wastes	Safe disposal of solid wastes arising during operation	● Identify type and volume of different waste streams ● Make provisions for waste segregation and temporary storage prior to disposal off site ● Identify licensed off-site disposal routes, including re-use, recycling and final disposal to landfill	Design Institute	APPSCIG; APDOT PPMO; ESE
	Water quality	Wastewater discharge	● Review the need to treat wastewater from ships ● Design a small package plant on site to treat domestic wastewater ● Design systems for stormwater drainage, collection and treatment of water used on site eg wash down water and oil separators	Design Institute	APPSCIG; APDOT PPMO; ESE
	Construction traffic	Reduce the impact of construction traffic on road network	● Investigate sources and volumes of construction materials required ● Investigate scope of bringing materials to site by river rather than overland by truck	Design institute	APPSCIG; APDOT PPMO; ESE
Energy efficiency	Air emissions	Construction transport emissions	● Specify local materials from licensed providers that minimise transport distance or modal shift from road to inland waterway.	Design Institute	APPSCIG; APDOT PPMO; ESE
Health and Safety	Community Health and	Spread of the disease	● Verify locations where	Design Institute	APPSCIG; APDOT PPMO; ESE;

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
	Safety	Schistosomiasis	schistosomiasis is present in villages along the Shuiyang River ● Liaise with the local health authorities to develop a suite of mitigation measures to prevent the spread of infected host snails during dredging and the temporary stockpiling of dredged sediments, to include controls on the width of river bed to be dredged; controls on the disposal of dredged materials and drainage water; and training for the workforce and local communities		Municipal Schistosomiasis Prevention and Treatment Office; local Health Administration Department
Conservation of soil and land resources	Soil resources	Loss of land and topsoil and increased risk of erosion	● Minimise permanent and temporary landtake for development. ● Retain/incorporate landscape features of interest in design. ● Maximise reuse of spoil within the construction or adjacent construction works. ● Agree spoil disposal sites, management and rehabilitation plan with Xuancheng WRB. ● Detailed design of bank revetment works ● Detailed design of soil and water conservation works ● Specify vegetation that serves specific bio-engineering functions. ● Design appropriate drainage systems for the dump sites for the dredged spoil to control runoff and sedimentation.	Design Institute	APPSCIG; APDOT PPMO
Pre-construction Stage					

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
Construction Stage					
Shuiyang River Improvement Works	Water Quality	Turbidity in the Shuiyang River during dredging	● Use cutter suction dredger with dredged material conveyed by pipeline to the spoil disposal site ● Use grab dredger for specific spot works. ● Operate the dredger to avoid over-spill of turbid water ● Ensure correct connection of the pipeline including good seals to prevent leakage of turbid water along the pipeline ● Test the dredger and pipeline for leaks prior to start ● Investigate loss of pressure along the pipeline immediately and in the event of a leak, stop pumping and take action to clean up the spillage	Contractor	APPSCIG; ESE; EPB
		Protection of the drinking water in-take works	● Prior to start of dredging activity, liaise with the relevant Health Administration Bureaux, local EPB, or local township / town to inform them of the works and the programme ● Continue to inform the local authorities during the dredging ● Provide temporary water in-take works on floating pontoons connected to the main water conveyance pipeline ● Close the permanent in-take works and position the floating pontoon at least 600m upstream or 300m downstream of the dredging	Contractor	APPSCIG; ESE; EPB

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			works ● Monitor river water quality during the dredging		
	Spoil sites	Drainage from the dredged spoil sites	● For the seven pond disposal sites, drawdown the existing water levels in the ponds, to avoid overspilling from the dredger pumping line ● Control the drainage of water from the ponds to avoid discharge of turbid water to canals and drainage channels ● In the later stages of reclamation of the dump sites, use flocculants to speed up sedimentation ● Regularly inspect the drainage channels to check for blockage of the drains and risk of localized flooding ● Rehabilitate and restore spoil disposal sites in accordance with agreed plan (agriculture or woodland). ● Conduct project completion audit to confirm that spoil disposal site rehabilitation meets required standard, contractor liable in case of non-compliance.	Contractor	APPSCIG; ESE; EPB;
	Spoil sites	Spread of disease vector	● Dump the dredged spoil from sections of the channel where schistosomiasis is a risk at specially designated dump sites (one of the seven ponds). ● Contain the site to avoid the spread of the host snail and schistosomes.	Contractor	APPSCIG; ESE; EPB

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
	Air Quality	Odour from the dredged spoil sites	● Undertake the dredging during the winter dry season as low temperatures help reduce generation of bad odour ● Locate the dump sites for the dredged spoil at least 100m from sensitive receptors	Contractor;	APPSCIG ; ESE; EPB
	Noise	Dredging and bank protection works	● Select models of dredger with lower sound power levels ● Prohibit dredging and piling at night if possible	Contractor	APPSCIG; ESE; EPB
	Bank protection	Soil erosion	● Realign Shuiyang River meanders during low flows ● Install bank protection including concrete formations and infill with soil and plants	Contractor	APPSCIG; ESE; EPB
Xuanzhou Multi-purpose Port	Water quality	Turbidity in Shuiyang River	● Programme piling works for the new port during the dry season ● Install sheet piling and pile the foundations for the port in the dry to avoid creating turbidity in the river	Contractor;	APDOT PPMO; APPSAB APPSCIG; ESE: EPB
	Soil resources	Land raising	● Drain the existing pond in the port area prior to land raising. ● Excavate spoil from the designated donor site close to the port and use it to raise the land in the port area. ● Install temporary drainage and settlement tanks prior to discharge of stormwater off site.	Contractor;	APPSCIG; ESE; EPB

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			● Ensure that the material used in land raising is compacted. ● Implement dust suppression measures throughout the land raising activities.		
		Disease prevention and safety awareness	● Construction workers must have physical examination before start working on site. ● Provide annual health checks. ● If infectious disease is found, the patient must be isolated for treatment to prevent the disease from spreading. ● Establish health clinic at location where workers are concentrated, which should be equipped with common medical supplies and medication for simple treatment and emergency treatment for accidents. ● Specify the person responsible for health and epidemic prevention responsible for the education and propaganda on food hygiene and disease prevention to raise the awareness of workers. ● Regularly inspect works to ensure there are no areas of stagnant water that could provide breeding grounds for malaria, encephalitis and dengue fever mosquitoes. ● Regularly inspect works to ensure that there are no breeding grounds for the host snail for schistosomiasis ● Provide training to the workforce on disease prevention and safety awareness	Contractor;	APPSCIG; ESE; EPB

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			● Undertake checks every six months for workforce working in areas / tasks with a moderate to high risk of contact with schistosomiasis and medicate if the disease is found. ● Inform the local Schistosomiasis Prevention and Treatment Office and report the incidence to the local Health Administrative Department		
Operational Stage					
Shipping	Shipping	Waste from ships	● Ships have to be equipped with sufficient storage for sewage and solid waste; ● Discharge of wastewater to inland waterways in exceedance of the standards is prohibited; ● Train ships' crews on the correct procedures for the safe disposal of solid waste and wastewaters; ● Strengthen inspection of ships in compliance with the relevant standards; and ● Wastewater and solid waste from ships can be accepted at the port for collection and treatment.	Ship operators	APPSCIG ; Maritime Bureau
		Noise	● Ships horns should have a strong directionality and only be sounded for short durations, during the day, and in response to specific requirements ● Avoid unnecessary use of horn near residential areas	Ship operators	APPSCIG, Maritime Bureau

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			● Use lights at night to signal rather than horns.		
		Navigation safety	● Strictly enforce navigation lanes, temporary waiting and anchorage areas, and manoeuvres to use the ship lock	Ship operators, Port operator	APPSCIG ; Maritime Bureau
Shuiyang River Improvement Works	Ship lock	Wastewater	● Discharge of wastewater to Shuiyang Town sewerage system	APPSCIG	APDOT PPMO
		Solid domestic waste	● Waste streams to be collected, stored and disposed of separately. ● Domestic waste to be segregated using different coloured bins (organic, recyclable, and non-recyclable) and disposed of appropriately ● Hazardous waste eg oily rags, oil contaminated soils, to be stored and disposed of separately	APPSCIG	APDOT PPMO
		Fisheries	● Ensure that the operating rules for the barrage include consideration of migratory fish so that the barrage could be partially or fully deflated to allow upstream migrations	Port operator APPSCIG	APDOT PPMO
	Rubber barriers	Loss of head	● Ensure co-ordinated management of the two rubber barriers to maintain water levels in the Shuiyang River	APPSCIG	APDOT PPMO
Xuanzhou Multipurpose Port	Port operations	Air quality	● Attract container freight If possible, avoid loading / unloading of bulk loose material on windy days ● Minimize drop heights and avoid over loading conveyor belts ● Adopt dust suppression methods	APPSCIG	APDOT PPMO, local EPB

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			such as water spraying, covering bulk materials with felt, and installing windbreaks around stockpiles ● Provide watering facility in coal storage yard and ore storage yard for dust suppression ● Plant trees and fences around the site to prevent the dispersion of dust off site		
		Noise	● Direct the ships in and out of the port to avoid the need for ships to use their horns ● Maintain mobile and stationery plant according to the manufacturer's instructions ● Monitor noise levels during routine and abnormal conditions, and in response to complaints. ● Implement further mitigation measures in the event of exceedances of noise standards.	Port operator	APPSCIG
		Solid wastes	● Hazardous and non-hazardous waste streams to be collected, stored and disposed of separately . ● Domestic waste to be segregated using different coloured bins (organic, recyclable, and non-recyclable) and disposed of regularly in accordance with local EPB instructions ● Hazardous waste eg oily rags, oil contaminated soils, to be stored and disposed of separately	Port operator	APPSCIG, local EPB
		Water quality	● Periodic cleaning of the oil separators and silt traps on stormwater drainage systems around the port [CHECK]	Port operator	APPSCIG

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			• Oily wastewater from maintenance sheds and other places to pass through oil separator and mix with domestic sewage. • Periodic maintenance of the small package plant installed within the port precincts, including disposal of sewage sludges to the Municipal wastewater treatment plant • Discharge wastewater treated to Grade III to the sewerage system serving the Xuanzhou Economic and Technological Development Zone		
		Emergency planning	• Prepare an emergency response plan • Keep oil spillage equipment at the port • Ships wishing to unload flammable, explosives, corrosive, poisonous and dangerous cargo are required to hang the required signal in compliance with the *Regulations for Supervision and Administration for Ships Carrying Dangerous Goods.* • In the event of an emergency, the drinking water in-takes downstream must be closed	Port operator	APPSCIG, Maritime authorities

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Table A3.5: Specific Mitigation Measures for the Highway Improvement Schemes I Ma'anshan North Corridor

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
Detailed Design Stage					
General Highway Design Issues	Land and soil resources	Loss of land, impact on agriculture, loss of topsoil and increased risk of erosion	● Fine tune vertical and horizontal alignments ● Balance cut and fill as far as possible ● Avoid deep cuts and high embankments to minimise earthworks ● Minimise permanent and temporary land-take. ● Retain/incorporate landscape features of interest in design. ● Maximise reuse of spoil within the construction or adjacent construction works. ● Agree spoil disposal sites, management and rehabilitation plan with APEPD / local EPB. ● Remove and store topsoil (10-30cm) for restoration works prior to main earthworks. ● Specify vegetation that serves specific bio-engineering functions. Design appropriate drainage systems for slopes to reduce soil erosion.	Design Institute	APDOT PPMO;
	Extreme weather events due to climate change	Road surface cracking due to extreme hot or cold weather, landslide and flooding due to torrential rainfall	● Consider potential impacts from extreme weather events due to climate change in designing road subgrade, pavement, road-side slopes, drainage system, bridges and culverts. ● Adopt appropriate protective measures such as vegetation cover, geotextiles, settling basins, permeable paving, infiltration ditches, stepped slopes, riprap, crib walls, retaining walls and intercepting ditches to reduce	Design Institute	APDOT PPMO

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			the speed of surface run-off.		
	Health and safety	Promotion of non-motorized transport, protection of vulnerable road users	● Design must ensure public health and safety. ● Promote non-motorized traffic. ● Where possible, separate vehicles and NMT, and separate cyclists and pedestrians. ● Promote safe crossings for pedestrians ● Promote scheme lighting, where there is a H&S case and it does not cause light pollution in rural areas	Design Institute	PPMO; APDOT
	Air emissions	Construction transport emissions	● Specify local materials from licensed providers that minimise transport distance.	Design Institute	APDOT PPMO
	GHG emissions	Energy efficiency	● Consider energy efficient street lighting, such as LEDs or solar-powered lights	Design Institute	APDOT PPMO
Design of bridge crossings	River erosion	Scour of river bed and banks	● Design scour protection for the bridge piers and river banks	Design Institute	APDOT PPMO
Ma'anshan North Corridor	Traffic noise	Protection of sensitive receptors	● Design of low noise road pavement of 191,925 m^2 in front of 34 sensitive points at Dachen, Zhongshan Village, Dayu, Chaomiaoji, Ruiqiao, Weiteng, Dajing, Xucun, Huanghe, Zhoucun, Xiongzhuang, Hanwang, Wangzhengwu, Taodian, Bazou, Xiaozhuang, Ruicun/Weizhuang, Huangcun, Quanshuikou, Shanwang Village, Xiaolizhuang, Shanghezhuang, Jibaozi, Chenzhanglu, Haiwang Village, Zhongheji, Xiaoyuanzhuang, Gaozuji, Panxiao Village, Baozhuang, Tanzhuang, Dajiangzhuang, Xiaowang Village and Menlianzhuang.	Design Institute	APDOT PPMO
	Health and Safety and Community	Local communities	● In urban areas, consider replacing the hard shoulder	Design Institute	APDOT PPMO

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
		NMT	with pavements to separate pedestrians from the traffic ● Town and village authorities to consider lighting in urban areas		
	Construction nuisance	Haul roads	● Identify the locations of the 53 km of haul roads to minimise environmental impacts and disturbance of local communities	Design Institute	APDOT PPMO
	Infrastructure	Protection of assets	● Ensure the design for Sima Bridge allows for the upgrading of navigation on the river to Class IV	Design Institute	APDOT PPMO
Pre-construction Stage					
Construction Stage					
Implementation of mitigatioin measures	Agricultural land	Minimize impact on farmland from land take and haulage	● Minimise disruption outside of approved permanent and temporary land-take areas, install barriers and protective fencing, if appropriate to prevent encroachment on adjacent areas. ● Follow procedures for top soil stripping (see general good site practice guidance above) ● Use existing field roads as access roads where possible ● Temporary land-take areas to be cleared up and revegetated after the end of construction.	Contractor	MHAB; ESE; EPB
	Noise	Protection of noise sensitive receptors	● Lay low noise asphalt during construction ● Install noise insulation at the Taodian Health Clinic ● Erect warning and no horn signs at 3 schools (Taodian Primary School, Gaozu Primary School and Baozhuang Primary School) and the Taodian Health Clinic	Contractor	MHAB; ESE; EPB
Operational Stage					
Road maintenance and safety	Traffic	Road condition	Regularly inspect and maintain the road surface and clean up the drains.	O&M units	MHAB

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
		Road safety and traffic accidents	Strictly enforce traffic laws to improve road safety and reduce traffic accidents.	Anhui Traffic Police	MHAB; MG

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Table A3.6: Specific Mitigation Measures for the Highway Improvement Schemes II Yimu Highway Kedian to Mujinting

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
Detailed Design Stage					
General Highway Design Issues	Land and soil resources	Loss of land, impact on agriculture, loss of topsoil and increased risk of erosion	● Fine tune vertical and horizontal alignments ● Balance cut and fill as far as possible ● Avoid deep cuts and high embankments to minimise earthworks ● Minimise permanent and temporary land-take. ● Retain/incorporate landscape features of interest in design. ● Maximise reuse of spoil within the construction or adjacent construction works. ● Agree spoil disposal sites, management and rehabilitation plan with APEPD / local EPB. ● Remove and store topsoil (10-30cm) for restoration works prior to main earthworks. ● Specify vegetation that serves specific bio-engineering functions. ● Design appropriate drainage systems for slopes to reduce soil erosion.	Design Institute	APDOT PPMO
Design of road alignment, road surface, drainage and lighting	Extreme weather events due to climate change	Road surface cracking due to extreme hot or cold weather, landslide and flooding due to torrential rainfall	● Consider potential impacts from extreme weather events due to climate change in designing road subgrade, pavement, road-side slopes, drainage system, bridges and culverts. ● Adopt appropriate protective measures such as vegetation cover, geotextiles, settling basins, permeable paving, infiltration ditches, stepped slopes, riprap, crib	Design Institute	APDOT PPMO

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			walls, retaining walls and intercepting ditches to reduce the speed of surface run-off.		
	Health and safety	Promotion of non-motorized transport, protection of vulnerable road users	● Design must ensure public health and safety. ● Promote non-motorized traffic. ● Ensure barrier-free design for disabled people. ● Where possible, separate vehicles and NMT, and separate cyclists and pedestrians. ● Promote safe crossings for pedestrians	Design Institute	APDOT PPMO
	Air emissions	Construction transport emissions	● Specify local materials from licensed providers that minimise transport distance.	Design Institute	APDOT PPMO
	GHG emissions	Energy efficiency	● Consider energy efficient street lighting, such as LEDs or solar-powered lights	Design Institute	APDOT PPMO
Design of bridge crossings	River erosion	Scour of river bed and banks	● Design scour protection for the bridge piers and river banks ● Zhanghe bridge with piped drainage and discharge to land	Design Institute	APDOT PPMO
Access	Construction nuisance	Haul roads	● Identify the locations of the haul roads to minimise environmental impacts and disturbance of local communities	Design Institute	APDOT PPMO
Yimu Highway	Traffic noise	Protection of sensitive receptors	● Design of low noise road pavement over 1800 m covering 40500 m^2 at 5 sensitive points - Gutianxincun, Gutian Village, Yafutang, Shanggang Village and Bowen High School. ● Design noise insulation for 1147 households in 22 sensitive receptor villages. Jiangcun, Kedian Village, Shangtanghu, Dagang Village, Wangcun, Shuguang	Design Institute	APDOT PPMO

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			Village 1, Shuguang Village 2, Gongyi Village, Meishan Village/Meihua Village, Tudiwan, Tangmuqiao, Huilongdun, Gongshan Town, Gongshan Village, Gaoling Village 1, Gaoling Village 2, Guolong, Haizijia, Haiquan/haijia, Huitouwu, Wuxia Temple and Shuicun Village.		
	H&S and community	NMT and pedestrians	● Review the provision for pedestrian crossings over the Class I highway section ● Review pedestrian safety for crossing Wuli intersection. Consider light-controlled crossing (without vehicle turning), overpasses and underpasses.	Design Institute	APDOT PPMO
	Construction nuisance	Haul roads			
	Infrastructure	Protection of assets		Design Institute	APDOT PPMO
Pre-construction Stage					
Construction Stage					
Implementation of noise mitigation measures	Noise	Potection of noise sensitive receptors	● Install noise insulation in 1147 properties ● Lay low noise asphalt	Contractor	NCTB; ESE; EPB
Operational Stage					
Road maintenance and safety	Traffic	Road condition	Regularly inspect and maintain the road surface and clean up the drains.	O&M units	NCTB
		Road safety and traffic accidents	Strictly enforce traffic laws to improve road safety and reduce traffic accidents.	Anhui Traffic Police	NCTB; MG

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Table A3.7: Specific Mitigation Measures for the Highway Improvement Schemes III S319 Erba to Wuwei

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
Detailed Design Stage					
Conservation of soil and land resources	Soil resources	Loss of land and topsoil and increased risk of erosion	● Minimise permanent and temporary landtake for development. ● Retain/incorporate landscape features of interest in design. ● Optimise balance between cut and fill and avoid deep cuts and high embankments to minimise earthworks. ● Maximise reuse of spoil within the construction or adjacent construction works. ● Agree spoil disposal sites, management and rehabilitation plan with APEPD/local EPB. ● Remove and store topsoil (10-30cm) for restoration works prior to main earthworks. ● Specify vegetation that serves specific bio-engineering functions. ● Design appropriate drainage systems for slopes to reduce soil erosion.	Design Institute	APDOT PPMO
Design of road alignment, road surface, drainage and lighting	Extreme weather events due to climate change	Road surface cracking due to extreme hot or cold weather, landslide and flooding due to torrential rainfall	● Consider potential impacts from extreme weather events due to climate change in designing road subgrade, pavement, road-side slopes, drainage system, bridges and culverts. ● Adopt appropriate protective measures such as vegetation cover, geotextiles, settling basins, permeable paving, infiltration ditches, stepped slopes, riprap, crib walls, retaining walls and intercepting ditches to reduce the speed of surface run-off.	Design Institute	APDOT PPMO
	Health and safety	Promotion of non-motorized	● Design must ensure public health and safety.	Design Institute	APDOT PPMO

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
		transport, protection of vulnerable road users	● Promote non-motorized traffic. ● Ensure barrier-free design for disabled people.		
	Air emissions	Construction transport emissions	● Specify local materials from licensed providers that minimise transport distance.	Design Institute	APDOT PPMO
	GHG emissions	Energy efficiency	● Consider energy efficient street lighting, such as LEDs or solar-powered lights	Design Institute	APDOT PPMO
Design of bridge crossings	River erosion	Scour of river bed and banks	● Design scour protection for the bridge piers and river banks	Design Institute	APDOT PPMO
	Noise	Traffic noise	● Design noise insulation for windows at 700 households, two hospitals (the Economic Development Zone Wuwei County Health Centre and Boai Hospital) and 1 school (Banqiao Primary School). The beneficiaries reside in the following villages: Datan Village, Zhangwang Village, Chenzhuang, Xiaozhao, Gaoweiqian, Shangs, Lingjiawan / Dazhen, Huangcun, Jiajiazhuang / Xiaozhang, Linghou / Xiaowang, Wanxu, Tans, Dais/Jiangs, Hualong/Yangs, Wuyi Village, Shazhuang Village, Zhangyu/Hudun, Yangmaozui, Zhangni Village, Lijiatan, Nianxi, Dingwu, Xinjianzhuang, Hexi/Xucun, Xingeng, Fengxu, Weigeng/Changba Village, Lijiaxu, and Liwei.	Design Institute	APDOT PPMO
S319 Erba-Wuwei Section	H&S	Accident risks	● Review the treatment of the edge of the highway and the avenue of trees, and the risk of off-road collisions ● Review the need for the removal of the avenue or trees or provision of safety barriers ● Develop the design of junctions along the rural section, to improve safety for movements to rural roads	Design Institute	APDOT PPMO

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			● Review the need for lighting in the rural section		
Pre-construction Stage					
Construction Stage					
Implementation of noise mitigation measures	Traffic noise	Protection of noise sensitive receptors	● Install noise insulation for properties ● Erect warning and no horn signs at the following locations: ■ Wuwei County Economic Development Zone Health Clinic ■ Bo'ai Hospital ■ Yongnan Center Primary School ■ Changba Primary School	WCTB	APDOT PPMO
Operational Stage					
Road maintenance and safety	Traffic	Road condition	Regularly inspect and maintain the road surface and clean up the drains.	O&M units	WCTB
		Road safety and traffic accidents	Strictly enforce traffic laws to improve road safety and reduce traffic accidents.	Anhui Traffic Police	WCTB; MG

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Table A3.8a: Specific Mitigation Measures for the Highway Improvement Schemes IV G206 Dongliu to Yaodu

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
Detailed Design Stage					
Conservation of soil and land resources	Soil resources	Loss of land and topsoil and increased risk of erosion	● Minimise permanent and temporary landtake for development. ● Retain/incorporate landscape features of interest in design. ● Optimise balance between cut and fill and avoid deep cuts and high embankments to minimise earthworks. ● Maximise reuse of spoil within the construction or adjacent construction works. ● Agree spoil disposal sites, management and rehabilitation plan with APEPD/local EPB. ● Remove and store topsoil (10-30cm) for restoration works prior to main earthworks. ● Specify vegetation that serves specific bio-engineering functions. ● Design appropriate drainage systems for slopes to reduce soil erosion.	Design Institute	APDOT PPMO
Design of road alignment, road surface, drainage and lighting	Extreme weather events due to climate change	Road surface cracking due to extreme hot or cold weather, landslide and flooding due to torrential rainfall	● Consider potential impacts from extreme weather events due to climate change in designing road subgrade, pavement, road-side slopes, drainage system, bridges and culverts. ● Adopt appropriate protective measures such as vegetation cover, geotextiles, settling basins, permeable paving, infiltration ditches, stepped slopes, riprap, crib walls, retaining walls and intercepting ditches to reduce the speed of surface run-off.	Design Institute	APDOT PPMO
	Health and safety	Promotion of non-motorized	● Design must ensure public health and safety.	Design Institute	APDOT PPMO

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
		transport, protection of vulnerable road users	● Promote non-motorized traffic. ● Ensure barrier-free design for disabled people.		
	Air emissions	Construction transport emissions	● Specify local materials from licensed providers that minimise transport distance.	Design Institute	APDOT PPMO
	GHG emissions	Energy efficiency	● Consider energy efficient street lighting, such as LEDs or solar-powered lights	Design Institute	APDOT PPMO
Design of bridge crossings	River erosion	Scour of river bed and banks	● Design scour protection for the bridge piers and river banks	Design Institute	APDOT PPMO
	Noise	Traffic noise	● Design noise insulation for 94 households in the sensitive receptor clusters in Weizhuang, Zhanggang, Liuchun Village and the farm dormitory.	Design Institute	APDOT PPMO
G206 Dongliu to Yaodu Section	H&S	NMT and pedestrians	● Fine tune the vertical and horizontal alignments, to reduce the impacts on land-take, balance cut and fill, reduce the need for extensive slope remediation works, and increase the distance from sensitive receptors ● Consider the possibility of using the spoil in land contouring to attenuate noise ● Review the need for pedestrian walkways along this alignment and provision of pedestrian crossings for this dual three lane highway ● Review the need to separate cyclists and pedestrians ● Review the need for lighting in the rural sections	Design Institute	APDOT PPMO
Pre-construction Stage					
Construction Stage					

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
Implementation of mitigation measures	Traffic Noise	Protection of noise sensitive receptors	● Provide noise insulation for windows at 94 households in the sensitive receptor clusters in Weizhuang, Zhanggang, Liuchun Village and the farm dormitory.	Contractor	CHAB; ESE
	Slope Stability	Protection of new cuttings	● Take care during excavations of deep cuttings to avoid creating slope collapse and mass movements. ● Use appropriate techniques to stabilize the slopes, including geo-technical, slope reinforcement and planting options. ● Install drainage to the top of the slope.	Contractor	CHAB;ESE; EPB
	Ecology	Protection of natural habitats	● Minimize the construction programme for the sections between K0+000 to K2+300 and K15+000 to K16+580 to reduce impact on ecological features. ● Avoid noisy activities such as blasting between the main bird nesting season May and June. ● Prohibit blasting in the morning and at night. ● Walkover survey prior to construction by trained wildlife and forestry experts to confirm works can go ahead. ● Identify trees to be preserved and clearly mark them, translocate other trees to new locations, and ensure adequate aftercare ● If any protected species are observed along the alignment, take advice from ecologist on appropriate measures for translocation. ● Provide environmental training on the importance of protecting habitats and wildlife to construction workforce ● Prohibit the collection of timber, non-timber forestry products, hunting, and fishing in the Forestry Reserve by	Contractor	CHAB;ESE; Local Forestry Bureau

Item	Impact Factor	Potential Impact and/or Issues	Mitigation Measures	Implementing Entity	Supervising Entity
			the construction workforce. ● Prohibit the setting of fires in the woodland sections of the alignment.		
Operational Stage					
Road maintenance and safety	Traffic	Road condition	Regularly inspect and maintain the road surface and clean up the drains.	O&M units	CHAB
		Road safety and traffic accidents	Strictly enforce traffic laws to improve road safety and reduce traffic accidents.	Anhui Traffic Police	CHAB; MG

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Table A3.8b: Summary of costs for implementing EMP for the Shuiyang River Inland Waterway Improvement Scheme (Units, RMB ten thousand)

S/N	Name of works or item cost	Works cost	Other costs	Total	Remarks
	Part I: Works cost				
1	Ambient air pollution prevention during construction period	20		20	
	200 m barriers	5			
	Temporary road hardening	5			
	Watering and dust suppression	4			
	Temporary factory sheds	6			
	Watering cart, spray facilities around storage yard	80		80	
2	Noise pollution prevention in the construction period	50		50	
	Mobile sound barrier	35			
	Closed machinery sheds	15			
3	Water pollution prevention in construction and operation period	40		40	
	Septic tank, grit chamber	40			Calculated in 20 thousand yuan / place, about setting 20 places
4	Solid waste pollution prevention in construction and operation period	50		50	
	Temporary storage yard of building waste	50			
5	Remained water treatment in mud-pumping area	70		70	
	7 grit chambers	70			100 thousand yuan/ place
6	Ecological restoration of mud-pumping areas and borrow area/spoil ground	450		450	
	Surface soil transfer and coverage	150			
	Planting	300			
7	Environmental monitoring	62.2		62.2	
	Environmental monitoring during construction period	51.2			
	Environmental monitoring during operation period	11			Pro rata for 3 years
8	Personnel training cost		40	40	
	Part II: Preliminary work and survey and design cost				
1	Environmental supervision		180	180	
	Part III: Water and soil conservation				
1	Greening	300		300	
	Total	1162.2	220	1382.2	

Table A3.9a: Summary of costs for implementing environmental mitigation measures for the Shuiyang River Inland Waterway Improvement Scheme

Item No.	Description	Mitigation Cost		Remark
		CNY	USD	
1	Ambient air pollution prevention during construction period	1,000,000	158,700	Barriers and hoardings, temporary road paving, watering and spraying equipment and temporary sheds
2	Noise pollution prevention in the construction period	500,000	79,350	Mobile noise barrier and enclosed machinery sheds
3	Water pollution prevention in the construction period	400,000	63,480	Septic tanks and grit chambers at approximately 10 locations

Item No.	Description	Mitigation Cost		Remark
		CNY	USD	
4	Solid waste pollution prevention	500,000	79,350	Temporary storage yards and facilities
5	Wastewater treatment at dredged sediment storage site	700,000	111,090	Grit chambers, sedimentation basin
	Total	**3,100,000**	**491,970**	

Table A3.9b: Summary of costs for implementing the envirionmental mitigation measures for the Highway Schemes

Item No.	Description	Mitigation Cost		Remark
		CNY	USD	
1	Ambient air pollution prevention during construction period	530,000	84,111	Barriers and temporary hoardings, watering and dust suppression
2	Noise pollution prevention in the construction and operation periods	17,710,000	2,810,577	Mobile noise barriers, sound insulation windows and additional cost for low noise road paving materials
3	Water pollution prevention in the construction period	1,000,000	158,700	Septic tanks and grit chambers
4	Solid waste pollution prevention	400,000	63,480	Temporary storage yards and facilities
	Total	**19,640,000**	**3,116,868**	
Note: Noise mitigation measures include the provision of sound insulation windows at CNY 10,510,000 (USD 1,667,937) and additional cost for applying low noise road paving at CNY 6,000,000 (USD 952,200)				

IV. Environmental Monitoring and Reporting

18. The project monitoring programme focuses on the environment within the project's area of influence. Monitoring will include project readiness monitoring (to be conducted by the ESE), environmental quality monitoring (to be conducted by a licensed entity), as well as EMP compliance verification during project implementation and operation (to be conducted by PPMO and ESE during implementation and first year of operation and then APEPD or local EPB in subsequent years). Monitoring and reporting arrangements defined for this project are described below.

19. **Assessment of project readiness.** Before construction, the ESE will assess the project's readiness in terms of environmental management based on a set of indicators (**Table A.10**) and report it to ADB, IA and the PPMO. This assessment will demonstrate that environmental commitments are being carried out and environmental management systems are in place before construction starts, or suggest corrective actions to ensure that all requirements are met.

Table A3.10: Project Readiness Assessment Indicators

– Indicator	– Criteria	– Assessment
– EIA approval	• The project EIRs have all been approved by APEDP/local EPBs. The EIA has been approved by ADB and satisfied the 120 day disclosure rule prior to board consideration.	– Yes No
– EMP update	• The EMP was updated after technical detail design, and approved by ADB	– Yes No
– Compliance with loan covenants	• The borrower complies with loan covenants related to project detailed design and pre-construction requirements.	– Yes No
– Public involvement effectiveness	• Meaningful consultation completed	– Yes No
	• GRM established with entry points	– Yes No
– Environmental Supervision in place	• ESE is in place	– Yes No
	• Environment specialist appointed by APDOT PPMO	– Yes No
	• Environment specialists appointed by IA LPMOs	– Yes No
	• EMSs contracted by APDOT	– Yes No
– Bidding documents and contracts with environmental safeguards	• Bidding documents and contracts incorporate the requirements as set out in the environmental loan assurances	– Yes No
	• Bidding documents incorporate the EMP mitigation and monitoring requirements	– Yes No
	• Construction contracts incorporate the EMP mitigation and monitoring requirements	– Yes No
– EMP financial support	• The required funds have been set aside to support the EMP implementation	– Yes No

20. **Internal Environmental Monitoring. Tables A3.11a-f** show the internal environmental monitoring program specifically designed for this project, defining the requirements, including, scope, location, parameter, duration and frequency of monitoring during the construction and operational stages. Internal environmental monitoring will include monitoring of air quality, noise and water quality as described in **Tables A3.11a-f**. Internal environmental monitoring during construction and operation (first two years) will be contracted by APDOT PPMO. The budget for internal environmental monitoring has been estimated at RMB 1.344million (USD 220,618). The APDOT PPMO, the contractor and the ESE will, at the outset of project implementation, prepare more detailed internal environmental monitoring programs for construction and operational

phases if necessary. The monitoring program and budgets will be included in the project tender documents and budgets, as well as the construction and operation contracts.

21. The internal environmental monitoring results will be compared with relevant PRC performance standards (**Table A3.12**), and non-compliance with these standards will be highlighted in the monitoring reports. Monitoring results will be submitted by the EMSs to the APDOT PPMO on a quarterly basis, any significant issues will be highlighted in the quarterly project progress reports, otherwise they will be reported in the semi-annual environmental monitoring reports by the APDOT PPMO (with the support of the ESE, see reporting plan in **Table A.13**).

22. **External Environmental Monitoring.** External environmental monitoring will also be periodically conducted by the environmental authorities, APEPD and local EPBs, in the framework of their legal mandate to check compliance with applicable environmental regulations. They will be responsible for undertaking regular and random environmental monitoring and inspection activities before, during, and after construction as well as in the event of emergencies.

Table A3.11a: Internal Environmental Monitoring Programme for the Shuiyang River Inland Waterway Project

Item	Monitoring Parameter	Monitoring Location	Monitoring, Frequency & Duration	Implementing Entity	Supervising Entity
Construction Stage					
Air quality	TSP	1) 1 site in the village closest to the bridge re-construction 2) Located 10m from the construction site boundary	During Construction Monitor for +12 hrs / day over 3 days once a quarter	EMS	APPSCIG; ESE
Noise	L_{Aeq}	1) For each of three dredging sections identify one site 5m from flood wall and one site by nearest sensitive receptor. 2) One site at the nearest sensitive receptor to each of the five 7 dump sites. 3) One site 5m from the bridge re-construction site and one site at the nearest sensitive receptor.	During Construction Monitor for 20 mins once during the day and once at night, every quarter	EMS	APPSCIG; ESE
Water quality	pH, SS, ammoniacal nitrogen, permanganate index, and petroleum	Dredging For each of three dredging sections monitor 50m upstream, and 50m, 100m and 200m downstream	During Dredging Sample over 2 days every quarter	EMS	APPSCIG; ESE
	SS	Dump Sites Monitor the drainage exit at each of the No. 5 dump sites	During Construction Take a composite sample of the drainage water over 2 days, once a quarter.	EMS	APPSCIG; ESE
Operational Stage (for 15 years)					
Water quality	Discharge, pH, SS, CODcr, ammoniacal nitrogen, petroleum and BOD5	Discharge from the wastewater treatment plant.	Sample over 2 days, every 6 months	EMS	APPSCIG; APDOT PPMO
Noise	L_{Aeq}	Choose 5 paired locations, one 5m from the flood bank and one at the sensitive receptor. Located two at Shuiyang Town including the ship lock, and one each at Xinhezhuang, Baiguoshu, and Gonweizhui.	Monitor once a year, over two days, during the day and at night	EMS	APPSCIG; APDOT PPMO
					Total estimated cost: 732,000RMB

Notes: **EMS** = Environmental Monitoring Station; **APDOT PPMO** = Anhui Province Department of Transport Project Management Office; **APPSCIG** = Anhui Province Ports and Shipping Construction Investment Group**; ESE** = Environmental Supervision Engineer.

Table A3.11b: Internal Environmental Monitoring Programme for the Xuanzhou Multi-purpose Port

Item	Monitoring Parameter	Monitoring Location	Monitoring, Frequency & Duration	Implementing Entity	Supervising Entity
Construction Stage					
Air quality	TSP	1) 1 site at the nearest sensitive receptor to the construction works 2) 1 site located 10m from the enclosed concrete mixing station at the port site	During Construction Monitor for +12 hrs / day over 3 days once a quarter	EMS	APPSCIG, ESE
Noise	L_{Aeq}	1) Set 1 site 5m outside the construction boundary 2) Set 1 site at the nearest sensitive receptor.	During Construction Monitor for 20 mins once during the day and once at night, every quarter	EMS	APPSCIG, ESE
Water quality	pH, SS, ammoniacal nitrogen, permanganate index, and petroleum	Port Construction Select three monitoring points in front of the dock structure, 50m upstream (control point), and 50m and 100m downstream.	Construction Sample over 2 days every quarter	EMS	APPSCIG, ESE
Operational Stage (for 15 years)					
Water quality	Discharge, pH, SS, CODcr, ammoniacal nitrogen, petroleum and BOD5	Discharge from the wastewater treatment plant.	Sample over 2 days, every 6 months	EMS	APPSCIG; APDOT PPMO
Noise	L_{Aeq}	Chose 3 points on the west, southern and northern boundaries of the port	Monitor once a year, over two days, during the day and at night	EMS	APPSCIG; APDOT PPMO
Air	TSP	Chose a site 10m from the boundary of the storage yard	Continuous sampling for more than 12 hrs/ day, for 3 days, every 6 months	EMS	APPSCIG; APDOT PPMO
					Total estimated cost: 335,000RMB
Notes: EMS = Environmental Monitoring Station; **APDOT PPMO** = Anhui Province Department of Transport Project Management Office; **APPSCIG** = Anhui Province Ports and Shipping Construction Investment Group**; ESE** = Environmental Supervision Engineer.					

Table A3.11c: Internal Environmental Monitoring Programme for the Highway Subproject I – Ma'anshan North Corridor

Item	Monitoring Parameter	Monitoring Location	Monitoring, Frequency & Duration	Implementing Entity	Supervising Entity
Construction Stage					
Air quality	TSP	1) 1 site near an asphalt / concrete mixing station 2) 1 site near an unpaved section of road under construction 3) 1 site at the Taodian Health Centre and Chuomiaoji	Pre-Construction Monitor consecutively over 3 days During Construction Monitor for +12 hrs / day over 3 days once a quarter	EMS	MHAB, ESE
Noise	L_{Aeq}	1) 1 site by concrete / asphalt mixing station 2) 6 Sensitive receptors including • Taodian health centre • Gaozu elementary school • Baozhuang elementary school • Chumiaoji	Pre-construction Consecutive monitoring for 2 days during the day and at night During Construction Monitor over two days during the day and at night once a quarter	EMS	MHAB, ESE
Water quality	pH, SS, ammoniacal nitrogen, permanganate index, and petroleum	Bridge construction: 1) Sima River: 1 location 50m upstream, 1 location 50m downstream 2) Dongfeng River: 1 location 50m upstream, 1 location 50m downstream	Pre-Construction Sample over two consecutive days to obtain control During Construction Sample once over 2 days every quarter	EMS	MHAB, ESE
Operational Stage (annually for 15 years)					
Air quality	TSP, NO_2	1) Taodian health centre 2) Chuomiao bazaar	Monitor consecutively over 3 days, once every 2 years. TSP has to be monitored over 12 hrs / day. NO_2 has to be monitored consecutively for 18hrs / day	EMS	MHAB; APDOT PPMO
Noise	L_{Aeq}	6 sensitive receptors including: 1) Taodian Health Centre 2) Gaozu elementary school 3) Baozhuang elementary school 4) Chuomiaoji	Monitor over 5 days in the first year and subsequently once a year, over two days, during the day and at night	EMS	MHAB; APDOT PPMO
GHG emissions	Annual CO_2 emissions	Calculate and report to ADB annual emissions of CO_2 from traffic on the project road	Report to ADB annually	MHAB	APDOT PPMO
					Total estimated cost: 378,000RMB
Notes: **EMS** = Environmental Monitoring Station; **ADB** = Asian Development Bank; EIR = Environmental Impact Report; **APDOT**					

Item	Monitoring Parameter	Monitoring Location	Monitoring, Frequency & Duration	Implementing Entity	Supervising Entity
PPMO = Anhui Province Department of Transport Project Management Office; **MHAB** = Ma'anshan Highway Administration Bureau; **ESE** = Environmental Supervision EngineerManagement Office. MEPB **=** Ma'anshan Municipal Environmental Protection Bureau; **GHG** = Greenhouse gas					

Table A3.11d: Internal Environmental Monitoring Programme for the Highway Subproject II – Yimu Highway Kedian to Mujiating Section

Item	Monitoring Parameter	Monitoring Location	Monitoring, Frequency & Duration	Implementing Entity	Supervising Entity
Construction Stage					
Air quality	TSP	1) 1 site near an asphalt / concrete mixing station 2) 1 site near an unpaved section of road under construction 3) 1 site at the Bowen Junior High School and Wuxia Temple	Pre-Construction Monitor consecutively over 3 days During Construction Monitor for +12 hrs / day over 3 days once a quarter	EMS	NCTB; ESE
Noise	L_{Aeq}	1) 1 site by concrete / asphalt mixing station 2) 6 Sensitive receptors including • Bowen Junior High School • Wuxia Temple	Pre-construction Consecutive monitoring for 2 days during the day and at night During Construction Monitor over two days during the day and at night once a quarter	EMS	NCTB; ESE
Water quality	pH, SS, ammoniacal nitrogen, permanganate index, and petroleum	Bridge construction: 1) Zhang River: 1 location 50m upstream, 1 location 50m downstream 2) Water intake works on Zhang River 3) Hougang River: 1 location 50m upstream, 1 location 50m downstream	Pre-Construction Sample over two consecutive days to obtain control During Construction Sample once over 2 days every quarter	EMS	NCTB; ESE
Operational Stage (for 15 years)					
Air quality	TSP, NO_2	1) Bowen Junior High School 2) Wuxia Temple	Monitor consecutively over 3 days, once every 2 years. TSP has to be monitored over 12 hrs / day. NO_2 has to be monitored consecutively for 18hrs / day	EMS	NCTB; APDOT PPMO
Noise	L_{Aeq}	6 sensitive receptors including: 1) Bowen Junior High School 2) Wuxia Temple	Monitor over five days in the first year and subsequently once a year, over two days, during the day and at night	EMS	NCTB; APDOT PPMO
GHG emissions	Annual CO_2 emissions	Calculate and report to ADB annual emissions of CO_2 from traffic on the project road	Report to ADB annually	NCTB	APDOT PPMO
					Total estimated cost: 369,000RMB
Notes: **EMS** = Environmental Monitoring Station; **ADB** = Asian Development Bank; EIR = Environmental Impact Report; **APDOT**					

Item	Monitoring Parameter	Monitoring Location	Monitoring, Frequency & Duration	Implementing Entity	Supervising Entity
PPMO = Anhui Province Department of Transport Project Management Office; **NCTB** = Nanling County Transport Bureau; **ESE** = Environmental Supervision EngineerManagement Office. MEPB **=** Ma'anshan Municipal Environmental Protection Bureau; **GHG** = Greenhouse gas					

Table A3.11e: Internal Environmental Monitoring Programme for the Highway Subproject III – S319 Erba to Wuwei Section

Item	Monitoring Parameter	Monitoring Location	Monitoring, Frequency & Duration	Implementing Entity	Supervising Entity
Construction Stage					
Air quality	TSP	1) 1 site near an asphalt / concrete mixing station 2) 1 site near an unpaved section of road under construction 3) 1 site each at the Yongnan Central Elementary School, Bo'ai Hospital and Changba Elementary School	Pre-Construction Monitor consecutively over 3 days During Construction Monitor for +12 hrs / day over 3 days once a quarter	EMS	WCTB; ESE
Noise	L_{Aeq}	1) 1 site by concrete / asphalt mixing station 2) 6 sensitive receptors including • Yongnan Central Elementary School • Bo'ai Hospital • Changba Elementary School	Pre-construction Consecutive monitoring for 2 days during the day and at night During Construction Monitor over two days during the day and at night once a quarter	EMS	WCTB; ESE
Water quality	pH, SS, ammoniacal nitrogen, permanganate index, and petroleum	Bridge construction: 1) Bridge across West River: 1 location 50m upstream, 1 location 50m downstream	Pre-Construction Sample over two consecutive days to obtain control During Construction Sample once over 2 days every quarter	EMS	WCTB; ESE
Operational Stage (for 15 years)					
Air quality	TSP, NO_2	1) Health centre for Economic Development Zone of Wuwei County 2) Yongnan Central Elementary School 3) Bo'ai hospital 4) Changba Elementary School 5) Hualong Village	Monitor consecutively over 3 days, once every 2 years. TSP has to be monitored over 12 hrs / day. NO_2 has to be monitored consecutively for 18hrs / day	EMS	WCTB
Noise	L_{Aeq}	1) Health centre for Economic Development Zone of Wuwei County 2) Yongnan Central Elementary School 3) Bo'ai hospital 4) Changba Elementary School 5) Hualong Village 6) TBC	Monitor over five days in the first year and subsequently once a year, over two days, during the day and at night	EMS	WCTB
GHG emissions	Annual CO_2 emissions	Calculate and report to ADB annual emissions of CO_2 from traffic on the	Report to ADB annually	WCTB	APDOT PMO

Item	Monitoring Parameter	Monitoring Location	Monitoring, Frequency & Duration	Implementing Entity	Supervising Entity
		project road			
					Total estimated cost: 513,000RMB

Notes: **EMS** = Environmental Monitoring Station; **ADB** = Asian Development Bank; EIR = Environmental Impact Report; **APDOT PMO** = Anhui Province Department of Transport Project Management Office; **WCTB** = Wuwei County Transport Bureau; **ESE** = Environmental Supervision EngineerManagement Office. MEPB = Ma'anshan Municipal Environmental Protection Bureau; **GHG** = Greenhouse gas

Table A3.11f: Internal Environmental Monitoring Programme for the Highway Subproject IV – G206 Dongliu to Yaodu Section

Item	Monitoring Parameter	Monitoring Location	Monitoring, Frequency & Duration	Implementing Entity	Supervising Entity
Construction Stage					
Air quality	TSP	1) 1 site near an asphalt / concrete mixing station 2) 1 site near an unpaved section of road under construction 3) 1 site each at Zhazui and Yangjia	Pre-Construction Monitor consecutively over 3 days During Construction Monitor for +12 hrs / day over 3 days once a quarter	EMS	CHAB, ESE
Noise	L_{Aeq}	1) 1 site by concrete / asphalt mixing station 2) 3 Sensitive receptors • Zhazui • Yangjia • Liucun Village	Pre-construction Consecutive monitoring for 2 days during the day and at night During Construction Monitor over two days during the day and at night once a quarter	EMS	CHAB, ESE
Water quality	pH, SS, ammoniacal nitrogen, permanganate index, and petroleum	Bridge construction: 1) Bridge across Xiaohuangni Lake 1 location 50m upstream, 1 location 50m downstream 2) Tributary of Yaodu River 1 location 50m upstream, 1 location 50m downstream	Pre-Construction Sample over two consecutive days to obtain control During Construction Sample once over 2 days every quarter	EMS	CHAB, ESE
Ecology	Bird species and bird counts	Within the section between K6+000 and K15+000 along the lakesides	Two consecutive days each month between 0700-0900 hr	Ornithologist	CHAB, ESE
Operational Stage (for 15 years)					
Air quality	TSP, NO_2	1) Zhazui 2) Yangjia	Monitor consecutively over 3 days, once every 2 years. TSP has to be monitored over 12 hrs / day. NO_2 has to be monitored consecutively for 18hrs / day	EMS	CHAB
Noise	L_{Aeq}	1) Zhazui 2) Yangjia 3) Liucun Village	Monitor over five days in first year, once a year, over two days, during the day and at night	EMS	CHAB
GHG emissions	Annual CO_2 emissions	Calculate and report to ADB annual emissions of CO_2 from traffic on the project road	Report to ADB annually	CHAB	APDOT PPMO

Item	Monitoring Parameter	Monitoring Location	Monitoring, Frequency & Duration	Implementing Entity	Supervising Entity
					Total estimated cost: 432,000RMB

Notes: **EMS** = Environmental Monitoring Station; **ADB** = Asian Development Bank; EIR = Environmental Impact Report; **APDOT PPMO** = Anhui Province Department of Transport Project Management Office; **CHAB** = Chizhou Highway Administration Bureau; **ESE** = Environmental Supervision EngineerManagement Office. MEPB **=** Ma'anshan Municipal Environmental Protection Bureau; **GHG** = Greenhouse gas

Table A3.12: Monitoring Indicators and Applicable PRC Standards

Period	Indicator	Standard
Construction	TSP	Class II Ambient Air Quality Standard (GB 3095-1996)
	Fume from asphalt mixing plant (SO_2, NOx)	Air Pollutant Integrated Emission Standard (GB 16297-1996)
	Noise limits of PME at boundary of construction site	Emission Standard of Environmental Noise for Boundary of Construction Site (GB 12523-2011)
	Discharge of wastewater from construction sites	Class I standard of Integrated Wastewater Discharge Standard (GB 8978-1996)
Operation	Traffic noise at sensitive receptor within 35 m of road red line	Noise standard for Category 4a Functional Area in Environmental Quality Standard for Noise (GB 3096-2008)
	Traffic noise at sensitive receptor beyond 35 m of road red line	Noise standard for Category 2 Functional Area in Environmental Quality Standard for Noise (GB 3096-2008)

23. **Compliance Monitoring.** EMP compliance monitoring will be undertaken by the APDOT PPMO, with support of the ESE. The APDOT PPMO will report to ADB the project's adherence to the EMP, information on project implementation, environmental performance of the contractors, and environmental compliance through quarterly project progress reports and semi-annual environmental monitoring reports (Table A3.6). Quarterly project progress reports by the APDOT PPMO to ADB will highlight any specific issues with EMP implementation progress and compliance. The ESE will support the APDOT PPMO in developing the semi-annual environmental monitoring reports. The reports should confirm the project's compliance with the EMP, local legislation such as PRC EIA requirements, and identify any environment related implementation issues and necessary corrective actions, The performance of the contractors in respect of environmental compliance will also be reported. The operation and performance of the project GRM, environmental institutional strengthening and training, and compliance with environmental covenants under the project will also be included in the report. The costs for the ESE to conduct independent environmental supervision and compliance verification of EMP implementation have been estimated to be $682,410 (consisting of $285,660 for the Shuiyang River Inland Waterway Improvement Scheme and $396,750 for the Highway Subprojects).

24. **Monitoring by ADB.** Besides reviewing the quarterly project progress reports and the semi-annual environment monitoring reports from the APDOT PPMOs and the verification reports from the ESE, ADB missions will inspect the project progress and implementation on site at least once a year. For environmental issues, inspections will focus mainly on (i) monitoring data; (ii) the implementation status of project performance indicators specified in the loan documents for environment, environmental compliance, implementation of the EMP, and environmental institutional strengthening and training; (iii) the environmental performance of contractors, ESE, the APDOT PPMO and the IA LPMOs; and (iv) operation and performance of the project GRM. The performance of the contractors in respect of environmental compliance will be recorded and will be considered in the next bid evaluations.

25. **Environmental Acceptance and Completion Monitoring and Reporting.** Within three months after completion, or no later than one year with permission of the APEPD/ relevant local EPB, environmental acceptance reports shall be prepared by a licensed institute in accordance with the PRC Regulation on Project Completion Environmental Audit (MEP, 2001) and approved by the relevant environmental authority, and finally reported to ADB (**Table A3.13**). The environmental acceptance report will indicate the timing, extent, effectiveness of completed

mitigation and of maintenance, and the need for additional mitigation measures and agreed monitoring during operation. These environmental acceptance reports will be provided to the ESE who will prepare an environmental completion report and inputs for the Project Completion Report for ADB.

26. **Project Design and Monitoring Framework.** At the outset of project implementation, the APDOT PPMO will develop (i) a comprehensive project design and monitoring framework (DMF) procedures to systematically generate data on inputs and outputs of the project components, and (ii) detailed environmental and related social economic indicators to measure project impacts. The DMF indicators for the project include (i) public satisfaction with the living environment; (ii) increased employment; (iii) water quality in the Shuiyang River, (iv) wastewater collection and treatment rate; (v) increased shipping and cargo handling at Xuanzhou Port and traffic flow on project roads; (vi) increased or decreased traffic accidents; and (vii) increased local GDP. Under the DMF, baseline and progress data will be reported at the requisite time intervals by APDOT PPMO. APDOT PPMO will be responsible for analyzing and consolidating the data through its management information system. The DMF will be designed to permit adequate flexibility to adopt remedial actions in relation to project design, schedules, activities, and development impacts. The APDOT PPMO will refine the DMF, confirm achievable goals, firm up monitoring and recording arrangements, and establish systems and procedures no later than six months after loan effectiveness.

Table A3.13: Reporting Plan

Reports		From	To	Reporting Frequency
Construction Phase				
Internal progress reports by contractors	Internal project progress report by construction contractors	Contractors	APDOT PPMO	Monthly
Environmental quality monitoring	Environmental quality monitoring report	EMS	EPB, APDOT PPMO	Quarterly
Reports to ADB	Project progress report (including section highlighting any EMP implementation and monitoring issues)	PPMO	ADB	Quarterly
	Environmental monitoring reports	PPMO	ADB	Semi-annual
Acceptance report	Environmental acceptance monitoring and audit report	Licensed institute	APEPD/ Local EPB	Once, not later than one year after completion of physical works
Completion report	Environmental completion report for ADB	ESE	ADB	Once, one year after completion of physical works
Operational Phase				

Reports		From	To	Reporting Frequency
Environmental quality monitoring	Environmental quality monitoring report	EMS	EPB, APDOT PPMO	Quarterly
Reports to ADB	Project progress report (including section on EMP implementation and monitoring)	APDOT PPMO	ADB	Quarterly
	EMP progress and monitoring report	APDOT PPMO	ADB	Once (after first year of operation)

Notes: **ADB** = Asian Development Bank; **EMS** = Environment Monitoring Station; PPMO = Provincial Project Management Office; APDOT = Anhui Province Department of Transport; **EPB** = Environmental Protection Bureau.

V. Institutional Capacity Building and Training

27. The capacity of the APDOT PPMO and contractors' staff responsible for EMP implementation and supervision will be strengthened. All parties involved in implementing and supervising the EMP must have an understanding of the goals, methods, and practices of project environmental management. The project will address the lack of capacities and expertise in environmental management through (i) institutional capacity building, and (ii) training.

28. At this stage it is difficult to comment on specific requirements for institutional strengthening as the responsible organisations have not been appointed and it is not possible to assess their needs. However, it would be safe to assume that the IAs and associated institutions would need strengthening in a variety of environmental capacities, including understanding and enforcement of ADB and PRC environmental safeguards, supervision and monitoring, implementation of mitigation measures, operation and management of environmental installations.

29. **Institutional Strengthening.** The capacities of the APDOT PPMO to coordinate environmental management will be strengthened through a set of measures:

i. The appointment of one qualified environment specialist within the APDOT PPMO in charge of EMP coordination, including GRM;

ii. The appointment of ESE to guide APDOT PPMO in implementing the EMP and ensure compliance with ADB's Safeguard Policy Statement (SPS 2009); and

iii. The appointment of one environment specialist by each IA to conduct regular site inspections and coordinate internal environmental monitoring.

30. **Training.** The APDOT PPMO, IA LPMOs, contractors and O&M units will receive training in EMP implementation, supervision, and reporting, and on the GRM (**Table A3.14**). Training will be facilitated by the ESE. The estimated budget is 40,000 RMB (USD 6,556) for the Shuiyang River Inland Waterway Improvement Project and Xuanzhou Multi-purpose Port and 28,000 RMB (USD 4,596) for the four Highway Subprojects.

Table A3.14: Training Programme

Stage	Training contents	Personnel	Total time	Time	Cost (RMB 10,000)
Shuiyang River Inland Waterway Improvement Project					
Construction period	Environmental management and relevant policies	1 for FEO of APDOT, APPSCIG and design institute respectively	1 month	2014-2015	15
	1. Environmental protection laws, regulations and relevant policies; 2. Heritage conservation knowledge; 3. Highway environmental impact assessment and environmental management plan; 4. Daily environmental monitoring method; 5. Environmental supervision	2 for each construction bid section and construction supervision organization respectively and 5 for design organization	4 days	2014	5
	Environmental management emergency plan and measures	2 for APPSCIG and FIO of APDOT respectively and Xuancheng Port and Waterway Bureau respectively	3 days	2014	5
Operation period	Environmental management and relevant policies	1 for FIO of APDT, APPSCIG and Xuanzheng Port and Waterway Bureau respectively	1 month	2015-2016	15
	Subtotal				40
Highway Subprojects					
Construction period	Environmental management and relevant policies	1-2 for each municipal project office and design institute respectively	30 days	2013-2015	15

Stage	Training contents	Personnel	Total time	Time	Cost (RMB 10,000)
	1. Environmental protection laws, regulations and relevant policies; 2. Heritage conservation knowledge; 3. Highway environmental impact assessment and environmental management plan; 4. Daily environmental monitoring method; 5. Environmental supervision	2 for each construction bid section and construction supervision unit respectively and 4 for design unit	4 days	2013	4
	Environmental management emergency plan and measures	2 for each municipal project office and FIO of APDT respectively and 2 for each construction bid section and construction supervision unit respectively	3 days	2013	4
Operation period	Environmental management and relevant policies	1 for each municipal project office	15 days	2014-2015	5
	Subtotal				28

31. The institutional components of the project will also involve training by loan consultants in operation and maintenance of completed facilities. Part of this training will focus on teaching staff how to use a set of indicators to monitor performance of the completed facilities. These indicators will be designed by loan implementation consultants prior to operation start-up.

VI. Consultation, Participation and Information Disclosure

32. **Consultation during Project Preparation.** Section VII of the EIA report describes the meaningful public participation and consultation implemented during project preparation.

33. **Future Public Consultation Plan.** Plans for public involvement during construction and operation stages are to be developed during project preparation. These plans include public participation in (i) monitoring impacts and mitigation measures during the construction and operation stages; (ii) evaluating environmental and economic benefits and social impacts; and (iii) interviewing the public after the project is completed. These plans will include several types of public involvement, including site visits, workshops, investigation of specific issues, interviews, and public hearings, as indicated in **Table A3.15**. The budget for public consultation is estimated at approximately RMB 60,919 (USD 10,000).

Table A3.15: Public Consultation Plan

Organizer	Format	No. of Times	Subject	Attendees	Budget
Construction Stage					
APDOT PPMO, IA LPMOs	Public consultation & site visit	4 times: 1 time before construction commences and 1 time each year during construction	Adjusting of mitigation measures, if necessary; construction impact; comments and suggestions	Residents adjacent to project sites, representatives of social sectors	$2,500
APDOT PPMO, IA LPMOs	Expert workshop or press conference	As needed based on public consultation	Comments and suggestions on mitigation measures, public opinions	Experts of various sectors, media	$2,500
Operational Stage					
APDOT PPMO, IA LPMOs, O&M units	Public consultation and site visits	Once in the first year	Effectiveness of mitigation measures, impacts of operation, comments and suggestions	Residents adjacent to project sites, representatives of residents and representatives of social sectors	$2,500
APDOT PPMO, IA LPMOs, O&M units	Expert workshop or press conference	As needed based on public consultation	Comments and suggestions on operational impacts, public opinions	Experts of various sectors, media	$2,500
				Total budget:	**$10,000**

Notes: PPMO = Provincial Project Management Office; APDOT = Anhui Province Department of Transport; O&M = operation and maintenance

VII. Grievance Redress Mechanism

34. Public participation, consultation and information disclosure undertaken as part of the environmental and resettlement assessment process have identified and addressed community concerns about the project. Given the level of public and stakeholder participation during the development of the project and proposed ongoing information disclosure and consultation during project implementation major issues of grievance are not expected, however, unforeseen issues may occur. A Grievance Redress Mechanism (GRM) providing effective and transparent channels for receiving and managing complaints has been defined to address project environment related issues. The GRM will be established prior to construction. The GRM is responsive to ADB's Safeguard Policy Statement (2009) and PRC legislation (**Table A3.16**).

Table A3.16: ADB and PRC Requirements for Grievance Redress

Safeguard Policy Statement (2009) of the Asian Development Bank (ADB)	ADB requires that the borrower/client establish and maintain a grievance redress mechanism to receive and facilitate resolution of affected peoples' concerns and grievances about the borrower's/client's social and environmental performance at project level. The grievance redress mechanism should be scaled to the risks and impacts of the project. It should address affected people's concerns and complaints promptly, using an understandable and transparent process that is gender responsive, culturally appropriate, and readily accessible to all segments of the affected people at no cost and without retribution.
2005 PRC Decree 431; 2007 MEP Decree 34	The 2005 PRC Decree 431: the Petition System (by letter or visit), established provisions for a Complaint Handling Mechanism by all levels of government, and for protection of petitioners from any retaliation. This was adopted for environmental matters by the Ministry of Environment Protection (MEP) in 2007, under MEP Decree 34: Environmental Petition System. This Decree delegates to provincial governments the responsibility to establish local Complaint Handling Mechanism. Under this mechanism, contractor, the local EPB, the local government and the court are main access points. The role of the local EPB is to provide leadership and coordination in handling complaints.

35. **The Proposed Project GRM.** In consultation with the APDOT PPMO, APEPD, local EPBs and potentially affected people, it was agreed that the APDOT PPMO will establish a complaints center for the project. Other GRM entry points will include: (i) the contractors; (ii) IA LPMOs and local EPBs; and (iii) APDOT PPMO and APEPD. Contact details for the complaints hotline, complaints center and the entry points will be publicly disseminated on information boards at construction sites and nearby communities/villages. The mechanism will be accessible to diverse members of the community, including more vulnerable groups such as women and youths. Multiple means of using this mechanism, including face-to-face meetings, written complaints, telephone conversations, or e-mail, will be available. Confidentiality and privacy for complainants should be honored where this is requested. In the construction period and the initial operational period covered by loan covenants, the APDOT PPMO will report progress to the ADB, and this will include reporting complaints received and their resolution.

36. **Basic steps for grievance redress** are as follows and illustrated in **Figure A3.1**:

i. Step 1: For environmental issues during the construction stage, the affected persons can register their complaints directly with the contractors. Contractors are required to set up a complaint hotline and designate a person in charge of handling complaints, and advertise the hotline number at the main entrance to each construction site. The contractors are required to maintain and update a Complaints Register to document all complaints. The contractors are also required to respond to the complainant in writing within seven calendar days on their proposed solution and how it will be implemented. If the problem is resolved and the complainant is satisfied with the solution, the grievance is considered addressed. The contractors are required to report complaints received, handled, resolved and unresolved to APDOT PPMO monthly.

ii. Step 2: For environmental issues that cannot be resolved by the contractors, the affected person can take the grievance to the IA LPMOs and local EPBs. On receiving complaints by the IAs or local EPBs, the party receiving the complaints must notify the other party and document the complaint in writing in a Complaints

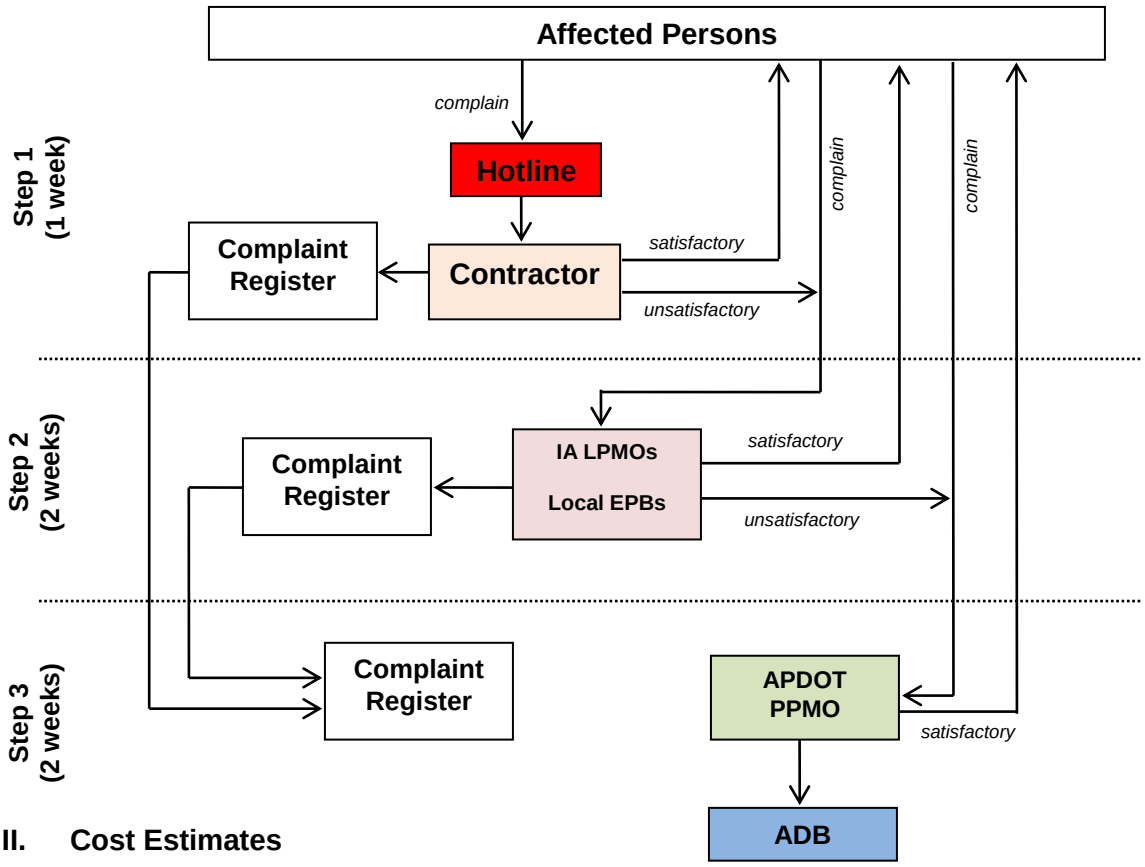
Register. The IA LPMOs and local EPBs must reply to each complainant in writing within 14 calendar days with the proposed solution and method of implementation. If the issue is resolved and the complainant is satisfied with the solution, the IA LPMOs and local EPBs should document the complaint and resolution process in its Complaint Register, with monthly reporting to APDOT PPMO.

iii. Step 3: If the complainant is not satisfied with the proposed solutions in Step 2, he/she can, upon receiving the reply, take the grievance to the APDOT PPMO complaints center. Upon receiving the complaint, the center must deal with it within 14 calendar days. Once a complaint is documented and put on file, the APDOT PPMO complaints center will immediately notify ADB. After discussing the complaint and potential solutions amongst ADB, APDOT PPMO and the ESE, the complainant and the contractor, APDOT PPMO must propose a resolution strategy within 14 calendar days from when the complaint is registered.

37. The tracking and documenting of grievance resolution by the APDOT PPMO (through its complaints center) will include the following elements: (i) tracking forms and procedures for gathering information from project personnel and complainant(s); (ii) dedicated staff to update the database routinely; (iii) systems with the capacity to analyze information so as to recognize grievance patterns, that can identify systemic causes of grievances, promote transparency, publicize how complaints are being handled, and periodically evaluate the overall functioning of the mechanism; (iv) processes for informing stakeholders about the status of a case; and (v) procedures to retrieve data for reporting purposes, including the periodic reports to the ADB.

38. The APDOT PPMO will record the complaint, investigation, and subsequent actions and report results in the monthly internal Environmental Management Plan reports. In the construction period and the initial operational period covered by loan covenants the EA will periodically report complaints and their resolution to ADB in the quarterly project progress reports and the semi-annual environmental monitoring reports.

Figure A3.1: Flow Diagram of the Project Grievance Redress Mechanism



VIII. Cost Estimates

39. Cost estimates for EMP implementation, including mitigation measures, internal environmental monitoring, training and public consultation are summarized in **Table A3.17.** Excluded from the costs estimates are:

i. infrastructure costs which relate to environment and public health but which are already included in the main civil works contract.

ii. remuneration costs for environment specialists within APDOT PPMO and IA LPMOs,

iii. loan implementation consultants, and

iv. technical experts on equipment operation and maintenance, which are covered elsewhere in the project budget.

Table A3.17: Estimated Budget for Implementation of the Environmental Management Plan

EMP Item		Shuiyang River and Xuanzhou Port	Highway Subprojects	Total
1	Mitigation measures	$491,970	$3,116,868	$3,608,838
2	Environmental monitoring	$169,333	$268,520	$437,853
3	Training	$63,480	$44,436	$107,916
4	Public consultation	$5,000	$5,000	$10,000
5	External compliance monitoring by ESE	$285,660	$396,750	$682,410
6	Soil and water conservation measures	$47,610	$4,085,684	$4,133,294
Total		**$1,063,053**	**$7,917,258**	**$8,980,311**

40. APDOT will bear all internal environmental monitoring costs during construction and the first year of operation and will ensure the necessary budgets are available for the Environmental Monitoring Station. Contractors will bear the costs for all mitigation measures during construction, including those specified in the tender and contract documents as well as those to mitigate unforeseen impacts due to their construction activities. The O&M units will bear the costs related to mitigation measures during operation, except the indirect mitigation measures of resettlement and provision of double-glazed windows, which will be borne by APDOT. APDOT will also bear the costs related to environmental supervision during construction and operation. The project as a whole (through PPMO and LPMOs) will bear the costs for training, for coordinating the Grievance Redress Mechanism (GRM), and contract costs associated with the PPMO Environmental Supervision Engineer.

IX. Mechanisms for Feedback and Adjustment

41. The EMP is a live document. The need to update and adjust the EMP will be reviewed when there are design changes, changes in construction methods and program, unfavorable environmental monitoring results or inappropriate monitoring locations, and ineffective or inadequate mitigation measures. Based on environmental monitoring and reporting systems in place, the PPMO (with the support of the ESE) and LPMOs shall assess whether further mitigation measures are required as corrective actions or improvements in environmental management practices are required. PPMO will inform ADB promptly on any changes to the project and needed adjustments to the EMP. The updated EMP will be submitted to ADB for review and approval, and will be disclosed on the project website.