

# Environmental Monitoring Report

---

# 6 Semestral Report  
September 2022

## People's Republic of China: Qinghai Haidong Urban-Rural Eco Development Project

Prepared by the Haidong Municipal Government for the People's Republic of China and the Asian Development Bank.

This environmental monitoring report is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature.

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.

# Environmental Monitoring Report (EMR)

---

Project Number: 48102-002

July 2022

## People's Republic of China: Loan 3443-PRC- Qinghai Haidong Urban-Rural Eco Development Project

(#6 EMR)

Prepared by the Haidong City Government for the Asian Development Bank

This environmental monitoring report is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature.

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.

## CURRENCY EQUIVALENTS

Currency Unit	–	Yuan (CNY)
CNY 1.00	=	\$ 0.15
\$ 1.00	=	CNY 6.7

## ABBREVIATIONS

ADB	–	Asian Development Bank
BOD	–	Biological Oxygen Demand
CNY	–	Chinese Yuan
CSC	–	Construction Supervision Company
COD	–	Chemical Oxygen Demand
dB(A)	–	A-Weighted Decibel
DI	–	Design Institute
DPA	–	Direct Project Area
EA	–	Executing Agency
EEM	–	External Environmental Monitor
EIA	–	Environmental Impact Assessment
EIS	–	Environmental Impact Statement
EMC	–	Environmental Monitoring Center
EMDP	–	Ethnic Minority Development Plan
EMP	–	Environmental Management Plan
EMS	–	Environmental Monitoring Station
EPB	–	Environmental Protection Bureau
EPD	–	Environmental Protection Department
FSR	–	Feasibility Study Report
FYP	–	Five-Year Plan
GAP	–	Gender Action Plan
GDP	–	Gross Domestic Product
GHG	–	Greenhouse Gas
GRM	–	Grievance Redress Mechanism
HMG	–	Haidong Municipal Government
HPLG	–	Haidong Project Leading Group
IA	–	Implementing Agency
IEE	–	Initial Environmental Evaluation
LIC	–	Loan Implementation Consultancy
LIEC	–	Loan Implementation Environment Consultant
MEP	–	Ministry of Environmental Protection
MRM	–	Management Review Meeting
NO <sub>2</sub>	–	Nitrogen Dioxide
O&M	–	Operation & Maintenance
PLG	–	Project Leading Group
PM <sub>10</sub>	–	Particular Matter smaller than 10 micrometers
PMO	–	Project Management Office
PPTA	–	Project Preparatory Technical Assistance
PRC	–	People's Republic of China
RP	–	Resettlement Plan
SAP	–	Social Action Plan
SEPA	–	State Environmental Protection Administration
SEPP	–	Soil Erosion Prevention Plan
SO <sub>2</sub>	–	Sulphur Dioxide
SPS	–	Safeguard Policy Statement
SS	–	Suspended Solids
TN	–	Total Nitrogen

TP	–	Total Phosphorus
TSP	–	Total Suspended Particulates
WWTP	–	Wastewater Treatment Plant

## WEIGHTS AND MEASURES

‰	–	per mill (per thousand)
ha	–	hectare
kg/d	–	kilogram per day
km	–	Kilometer
km <sup>2</sup>	–	square kilometer
m	–	meter
m <sup>2</sup>	–	square meter
m <sup>3</sup>	–	cubic meter
m <sup>3</sup> /d	–	cubic meters per day
m <sup>3</sup> /s	–	cubic meters per second
m <sup>3</sup> /yr	–	cubic meters per year
mg/m <sup>3</sup>	–	milligrams per cubic meter
mm	–	millimetre
mu	–	unit of land area equal to 1/15 ha or 667 m <sup>2</sup>

## NOTE

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

## Table of Contents

<b>I</b>	<b>BACKGROUND AND PROJECT PROGRESS</b>	<b>1</b>
<b>II</b>	<b>ENVIRONMENTAL MANAGEMENT</b>	<b>9</b>
<b>2.1</b>	Changes/updates in Project Organization and Environmental Management Team	9
<b>2.2</b>	Relationships with Contractors, Owner, Lender, etc.	11
<b>III</b>	<b>COMPLIANCE ON THE EMP</b>	<b>12</b>
<b>3.1</b>	The Project Environmental Management System, site-specific environmental management plan (SSEMP) and work plans	12
<b>3.2</b>	Site Inspections and Audit	12
<b>3.3</b>	Non-Compliance Notices	13
<b>3.4</b>	Corrective Action Plans	13
<b>3.5</b>	Actions taken to reflect the findings of ADB mission	13
<b>3.6</b>	Status Of Compliance With Major Loan Covenants and DMF indicators	15
<b>IV</b>	<b>FIELD ENVIRONMENTAL SAMPLING AND TESTING RESULTS ASSESSMENT</b>	<b>20</b>
<b>V</b>	<b>CONSULTATIONS AND COMPLAINTS</b>	<b>34</b>
<b>VI</b>	<b>CONCLUSIONS AND ACTION PLAN FOR THE NEXT PERIOD</b>	<b>36</b>
<b>6.1</b>	Conclusions and recommendations	36
<b>6.2</b>	Action Plan for the Next Period	36

### **Appendices**

**Appendix 1: Implementation Status Summary of EMP**

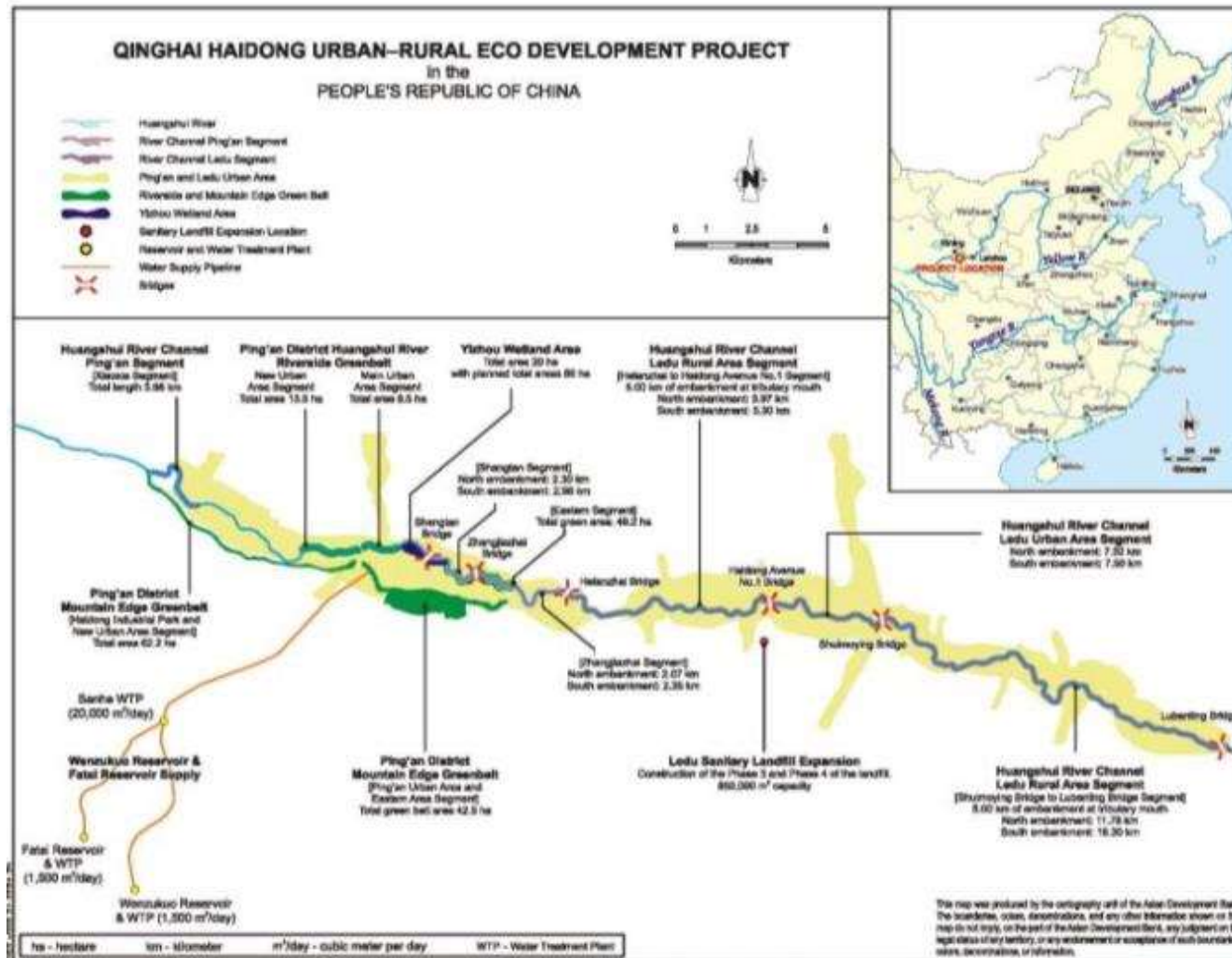
**Appendix 2: Qualification Certificate and Testing Results of Local EMS**

**Appendix 3: Implementation Status Summary of CRVA**

**Appendix 4: Public Consultation Records**

**Appendix 5: Implementation Status Of Covid-19 –Health And Safety Plan Checklist**

**Appendix 6: The compliance audit on afforestation including subcomponents 1.4 and 2.1**



**Figure: Overview of project components**



## PART I - BACKGROUND AND PROJECT PROGRESS

1. **General Introduction.** This report is the **SIXTH** environmental monitoring report of Qinghai Haidong Urban-Rural Eco Development Project (hereafter referred as 'the Project'), covering the period from January to June 2022. This report is prepared by Haidong Municipal Government (HMG) based on site visits and information collected from the Project Management Office (PMO), Project Implementation Units (PIUs), and environmental supervisors, under technical assistance from the loan implementation consultants. This environmental monitoring report is prepared in accordance with the project environmental management plan (EMP) including environmental monitoring program (EMoP). This report was reviewed by the PMO, prior to submission to ADB.

2. **Impact, Outcome and Output, and Environmental Screening/Categorization/Due Diligence.** The PRC Government requested ADB to provide a \$150 million loan project to fund improve the ecological and environmental services in Haidong City through more effective water resource and flood management, as well as ecosystem-based adaptation in the Huangshui River watershed. The project is aligned with the following impacts: enhanced environmental protection, ecological rehabilitation, and climate change adaptation; and improved flood control standards and urban aesthetics along the Huangshui River. The intended outcome will be an improvement in ecological and environmental services in Haidong. The project has the following four outputs:

- (i) **Integrated flood plain management infrastructure is provided for Huangshui River** which will support the stabilization of riverbanks and improve integrated flood risk management, rehabilitate riverine wetlands, increase forest coverage within riparian areas, provide environmental education, and improve recreational opportunities for residents through three components: (i) rehabilitation of existing and development of new embankments along the main Huangshui River channel; (ii) establishment of a riverside greenbelt; and (iii) development of an ecological wetland park;
- (ii) **Measures to control soil erosion in Haidong's urban catchment are implemented** which will control soil erosion to reduce siltation in Huangshui River, pursue dust suppression, and set an urban growth boundary to protect the fragile mountainous landscape adjacent to Ping'an District's urban area. This will include (i) establishing a mountainside greenbelt; and (ii) expanding the irrigation network to using treated wastewater in the greenbelt;
- (iii) **Rural-urban water supply and solid waste infrastructure is constructed;** which will provide critical urban and rural services including (i) building three water treatment plants and new conveyance pipe networks for raw and potable water; and (ii) adding 850,000 cubic meters of capacity to the Ledu landfill and building a leachate treatment facility; and,
- (iv) **Project management capacity is strengthened** to support consulting services, training, and equipment to boost the capacity of the executing and implementing agencies.

In compliance with ADB's Safeguard Policy Statement (SPS, 2009), the project is classified as **Environment category B**. An initial environmental examination (IEE) with an environmental management plan was prepared in compliance with ADB's Safeguard Policy Statement (2009) and disclosed on the ADB website. The initial environmental examination incorporates findings of domestic environmental impact assessments and topical studies conducted under the project preparatory technical assistance (PPTA). Construction will cause no loss of valuable ecology or physical cultural resources. Construction dust, noise, erosion, and local disruption to traffic and communities will be temporary. The design of flood mitigation embankments will promote the reestablishment of riverside habitats. Downstream afflux effects of flood mitigation works will be minor and manageable. Strict reservoir operation planning will ensure drinking and irrigation water security for the target rural communities as well as minimum environmental flows even in dry years. Landfill design, enforcement of buffer zone requirements, and operational control will minimize impacts on environment and communities. HMG will be responsible for the overall implementation



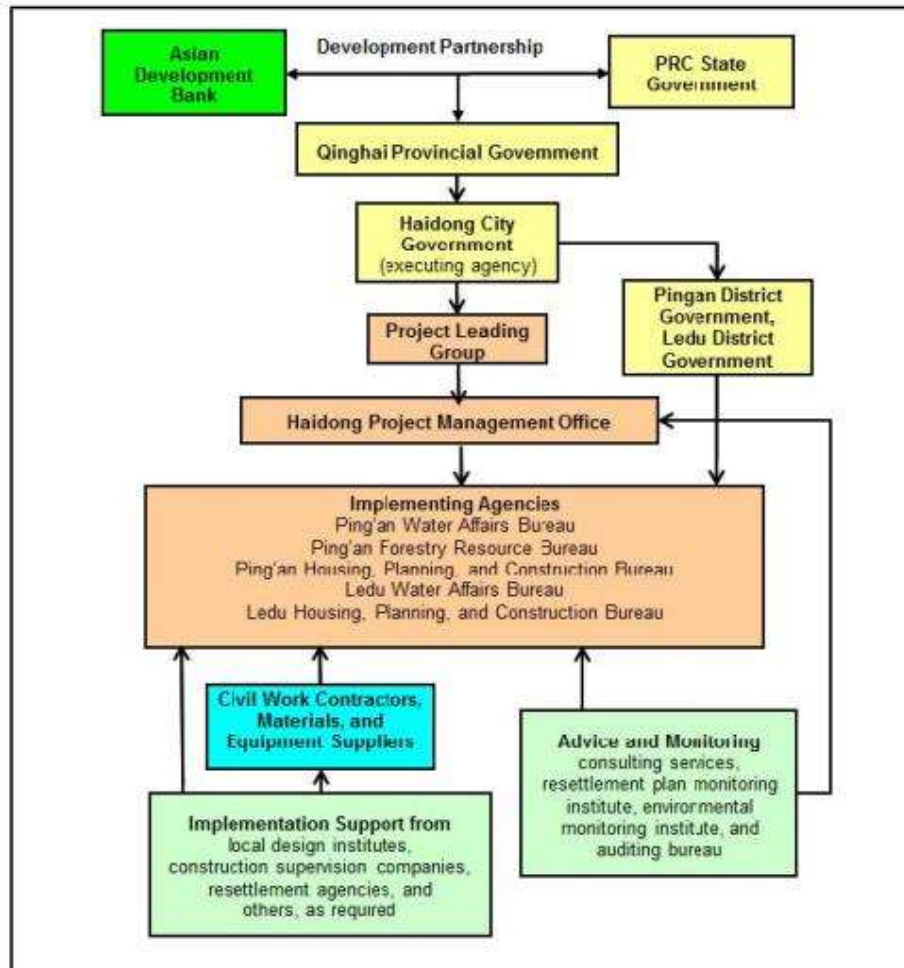
and compliance with the environmental management plan. Environmental management is supported by capacity development and institutional strengthening activities under output 4. HMG conducted meaningful consultation with potentially affected people and complaints will be handled in accordance with the project's grievance redress mechanism. The Project's climate risk is medium, therefore, a comprehensive Climate Risk and Vulnerability Assessment (CRVA) was prepared for the project at project preparation stage.

3. **Implementation Arrangement.** The Project is estimated to cost \$1,021.00 million equivalent. The major expenditure items are civil works, equipment and its installation, financial intermediation component, and consulting services. Among of them, climate mitigation is estimated to cost \$148.6 million, and climate adaptation is estimated to cost \$172.0 million.

**Table : Implementation Arrangements**

Aspects		Arrangements	
Implementation period		April 2017–March 2022	
Estimated completion date		31 March 2022	
Loan closing date		30 September 2022, per the loan agreement	
Management			
(i) Oversight body		Haidong project leading group Group leader: mayor of HMG Deputy group leaders: senior officials from HMG, Haidong Water Affairs Bureau, Haidong Finance Bureau, Haidong Development Reform Commission Group members: senior officials from Ledu District Government, Ping'an District Government, Haidong Forestry Bureau, Haidong Land Resource Bureau, Haidong Environmental Protection Bureau, Haidong Urban and Rural Planning and Construction Bureau, Haidong City Management and Comprehensive Law Enforcement Bureau, Haidong Communication and Transportation Bureau, Haidong Water Affairs Bureau, Haidong Water Group, and Haidong Forestry Bureau	
(ii) Executing agency		HMG	
(iii) Implementing agencies		Operating under the district governments, the five implementing agencies are: Ledu Housing, Planning, and Construction Bureau; Ledu Water Affairs Bureau; Ping'an Housing, Planning, and Construction Bureau; Ping'an Forestry Resource Bureau; and Ping'an Water Affairs Bureau.	
(iv) Implementation unit		The project management office is established in HMG, and housed in the Haidong Water Affairs Bureau. The office will have approximately eight staff, with a number of staff from the implementing agencies providing additional support.	
Procurement		Procurement Method	No. of Contracts
		National competitive bidding	15 Contracts
Consulting services		Quality- and cost-based selection	171 person-months
		Consultants' qualification selection	51 person-months
		Individual consultant selection	12 person-months
Retroactive financing and advance contracting		Advance contracting and retroactive financing apply to goods, works, and consulting services. The amount to be retroactively financed does not exceed 20% of the loan amount and is incurred prior to loan effectiveness but not earlier than 12 months before the date of signing of the related legal agreement.	
Disbursement		The loan proceeds will be disbursed in accordance with ADB's <i>Loan Disbursement Handbook</i> (2017, as amended from time to time) and detailed arrangements agreed upon between the government and ADB.	

ADB = Asian Development Bank, HMG = Haidong Municipal Government. Source: Asian Development Bank estimates.



**Figure Project Organization Structure**

4. **Design and Project Scope.** Preliminary and detailed design for many subcomponents has been completed or is at advanced stages. **The project scope was reconfirmed** whilst some minor design optimization or adjustments during detailed design due to more detailed due diligence were acknowledged. As some originally proposed ADB funded subcomponents have been completed by domestic funds (see the 1<sup>st</sup> EMR dated January 2020) which resulted in loan savings, the PMO was considering to newly add some new subcomponents to fully utilize the loan savings. The environmental due diligence on two new subcomponents (including comprehensive flood control and ecology improvement on the north bank of Huangshui River, and Yangjia water treatment plant (WTP) and water transmission and distribution network) were submitted to ADB in Oct 2020. The revised environmental due diligence was updated in November 2021, after the domestic EIA for those two subcomponents was approved by Haidong ecological environment bureau by July 2021. In addition, environmental due diligence on the existing subcomponent HD-IF-W4: Huangshi River Ledu Rural Segment (upstream) was submitted to ADB in Dec 2020.

5. **Project Progress.** The key project information used by ADB to monitor implementation progress is as follows:

Loan amount	\$150 million
Approval	19 October 2016
Signing	23 August 2017
Effectiveness	4 December 2017
Closing (original)	30 September 2022
Executing agency	Haidong Municipal Government
Elapsed time (at 31 June 2022)	94% (approx.)

6. **Status of Contracts awarded.** As of 30 June 2022, the cumulative contract award covers the 7 civil works, 1 goods and 5 consulting services packages described below.

Contract Package	Award Date
HD-CB-CS3-1 Initial project implementation support (Project Management and Procurement Specialist)	18 Apr 2017
HD-CB-CS3-2 Initial project implementation support (Safeguards Specialist)	26 Apr 2017
HD-CB-CS3-3 Initial project implementation support (Financial Management Specialist)	22 May 2017
HD-CB-CS1 Project Implementation Management Support	15 Apr 2019
HD-CB-CS2 External Resettlement and Social Monitoring	17 May 2019
HD-SE-W2 Water Reclamation – Pumping Station (Construction completed at the end of 2020)	10 Jun 2019
HD-SE-W3 Water Reclamation – Pipeline (Construction completed at the end of 2020)	13 Aug 2019
HD-RUI-W4 Landfill Expansion (Construction completed at the end of 2020)	26Nov2019
HD-IF-W1 Huangshui River Ping'an Segment	24 Mar 2021
HD-RUI-W1 Wenzukou WTP and Fatai WTP	05 Feb 2021
HD-RUI-W2 Sanhe Town WTP and Highland Reservoir	05 Feb 2021
HD-RUI-W3 Water Conveyance Pipelines	10 Mar 2021
HD-SW-G1 Landfill O&M Equipment	28 Dec 2020

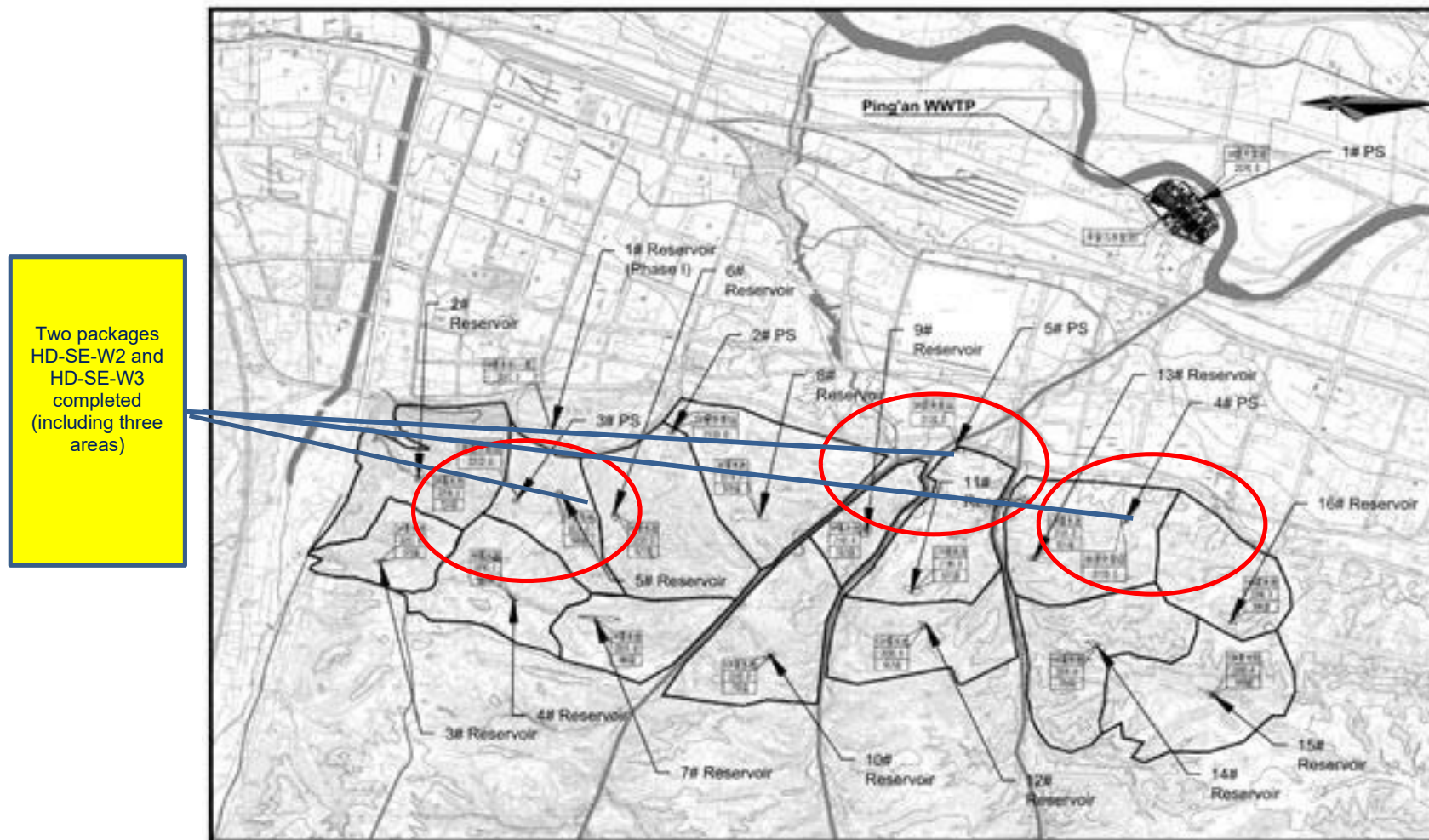
7. As the project is about to undergo a major change of scope, the PMO and ADB agreed to focus on developing the new scope, while also maintaining full speed on the remaining existing scope.

#### Implementation Progress of Subprojects

No.	Contract type	Contract	Current progress
1	Civil works	HD-SE-W2	Construction completed at the end of 2020
2		HD-SE-W3	Construction completed at the end of 2020
3		HD-RUI-W4	Construction completed at the end of 2020
4		HD-IF-W1	Contract being implemented
5		HD-RUI-W1	Contract being implemented
6		HD-RUI-W2	Contract being implemented
7		HD-RUI-W3	Contract being implemented
8	Goods	HD-SW-G1	Contract being implemented
9	Consulting Services	HD-CB-CS1	Service ongoing
10		HD-CB-CS2	Service ongoing
11		HD-CB-CS3-1	Service completed
12		HD-CB-CS3-2	Service completed
13		HD-CB-CS3-3	Service completed

(note: An environmental due diligence report for the three NBF sub-components was separately prepared and submitted to ADB at end Dec 2019, including the following: 1.3 Huangshui River Channel Ledu Rural Area Segment; 1.4 Ping'an District Huangshui River Riverside Greenbelt; and 2.1 Ping'an District Mountain Edge Green Belt)





Subcomponent 2.2 Ping'an  
WWTP Water Reclamation

Expansion of pipeline network from Ping'an WWTP for South Mountain Landscaping Water Irrigation System with total reclamation capacity of 9,500 m<sup>3</sup>/d, including 3 pump stations, 76.4 km of pipes and 15 water storage tanks.

**Figure: Internal Layout of South Mountain Irrigation Area**

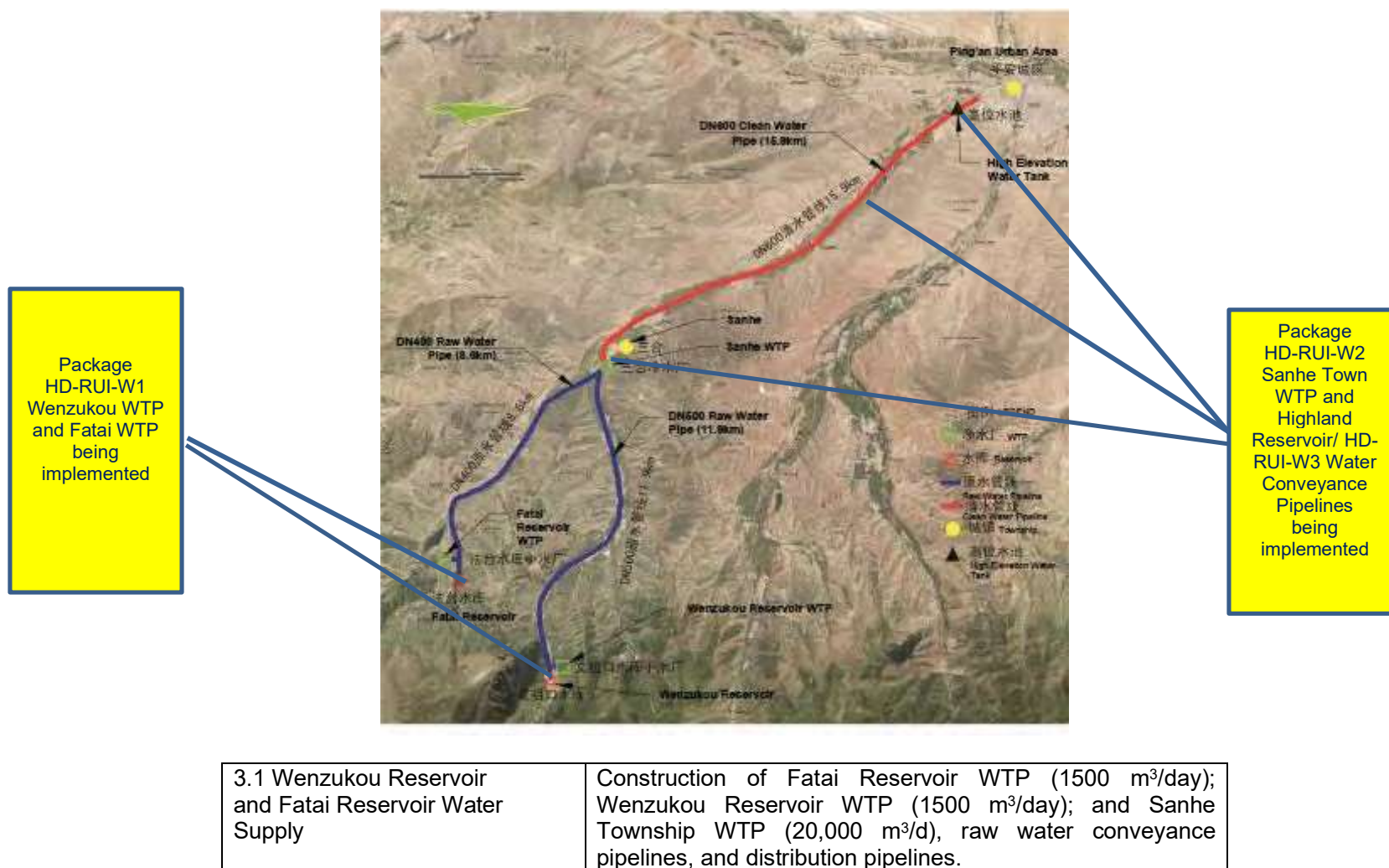
Package  
HD-RUI-W4  
Landfill  
Expansion  
Completed

Package HD-  
SW-G1  
completed



3.2 Ledu Sanitary Landfill Expansion	Construction of the Phase 3 and Phase 4 of the landfill, with capacity of 670,000 m <sup>3</sup>
--------------------------------------	--

**Figure : Location of the landfill**



**Figure: Scheme of the urban-rural water supply component**

## PART II - ENVIRONMENTAL MANAGEMENT

### 2.1 Changes/updates in Project Organization and Environmental Management Team

8. PMO, the IAs, contractors, construction supervision companies (CSC) and ETG (the loan implementation consulting firm) have respectively designated qualified environmental personnel to coordinate EMP implementation. No changes/updates in Project Organization and Environmental Management Team were identified during this reporting period, compared with the arrangement at appraisal.



**Table. Contact Information of EHS (environment, health and safety) staff/GRM focal points at Various Agencies Involved in the Project**

Institution	Name of Company	Position	Name of EHS staff	Contact Information (phone number/email)
<b>PMO</b>	Haidong municipal water affairs bureau	Both EHS officer or GRM focal point	Mr. Zhang	+ 86 159 9703 5558
<b>Subcomponent PIUs</b>	Ledu Housing, Planning, and Construction Bureau; Ledu Water Affairs Bureau; Ping'an Housing, Planning, and Construction Bureau; Ping'an Forestry Resource Bureau; and Ping'an Water Affairs Bureau <sup>1</sup>	Both EHS officer or GRM focal point	Mr. Dai Pingde as representative from Ping'an Forestry Resource Bureau. More EHS staff information to be available with project progressing.	+ 86 132 9979 7817
<b>Contractors</b>	package - HD-IF-W1 Huangshui River Ping'an Segment: Beijing Xindayu Water Conservancy	Both EHS officer or GRM focal point	Mr. Wang	

<sup>1</sup> Currently those subcomponents completed and being constructed are administered either by Haidong municipal water affairs bureau or Ping'an Forestry Resource Bureau. For more details please see **Part II**.



Institution	Name of Company	Position	Name of EHS staff	Contact Information (phone number/email)
	Construction Company			
	package - HD-RUI-W1 Wenzukou WTP and Fatai WTP: Qinghai Hongya Hydropower Engineering Co., Ltd	Both EHS officer or GRM focal point	Ms. Ma Zhongying	+ 86 189 0971 7014
	package - HD-RUI-W2 Sanhe Town WTP and Highland Reservoir: Xinxin Construction Group Co., Ltd.	Both EHS officer or GRM focal point	Mr. Ma	
	package -HD-RUI-W3 Water Conveyance Pipelines: Beijing Zetong Water Affairs Construction Group Co., Ltd.	Both EHS officer or GRM focal point	Mr. Wang	
<b>CSC</b>	package - HD-IF-W1 Huangshui River Ping'an Segment: Qinghai Yiyang Construction Project Management Co., Ltd.	Both EHS officer or GRM focal point	Mr. Sun Delong	+86 15609773525
	package - HD-RUI-W1 Wenzukou WTP and Fatai WTP: Qinghai Baixin Engineering Supervision Consulting Co., Ltd.	Both EHS officer or GRM focal point	Mr. Min Chunlong	+86 18597011130
	package - HD-RUI-W2 Sanhe Town WTP and Highland Reservoir: Qinghai Yiyang Construction Project Management Co., Ltd.	Both EHS officer or GRM focal point	Mr. Sun Delong	+86 15609773525
	package -HD-RUI-W3 Water Conveyance Pipelines: Qinghai Yiyang Construction Project Management Co., Ltd.	Both EHS officer or GRM focal point	Mr. Li	
<b>LIEC</b>	ET Company (the loan implementation consulting firm)	Both EHS officer or GRM focal point	Mr. Wu Zhizhong	+86 18797329252
<b>EMS</b>	Qinghai Monite Environmental Technology Company	Both EHS officer or GRM focal point	Mr. Yuan	+86 18797332663

9. Systematic and practical site training to PMO, IAs and contractors to clarify institutional responsibilities for EMP implementation, and supervision were regularly communicated among project stakeholders during this reporting period, and such trainings were further conducted by ETG consultant team. In June 2022, a half-day environmental theme training workshop through virtual teleconferencing was undertaken with 10 participators (including 4 female) from all construction companies, construction supervision companies and the PMO. The training was provided by LIEC focusing on ADB policies, EMP implementation including GRM.

## **2.2 Relationships with Contractors, Owner, Lender, etc.**

10. **Interactions among Contractors, Owner, Lender, etc.** The PMO (under HMG and based in Haidong municipal water affairs bureau), the IAs are responsible for management, coordination and execution of all activities funded under the loan and has overall responsibility for compliance with loan covenants. The scope of the project contractors/sub-contractors are determined or to be determined. ADB oversee project sites regularly and give clear instructions for the project sites improvements with regard to environmental safeguards. PMO periodically provided ADB project environmental management trainings to the IAs, contractors and CSCs.

## PART III - COMPLIANCE ON THE EMP

### 3.1 The Project Environmental Management System, site-specific environmental management plan (SSEMP) and work plans

11. **SSEMP for the Project** was prepared by the contractors before commencement of the civil works.

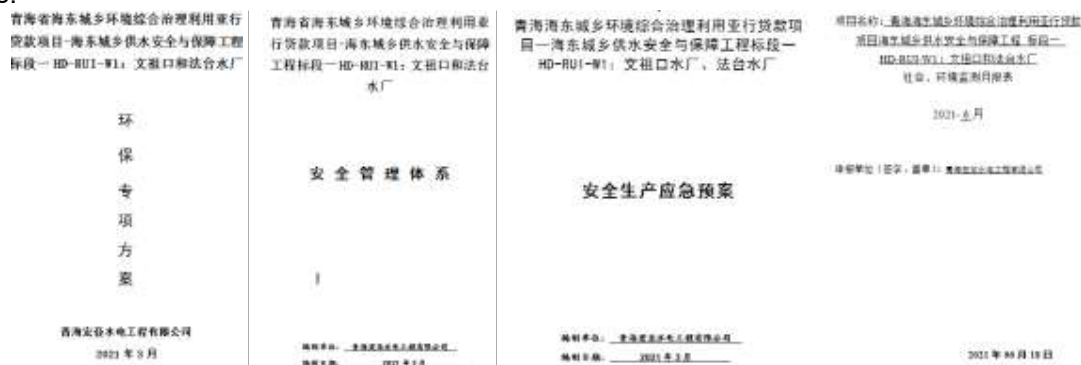


Figure SSEMP incorporated into HD-RUI-W1 Wenzukou WTP and Fatai WTP , also including the contractors' safety mangement systetm, emergency plan, monthly supervision report (sample)

### 3.2 Site Inspections and Audit

12. **Site Inspections, Internal Monitoring and Audit.** PMO, IAs and the construction supervision companies (CSCs) regularly and irregularly inspected the environmental status on the construction sites to check compliance status. Internal environmental monitoring was carried out by the contractors. As for environmental safeguards concern, the site visits and internal monitoring confirmed that mitigation measures during construction including dust controlling, construction site control, construction wastewater collection measures, and the use of adequate safety equipment are satisfactory. Based on the EMP (June 2016 version), implementation status of EMP during this reporting period are summarized in the **Appendix 1**. The implementation status of the EMP is summarized in the last columns of the tables for comparison with the designed measures stated in the EMP.

13. The original Subcomponents 1.4 Ping'an District Huangshui River Riverside Greenbelt (HD-IF-W6); and 2.1 Ping'an District Mountain Edge Green Belt (HD-SE-W1) were divided into two parts: the main urban area of Ping An and the eastern section of the mountain border shelterbelt, and the Haidong Industrial Park and the mountain border shelterbelt of Ping'an New City, with a total area of about 104.7 hectares. Those were fully completed by domestic funds, with the actual area of 899.47 ha. As such, the **Appendix 6** of this report includes a compliance audit on afforestation including subcomponents 1.4 and 2.1.

14. Notably, the project IEE identified there is very limited riparian (in-stream and river bank) vegetation along the Huangshui River in Ping'an District . None of these species is on the PRC local or provincial list for protected species, nor are these species of concern on the IUCN list. Some areas of terrestrial scrubland or riparian forest land were excavated during construction of HD-IF-W1 Huangshui River Ping'an Segment. The survey at project implementation reveals a total of 7.42ha of forest land and 3.8ha of grassland pemenantly occupied by this project. National approvals have been cleared by local authorities. According to the natural conditions of the project and clearance of local authorities, the measures for soil and water conservation plants were established according to

local conditions, suitable trees and grasses. Priority was given to selecting native trees, grass species and locally used trees and grass species, using a combination of multiple tree species for layout, strengthening tending management, improving vegetation survival rate, preventing soil erosion, and improving the surrounding ecological environment of the project. The area adopts the vegetation restoration measures combining arbor, shrub and grass. The arbor tree is replanted as dry willow, and the seedling specifications are: biennial strong seedling, diameter at breast height 8cm, mixed planting, the row spacing is 3m, and the plant spacing is 3m. It is distributed in a shape of 6m in width and planted in 3 rows. The land preparation method was hole-shaped land preparation, and the size is 60cm×60cm. The shrub species selected Tamarix, the specifications of the Tamarix seedlings are: two-year-old strong seedlings, diameter greater than 2cm, height 60cm, the land preparation method is cave-like land preparation, the size is 40cm × 40cm, the row spacing is 1m, and the plant spacing is 1m. The grass seeds are selected from the more suitable local Elysium and Bluegrass, mixed by 1:1, and the sowing density is 45kg/hm<sup>2</sup>. In summary, the EMP has to date been implemented effectively. The field photos are shown below.



Construction site of HD-RUI-W2, Sanhe WTP (June 2022)

### 3.3 Non-Compliance Notices

15. Not yet applicable as no non-compliance was identified in this reporting period. For details see above **section 4.2**, and **Appendix 1** as well as **Appendix 2**.

### 3.4 Corrective Action Plans, if any

16. Same as above.

### 3.5 Actions taken to reflect the findings of ADB mission

17. A physical loan review mission for the project was carried out from 17-22 October 2021 in Haidong Municipality, Qinghai Province. The purpose of the mission was to review (i) the overall progress of the project and implementation issues, (ii) pending change of project scope and implementation arrangements, loan reallocation, and extension, (iii) status of land acquisition and resettlement, (iv) impacts to environment, gender development, ethnic minority development, social and poverty reduction, (v) audit findings and financial management, (vi) compliance with loan covenants, (vii) contract awards and disbursements achievements. The follow-up status on the MOU of above ADB mission in November 2021 is shown as following:

**Table: Follow Up to the MOU of ADB Review Mission in October/November 2021**

Corresponding paragraphs in the MOU	Completion dates required in the MOU	Required tasks	Completion status and next steps	
			Actual completion status	Next Steps
No. 37	30 November 2021	to submit the finalized consolidated Updated IEE incorporating EDDRs on the two newly proposed projects	Complied with, and submitted in November 2021	Not applicable
No. 37	31 Dec 2021	to conduct environmental due diligence on the design optimization of the location change of Sanhe Water Plant; conduct the soil sampling as needed to ensure the environmental soundness of the new site; and obtain all requested national clearance	Being complied with (the report was submitted at end Dec 2021).	The requirement of to “conduct the soil sampling as needed to ensure the environmental soundness of the new site” will be complied with and reflected in the next EMR
No. 37	31 Jan 2022	to submit 5th EMR	Complied with. The 5th EMR was submitted at end January 2022. This is the 6th EMR.	Not applicable

### 3.6 Status Of Compliance With Major Loan Covenants and DMF (environmental safeguard, as of Jun 2022)

18. Compliance with major loan and project covenants. The status of the environmental safeguard related loan covenants which is summarized. Most of the major environmental safeguard related loan and project covenants under the project are “in compliance”, and some are not yet due for compliance.

Covenant	Reference in Loan and Project Agreements	Status of Compliance
<b>Project Agreement</b>		
<b>Environment</b> HMG shall, and shall cause the Project Implementing Agencies to, ensure that the preparation, design, construction, implementation, operation and decommissioning of the Project and all Project facilities comply with (a) all applicable laws and regulations of the Borrower and Qinghai Province relating to environment, health and safety; (b) the environmental safeguards stipulated in the Safeguards Policy Statement; and (c) all measures and requirements set forth in the IEE, the EMP, and any corrective or preventative actions set forth in a safeguards monitoring report.	Schedule-2	Being complied
HMG shall, and shall cause the Project Implementing Agencies to, ensure that throughout Project implementation, (a) any changes to the project design are reviewed that may potentially cause negative environmental impacts; (b) in consultation with ADB, environmental monitoring and mitigation measures are revised as necessary to assure full environmental compliance; and (c) provide ADB within 60 days justification for any proposed changes to the mitigation measures required during design, construction and operation.	Schedule-3	Being complied
HMG shall, and shall cause the Project Implementing Agencies to, ensure that all Project re-vegetation shall use only appropriate native species which are nationally sourced. The use of any plant species classified in the Borrower as weeds, as defined by the China National Invasive Plant Species, the Ministry of Environment Protection and the Chinese Academy of Sciences shall be prohibited HMG shall cause the Ping'an Housing, Planning, and Construction Bureau to ensure that the construction of the No.1 and No. 2 pump stations of the reclaimed water project phase 1 shall be completed and operational within 24 months of the Effective Date.	Schedule-4	Being complied
HMG shall cause the Ping'an District Water Affairs Bureau to ensure that (a) the construction of the Wenzukou Reservoir shall be completed and operational within 36 months of the Effective Date; and (b) the Wenzukou Reservoir shall be constructed, operated, maintained, and monitored in strict conformity with all applicable laws and regulations, including national and municipal laws and regulations and standards on environmental protection, health, labor, and occupational and public safety.	Schedule-6	To be complied
HMG shall cause the Ping'an District Government and the Ping'an District Water Affairs Bureau to ensure that relevant national and municipal laws and regulations on water source protection are complied with, throughout the implementation period of the Project, including (a) the delineation of water source protection zones around	Schedule-7	To be complied

Covenant	Reference in Loan and Project Agreements	Status of Compliance
the Fatai and Wenzukou Reservoir; and (b) the implementation of watershed protection regulations, including the disclosure of land use and activity constraints.		
HMG shall cause the Ping'an District Government and the Ping'an District Water Affairs Bureau to ensure that (a) reservoir regulation plans are prepared for the Fatai and Wenzukou reservoir in accordance with the Borrower's Guidelines for formulation of reservoir regulation rules (SL 706-2015); (b) these plans prioritize domestic and agriculture water demand of the target communities; and (c) reservoirs release a minimum ecological flow at all times as prescribed in the reservoir environmental impact assessment approved by the Qinghai Environmental Protection Department in July 2011.	Schedule-8	To be complied
HMG shall ensure that no water is supplied from the Sanhe WTP to the Ping'an urban district unless HMG demonstrates its commitment to comply with the leakage control requirements in the Standard for Leakage Control and Assessment of Water Supply Distribution System CJJ92-2002.	Schedule-9	To be complied
QPG shall ensure that its department of water resources and the water resource departments of HMG and Xining municipality initiate the establishment of a provincial-level Huangshui River coordination body to address Huangshui water resources management issues at watershed level.	Schedule-10	To be complied
HMG shall ensure that (a) a qualified and experienced design institute is engaged for the preliminary and detailed design of the landfill expansion component; and (b) the design includes a groundwater monitoring system, that is shared with ADB for review and appraisal prior to awarding of the Works contract.	Schedule-11	Being complied
HMG shall ensure that the afforested erosion control areas remain functional as erosion control areas, and that no tree cutting beyond standard maintenance shall occur.	Schedule-12	Being complied
<b>Safeguards-related Provisions in Bidding Documents and Contracts</b> HMG shall, and shall cause the Project Implementing Agencies to, ensure that all bidding documents and contracts for civil works contain provisions that require contractors to: comply with the measures relevant to the contractor set forth in the IEE, the EMP, the RP and the EMDP (to the extent they concern impacts on affected persons during construction), and any	Schedule-16	Being complied
(a) corrective or preventative actions set forth in safeguards monitoring reports; (b) make available a budget for all such environmental and social measures; (c) provide the potentially affected people with a written notice of any unanticipated environmental, or resettlement risks or impacts that arise during construction, implementation or operation of the project that were not considered in the IEE, the EMP, the RP and the EMDP; reinstate pathways and other local infrastructure to at least their pre-project condition as soon as possible and no later		Being complied

Covenant	Reference in Loan and Project Agreements	Status of Compliance
<p>than the completion of construction;</p> <p>(d) select and manage borrow and spoil disposal sites in compliance with the approved soil erosion protection plans and in consultation with relevant environmental protection and water resources authorities; and</p> <p>(e) take necessary actions to avoid interruptions to water supply, wastewater collection and other utility services during the construction of the Project.</p>		
<p><b>Safeguards Monitoring and Reporting</b> HMG shall, or shall cause the PMO to</p> <p>(a) submit Safeguards Monitoring Reports to ADB</p> <p>i. in respect of implementation of and compliance with Environmental Safeguards and the EMP, annually during construction and the implementation of the Project and the EMP until the issuance of ADB's Project completion report unless a longer period is agreed in the EMP; and</p> <p>ii. in respect of implementation of and compliance with Involuntary Resettlement Safeguards and Indigenous Peoples Safeguards, and of the RP and EMDP, semi-annually during the implementation of the Project until the issuance of ADB's Project completion report unless a longer period is agreed in the RP and EMDP, and disclose relevant information from such reports to the respective affected people under the Environmental Safeguards, the Involuntary Resettlement Safeguards and the Indigenous Peoples Safeguards promptly upon submission;</p>	Schedule-17(a)	Being complied
<p>(b) 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 IEE, the EMP, the RP and the EMDP, promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan;</p>	Schedule-17(b)	Being complied
<p>(c) engage qualified and experienced external social safeguards experts under a selection process and terms of reference acceptable to ADB, to verify information produced through the social safeguards monitoring process, and facilitate the carrying out of any verification activities by such external experts; and</p>	Schedule-17(c)	Being complied
<p>(d) report any actual or potential breach of compliance with the measures and requirements set forth in the EMP, the RP, or the EMDP promptly after becoming aware of the breach.</p>	Schedule-17(d)	Being complied
<p><b>Safeguard—Prohibited List of Investments</b> HMG shall ensure that no proceeds of the ADB loan are used to finance any activity included in the list of prohibited investment activities provided in Appendix 5 of the Safeguards Policy Statement.</p>	Schedule-20	Being complied
<p><b>Safeguards Grievance Redress Mechanism</b> HMG shall, and shall cause the Project Implementing Agencies to, ensure that separate safeguards grievance redress mechanisms</p>	Schedule 21	Being complied



Covenant	Reference in Loan and Project Agreements	Status of Compliance
acceptable to ADB are established in accordance with the provisions of the IEE, EMP, RP and EMDP at the PMO, within the timeframes specified in the relevant IEE, EMP, RP and EMDP, to consider safeguards complaints. The grievance redress mechanisms shall function to (a) review and document eligible complaints of project stakeholders; (b) proactively address grievances; (c) provide the complainants with notice of the chosen mechanism and/or action; and (d) prepare and make available to ADB upon request periodic reports to summarize (i) the number of complaints received and resolved, (ii) chosen actions, and (iii) final outcomes of the grievances and make these reports available to ADB upon request		
<b>Labor Standards, Health, and Safety</b> HMG shall ensure that the core labor standards and the applicable laws and regulations of the Borrower are complied with during Project implementation. HMG shall include specific provisions in the bidding documents and contracts financed by ADB under the Project requiring that the contractors, among other things (a) comply with the applicable labor law and regulations of PRC and incorporate applicable workplace occupational safety norms; (b) do not use child labor; (c) do not discriminate workers in respect of employment and occupation; (d) do not use forced labor; (e) do not restrict the workers from developing a legally permissible means of expressing their grievances and protecting their rights regarding working conditions and terms of employment; and (f) disseminate, or engage appropriate service providers to disseminate, information on the risks of sexually transmitted diseases, including HIV/AIDS, to the employees of contractors engaged under the project and to members of the local communities surrounding the project area, particularly women. HMG shall strictly monitor compliance with the requirements set forth in this paragraph and provide ADB with semiannual reports.	Schedule-23	Being complied

19. Follow-ups to the DMF indicators related to environment are summarized as following.

### DESIGN AND MONITORING FRAMEWORK

<b>Impacts the Project is Aligned with</b>  Environmental protection, ecological rehabilitation, and climate change adaptation enhanced (National Economy and Social Development Thirteenth Five-Year Plan, 2016–2020; and National New-type Urbanization Plan, 2014–2020) <sup>a</sup> (Achieved. To be followed up in future EMRs per national reporting)  Flood control standards and urban aesthetics along the Huangshui River improved (Master Planning of Haidong Urban Area, 2013–2030) <sup>b</sup> (not yet due. to be followed up in future EMRs)			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
<b>Outcome</b> Ecological and environmental services in Haidong improved	<b>By 2021 (Baseline 2016)</b> a. Flood risk reduced to a minimum of 20-year return period for farmland and at least 30-year return period	a. Annual environmental monitoring report from Haidong EPB and modeling performed	Changes to government priorities lead to inadequate financial and human resources provided to properly manage project

	<p>for residential and commercial areas (Baseline for farmland: below 1-in 5-year return period; baseline for residential and commercial areas: 1-in 20-year return period)</p> <p>b. Public satisfaction with ecological management in Haidong increased to 70% (Baseline= 61.35%)<sup>c</sup></p>	<p>using the hydrologic modeling system of Hydrologic Engineering Center <sup>c</sup></p> <p>(not yet due, to be followed up in future EMRs)</p> <p>b. Social survey results provided by the end of project from the PMO</p> <p>(not yet due, to be followed up in future EMRs)</p>	facilities
--	---	---	------------

#### **PART IV – FIELD ENVIRONMENTAL SAMPLING AND TESTING RESULTS ASSESSMENT**

20. **Arrangement of Field Environmental Sampling and Testing.** During this monitoring period, only four contracts were under construction<sup>2</sup>. A nationally accredited monitoring agency (Qinghai Monite Environmental Technology Company) was engaged by the independent environmental monitoring consultant on behalf of PMO to undertake field sampling and lab testing from Dec 2019. The monitoring results and analysis are presented below for the civil works contracts under implementation expect no test for the Haidong Urban and Rural Water Supply Project due to the epidemic in May 2022. Field sampling and lab testing data quality control please see **Appendix 2**.

---

<sup>2</sup> The civil works contract (HD-RUI-W4) was completed in 2020. And the implementation of landfill O&M equipment contract (HD-SW-G1) was generally completed in June 2021. The operator informed that the facilities were entering commissioning and being debugged during this reporting period. The IAs informed that the continuous environmental monitoring system for noise, dust, odor, as well as the ground water quality will be tested and reported in the later EMRs when the operation status becomes stable.

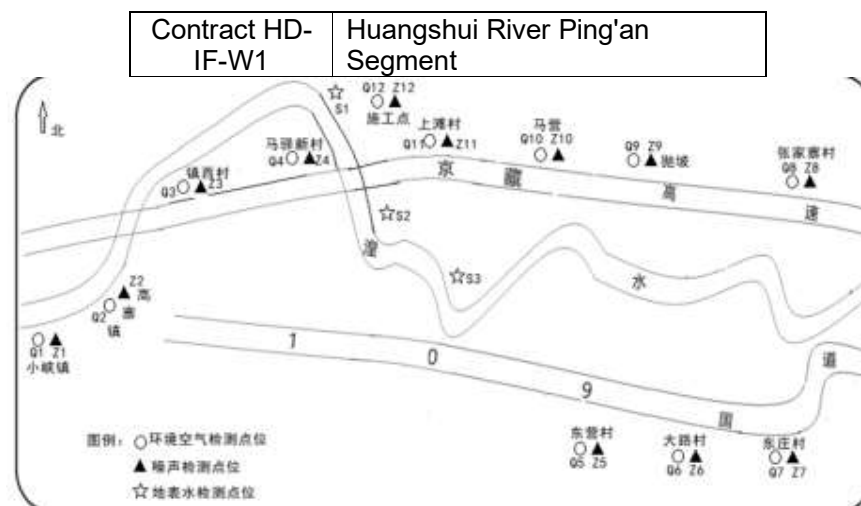


Figure: Schematic diagram of test points January to June 2022)

Table: Ambient air test results (2022-03-16)

Test point	Coordinates	Test parameters	Test results (mg/m <sup>3</sup> )	Compliance status(Applicable Standards (Environment Ambient Air Quality Standard (GB3095—2012), Grade II , 0.3 mg/m <sup>3</sup> )
Xiaoxia Town Q1	10 1 ° 58.28822' E ; 36 ° 32.36615' N	TSP	0.252	Complied with
Gaozhai Town Q2	10 1 ° 59.65196' E ; 36 ° 31.47115' N	TSP	0.264	Complied with
Town West Village Q3	10 2 ° 02.26845' E ; 36 ° 30.56192' N	TSP	0.292	Complied with
Mayi New Village Q4	10 2 ° 03.51329' E ; 36 ° 30.68478' N	TSP	0.263	Complied with
Dongying Village Q5	10 2 ° 07.10735' E ; 36 ° 30.48816' N	TSP	0.272	Complied with
Dalu Village Q6	10 2 ° 08.39457' E ; 36 ° 29.71506' N	TSP	0.288	Complied with
Dongzhuang Village Q7	10 2 ° 09.63377' E ; 36 ° 29.35693' N	TSP	0.290	Complied with

Zhangjiazhai Village Q8	10 2 ° 09.84930' E ; 36 ° 29.97816' N	TSP	0.246	Complied with
Throwing slope Q9	10 2 ° 08.29504' E ; 36 ° 30.50589' N	TSP	0.231	Complied with
Horse Camp Q10	10 2 ° 07.42114' E ; 36 ° 30.55304' N	TSP	0.217	Complied with
Shangtan Village Q11	10 2 ° 06.66492' E ; 36 ° 30.96468' N	TSP	0.276	Complied with
Construction site Q12	10 2 ° 06.63097' E ; 36 ° 30.98830' N	TSP	0.259	Complied with

**Table: Ambient air test results (2022-04-24)**

<b>Test point</b>	<b>Coordinates</b>	<b>Test parameters</b>	<b>Test results (mg/m3)</b>	<b>Compliance status(Applicable Standards (Environment Ambient Air Quality Standard (GB3095—2012), Grade II , 0.3 mg/m<sup>3</sup> )</b>
Xiaoxia Town Q1	10 1 ° 58.23971' E ; 36 ° 32.37474' N	TSP	0.247	Complied with
Gaozhai Town Q2	10 1 ° 59.65341' E ; 36 ° 31.46800' N	TSP	0.233	Complied with
Mayi New Village Q3	10 2 ° 07.11255' E ; 36 ° 30.48992' N	TSP	0.238	Complied with
Dongying Village Q4	10 2 ° 08.39731' E ; 36 ° 29.71687' N	TSP	0.255	Complied with
Dalu Village Q5	10 2 ° 09.57055' E ; 36 ° 29.38766' N	TSP	0.265	Complied with
Dongzhuang Village Q6	10 2 ° 10.20305' E ; 36 ° 29.29208' N	TSP	0.226	Complied with
Zhangjiazhai Village Q7	10 2 ° 08.29790' E ; 36 ° 30.50807' N	TSP	0.279	Complied with
Throwing slope Q8	10 2 ° 08.96937' E ; 36 ° 30.34046' N	TSP	0.262	Complied with
Horse Camp Q9	10 2 ° 09.77489' E ; 36 ° 30.01842' N	TSP	0.252	Complied with
Construction site Q10	10 2 ° 07.28634' E ; 36 ° 30.48487' N	TSP	0.239	Complied with
Construction site Q11	10 2 ° 06.66137' E ; 36 ° 30.95681' N	TSP	0.228	Complied with
Construction site Q12	10 2 ° 06.63896' E ; 36 ° 30.97315' N	TSP	0.253	Complied with

**Table: Construction noise test results (2022-03-17)**

Test point/no.	Coordinates	Daytime Leq [dB (A)]	Compliance status (Applicable Standards- Emission standard of environment noise for boundary of construction site)
Xiaoxia Town Z1	10 1 ° 58.28822' E ; 36 ° 32.36615' N	47.5	Complied with
Gaozhai Town Z2	10 1 ° 59.65196' E ; 36 ° 31.47115' N	47.1	Complied with
Town West Village Z3	10 2 ° 02.26845' E ; 36 ° 30.56192' N	50.1	Complied with
Mayi New Village Z4	10 2 ° 03.51329' E ; 36 ° 30.68478' N	47.7	Complied with
Dongying Village Z5	10 2 ° 07.10735' E ; 36 ° 30.48816' N	47.3	Complied with
Dalu Village Z6	10 2 ° 08.39457' E ; 36 ° 29.71506' N	47.9	Complied with
Dongzhuang Village Z7	10 2 ° 09.63377' E ; 36 ° 29.35693' N	50.2	Complied with
Zhangjiazhai Village Z8	10 2 ° 09.84930' E ; 36 ° 29.97816' N	49.6	Complied with
Slope Z9	10 2 ° 08.29504' E ; 36 ° 30.50589' N	50.0	Complied with
Horse Camp Z10	10 2 ° 07.42114' E ; 36 ° 30.55304' N	48.2	Complied with
Shangtan Village Z11	10 2 ° 06.66492' E ; 36 ° 30.96468' N	52.9	Complied with
Construction point Z12	10 2 ° 06.63097' E ; 36 ° 30.98830' N	54.9	Complied with

**Table: Construction noise test results (2022-04-24)**

Test point/no.	Coordinates	Daytime Leq [dB (A)]	Compliance status (Applicable Standards- Emission standard of environment noise for boundary of construction site)
Xiaoxia Town Z1	10 1 ° 58.23971' E ; 36 ° 22.27474' N	48.7	Complied with
Gaozhai Town Z2	10 1 ° 59.65341' E ; 36 ° 21.46800' N	47.6	Complied with
Mayi New Village Z3	10 2 ° 07.11255' E ; 36 ° 20.48000' N	47.1	Complied with
Dongying Village Z4	10 2 ° 08.39731' E ; 36 ° 20.71697' N	49.1	Complied with
Dalu Village Z5	10 2 ° 09.57055' E ; 36 ° 20.28766' N	48.0	Complied with
Dongzhuang Village Z6	10 2 ° 10.20305' E ; 36 ° 20.20208' N	49.3	Complied with
Zhangjiazhai Village Z7	10 2 ° 08.29790' E ; 36 ° 20.50807' N	48.7	Complied with
Slope Z8	10 2 ° 08.96937' E ; 36 ° 20.24046' N	46.7	Complied with
Horse Camp Z9	10 2 ° 09.77489' E ; 36 ° 20.01842' N	47.9	Complied with
Construction point Z10	10 2 ° 07.28634' E ; 36 ° 20.48487' N	50.5	Complied with
Construction point Z11	10 2 ° 06.66137' E ; 36 ° 20.05691' N	51.6	Complied with
Construction point Z12	10 2 ° 06.63896' E ; 36 ° 20.07215' N	52.2	Complied with



Figure: Schematic diagram of test points (January to June 2022)

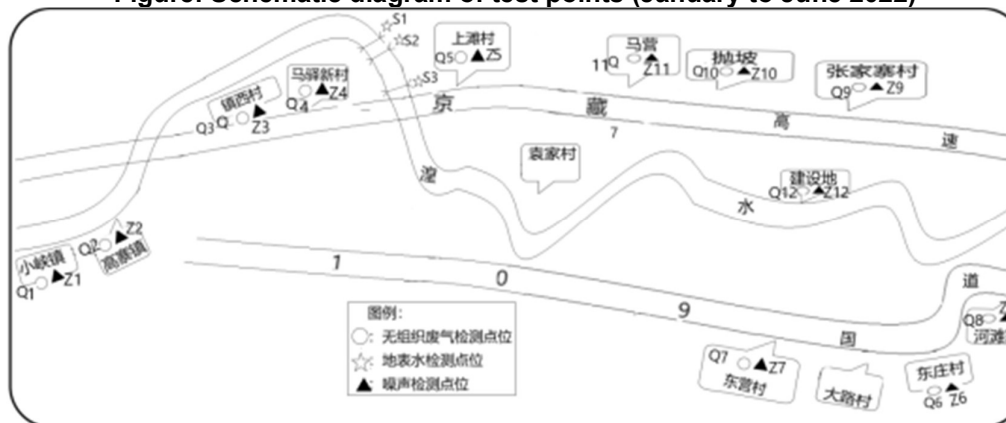


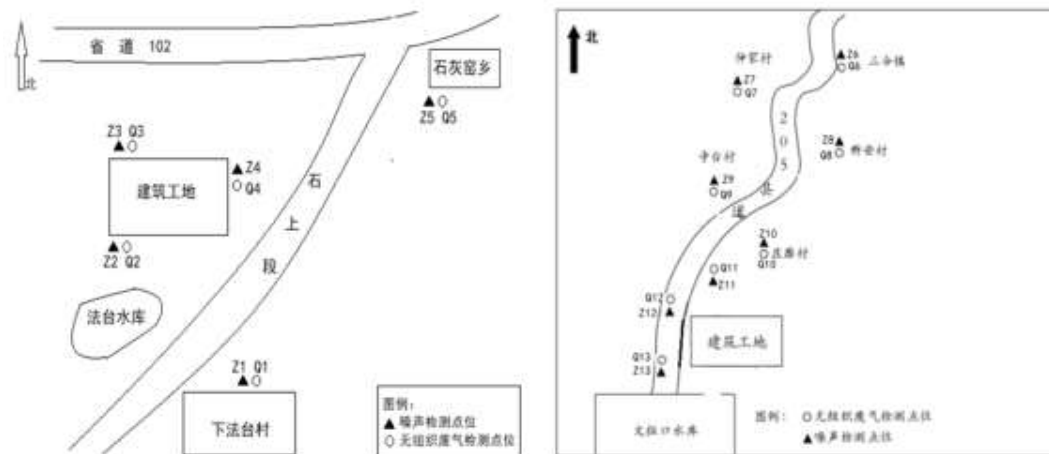
Table: Surface water test results

Test point	Testing parameters	Test frequency	Test results (mg/L)								
			03-15	03-17	03-23	03-25	03-29	03-31	04-12	04-25	05-05
upstream S1 102°06' 51.2 "E 36°30'5 1.7 "N	Suspended matter	The first time	126	119	113	116	128	131	88	68	32
		The second time	124	121	110	115	131	129	78	59	29
		The third time	129	122	115	119	129	132	80	66	36
	Petroleum	The first time	0.02	0.02	0.01	0.01	0.02	0.03	0.02	0.01	0.01

		The second time	0.01	0.02	0.01	0.01	0.02	0.02	0.02	0.01	0.02
		The third time	0.02	0.02	0.01	0.02	0.02	0.03	0.01	0.01	0.01
upstream S2 102° 0 7 ' 13.0 "E 36° 30' 30.2 "N	Suspended matter	The first time	133	130	121	124	141	140	106	92	36
		The second time	138	128	126	127	140	142	102	95	42
		The third time	135	133	126	129	143	139	98	86	40
	Petroleum	The first time	0.01	0.02	0.01	0.02	0.02	0.02	0.01	0.01	0.01
		The second time	0.02	0.02	0.02	0.01	0.02	0.02	0.01	0.01	0.02
		The third time	0.02	0.02	0.01	0.02	0.03	0.03	0.01	0.01	0.02
Downstream S3 102° 11 ' 07.0 "E 36° 29 ' 11.8 "N	Suspended matter	The first time	131	120	117	118	131	128	87	77	25
		The second time	129	124	116	117	128	130	90	71	20
		The third time	128	121	119	114	130	127	85	80	27
	Petroleum	The first time	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.01	0.02
		The second time	0.02	0.03	0.01	0.02	0.02	0.03	0.02	0.01	0.02
		The third time	0.02	0.02	0.02	0.02	0.03	0.03	0.02	0.01	0.02
Compliance status(Applicable Standards Environmental Quality Standards for Surface Water (GB3838-2002), Grade IV N/A for SS and 0.5 for petroleum			Com plied with	Com plied with	Com plied with	Com plied with	Com plied with	Com plied with	Com plied with	Com plied with	

Contract HD-RUI-W1	Wenzukou WTP and Fatai WTP
Contract HD-RUI-W2	Sanhe Town WTP and Highland Reservo
Contract HD-RUI-W3	Water Conveyance Pipelines

**Figure: Schematic diagram of test points in January to June 2022**



**Table: Ambient air test results (2022-03-18~2022-03-20)**

<b>Test point</b>	<b>Coordinates</b>	<b>Test parameters</b>	<b>Test results (mg/m3)</b>	<b>Compliance status(Applicable Standards (Environment Ambient Air Quality Standard (GB3095—2012),</b>
Xiafatai Village Q1	101°5 3.50927 'E; 36°2 1.61241 'N	TSP	0.290	Complied with
Fatai Reservoir Q 2	101°5 3.45082 'E; 36°2 1.99106 'N	TSP	0.269	Complied with
Fatai Reservoir Q 3	101°5 3.43334 'E; 36°2 1.98612 'N	TSP	0.263	Complied with
Fatai Reservoir Q 4	101°5 3.42553 'E; 36°2 1.94826 'N	TSP	0.283	Complied with
Shihuiyao Township Q5	101°5 3.41309 'E; 36°2 2.61083 'N	TSP	0.292	Complied with
Sanhe Town Q 6	101°5 6 ' 40.1 "E; 36°2 5 ' 31.0 "N	TSP	0.287	Complied with
Zhongjia Village Q 7	101°5 6 ' 42.1 "E; 36°2 4 ' 17.3 "N	TSP	0.273	Complied with
Xinan Village Q 8	101°5 7 ' 01.2 "E; 36°2 3 ' 22.7 "N	TSP	0.274	Complied with
Sitai Village Q 9	101°5 6 ' 46.0 "E; 36°2 2 ' 22.3 "N	TSP	0.269	Complied with
Zhuangkor Village Q 10	101°5 5 ' 25.8 "E; 36°2 1 ' 11.2 "N	TSP	0.272	Complied with
Q 11 around the construction site of Wenzukou Reservoir	101°5 5 ' 36.9 "E; 36°2 0 ' 04.2 "N	TSP	0.258	Complied with
Q 12 around the construction site of Wenzukou Reservoir	101°5 5 ' 37.6 "E; 36°2 0 ' 03.2 "N	TSP	0.253	Complied with
Q 13 around the construction site of Wenzukou Reservoir	101°5 5 ' 36.4 "E; 36°2 0 ' 05.7 "N	TSP	0.276	Complied with

**Table: Ambient air test results (2022-04-26~2022-04-29)**

<b>Test point</b>	<b>Coordinates</b>	<b>Test parameters</b>	<b>Test results (mg/m3)</b>	<b>Compliance status(<i>Applicable Standards (Environment Ambient Air Quality Standard (GB3095—2012),</i></b>
Sanhe Town Q1	101°5 6'40.2"E ; 36°25'31.0"N	TSP	0.274	Complied with
Zhongjia Village Q2	101°5 6'42.1"E ; 36°24'17.4"N	TSP	0.233	Complied with
Xinan Village Q3	101°5 7'00.1"E ; 36°23'28.9"N	TSP	0.242	Complied with
Sitai Village Q4	101°5 6'45.5"E ; 36°22'22.1"N	TSP	0.221	Complied with
Zhuangkuo Village Q5	101°5 5'24.5"E ; 36°21'08.2"N	TSP	0.258	Complied with
Q6 around the construction site of Wenzukou Reservoir	101° 55'38.2"E ; 36°20'03.2"N	TSP	0.256	Complied with
Around the construction site of Wenzukou Reservoir Q7	101° 55'36.8"E ; 36°20'03.6"N	TSP	0.239	Complied with
Q8 around the construction site of Wenzukou Reservoir	101° 55'36.0"E ; 36°20'09.5"N	TSP	0.247	Complied with
Xiafatai Village Q9	101° 53'30.8"E ; 36°21'36.6"N	TSP	0.231	Complied with
Q10 around the construction site of Fatai Reservoir	101°5 3'25.7"E ; 36°21'58.4"N	TSP	0.253	Complied with
Q11 around the construction site of Fatai Reservoir	101°5 3'26.5"E ; 36°21'59.5"N	TSP	0.229	Complied with
Q12 around the construction site of Fatai Reservoir	101°5 3'27.3"E ; 36°21'59.3"N	TSP	0.238	Complied with
Shihuiyao Township Q13	101°5 3'24.7"E ; 36°22'36.5"N	TSP	0.244	Complied with

**Table: Construction noise test results (2022-03-18~2022-03-20)**

Test point/no.	Coordinates	Daytime Leq [dB (A)]	Compliance status (Applicable Standards-Emission
Xiafatai Village Z 1	101°5 3.50927 'E; 36°2 1.61241 'N	50.5	Complied with
Z2 around the construction site of Fatai Reservoir	101°5 3.45082 'E; 36°2 1.99106 'N	52.1	Complied with
Z3 around the construction site of Fatai Reservoir	101°5 3.43334 'E; 36°2 1.98612 'N	52.8	Complied with
Z4 around the construction site of Fatai Reservoir	101°5 3.42553 'E; 36°2 1.94826 'N	53.6	Complied with
Shihuiyao Township Z 5	101°5 3.41309 'E; 36°2 2.61083 'N	48.8	Complied with
Sanhe Town Z6	101°5 6 ' 40.1 "E; 36°2 5 ' 31.0 "N	48.7	Complied with
Zhongjia Village Z7	101°5 6 ' 42.1 "E; 36°2 4 ' 17.3 "N	50.9	Complied with
Xinan Village Z8	101°5 7 ' 01.2 "E; 36°2 3 ' 22.7 "N	50.7	Complied with
Sitai Village Z9	101°5 6 ' 46.0 "E; 36°2 2 ' 22.3 "N	49.9	Complied with
Zhuangkuo Village Z10	101°5 5 ' 25.8 "E; 36°2 1 ' 11.2 "N	49.8	Complied with
Z11 around the construction site of Wenzukou Reservoir	101°5 5 ' 36.9 "E; 36°2 0 ' 04.2 "N	53.4	Complied with
Z12 around the construction site of Wenzukou Reservoir	101°5 5 ' 37.6 "E; 36°2 0 ' 03.2 "N	51.9	Complied with
Z13 around the construction site of Wenzukou Reservoir	101°5 5 ' 36.4 "E; 36°2 0 ' 05.7 "N	52.3	Complied with

**Table: Construction noise test results (2022-04-26~2022-04-29)**

Test point/no.	Coordinates	Daytime Leq [dB (A)]	Compliance status (Applicable Standards-Emission standard)
Sanhe Town Z 1	101°5 6'40.2"E ; 36°25'31.0"N	49.4	Complied with
Zhongjia Village Z 2	101°5 6'42.1"E ; 36°24'17.4"N	47.1	Complied with
Xinan Village Z 3	101°5 7'00.1"E ; 36°23'28.9"N	47.7	Complied with
Sitai Village Z 4	101°5 6'45.5"E ; 36°22'22.1"N	46.6	Complied with
Zhuangkor Village Z 5	101°5 5'24.5"E ; 36°21'08.2"N	47.9	Complied with
Z 6 around the construction site of Wenzukou Reservoir	101° 55'38.2"E ; 36°20'03.2"N	49.7	Complied with
Z 7 around the construction site of Wenzukou Reservoir	101° 55'36.8"E ; 36°20'03.6"N	50.9	Complied with
Z 8 around the construction site of Wenzukou Reservoir	101° 55'36.0"E ; 36°20'09.5"N	51.5	Complied with
Xiafatai Village Z 9	101° 53'30.8"E ; 36°21'36.6"N	46.7	Complied with
Z 10 around the construction site of Fatai Reservoir	101°5 3'25.7"E ; 36°21'58.4"N	49.6	Complied with
Z11 around the construction site of Fatai Reservoir	101°5 3'26.5"E ; 36°21'59.5"N	50.2	Complied with
Z 12 around the construction site of Fatai Reservoir	101°5 3'27.3"E ; 36°21'59.3"N	50.3	Complied with
Shihuiyao Township Z 13	101°5 3'24.7"E ; 36°22'36.5"N	46.5	Complied with

21. **Assessment of monitoring results.** The air quality monitored has met *Environment Ambient Air Quality Standard (GB3095—2012, Grade II*<sup>3</sup>). Noises at each construction site have met the requirement of relevant standards- *Emission standard of environment noise for boundary of construction site (GB 12523 —2011)*. Water quality has met *Environmental Quality Standards for Surface Water (GB3838-2002)*, Grade IV .

---

<sup>3</sup> There are three grades of ambient air quality function areas: Grade II is for Residential, Commercial, Industrial and Rural Area.



## PART V - CONSULTATIONS AND COMPLAINTS

### **Public Awareness Activities**

22. Regular **public awareness activities** were carried out within the Project during the period of January to June 2022 among the PMO, IAs, contractors and construction supervision companies. The consultation processes for this project followed both the PRC requirements and the ADB requirements. Meaningful consultation to safeguard the environment and local residents continued throughout construction phase. The IAs and the PMO were responsible for organizing the public consultations, with the support of the ETG consultant team. The contractors communicated and consulted with the communities in the project area of influence, especially those near works areas. Eye-catching public notice boards were set at each work site to provide information on the purpose of the project activity, the duration of disturbance, the responsible entities on-site (contractors, CSCs, IA), and the contract specific Grievance Redress Mechanism (GRM). Contact information of all GRM entry points and the PMO was disclosed on the construction site information boards. Consultation mainly focuses on public complaints (if any) about public nuisances from construction activities. In June 2022, the LIC conducted questionnaire survey remotely via Wechat based Questionnaire Star mobile phone App. The responses (please see Appendix 4) from the nearby residents nearby the water supply subcomponent and Ping'an section of Huangshui River improvement subcomponent construction sites, who all confirmed satisfactory and no environmental complaint ensuing to the project construction activities.



### **Grievance issue Grievance Redress Mechanism**

23. **GRM Established.** A project-level grievance redress mechanism (GRM) was established in accordance with the ADB's SPS 2009 requirement to receive and facilitate resolution of affected person's concerns and complaints about the Project's environmental performance during construction as well as operation phase of the Project. The project GRM includes a procedure for receiving grievances, recording/ documenting key information, and evaluating and responding to the complainants in a reasonable period of time. Any concerns raised through the GRM will need to be addressed promptly and transparently.



Signboards on contract profiles, contractor/PIU's GRM focal points, construction safety and civilized construction guidelines (HD-RUI-W2 Sanhe Town WTP and Highland Reservoir)

24. **GRM Focal Points.** The PMO is the lead agency responsible for overall management, implementation, and reporting of the GRM. The PMO-ES coordinates the GRM and (i) instructs the PIUs and contractors on their responsibilities in the GRM; (ii) establishes a simple registry system, to document and track grievances received (including forms to record complaints and how they have been resolved); and (iii) reports on progress of the GRM in the semi-annual environmental monitoring reports (EMRs) to ADB. Each IA assigns a member of staff, who is responsible for implementation of the GRM and other relevant aspects of the EMP. This is the PIU-ES. Tasks include keeping a record of complaints. At least two months before construction commences, these contacts were disclosed to the public at each construction site and forwarded to local residents and villagers to ensure that entry points to the GRM are well known. The **Section 2.1 in Part II** provides contact details of designated staff at all levels to be responsible for operating and managing GRM. GRM Procedures see **Appendix 1**.

25. **GRM Training and Operation Status.** PMO/IAs' GRM system, including the focal point, procedures, timelines for different institutions involved, and so on, have been trained and will be gradually improved. In the reporting period, no compliance or grievance was received.

## **PART VI – CONCLUSIONS AND ACTION PLAN FOR THE NEXT PERIOD**

### **6.1 Conclusions and recommendations**

26. **Summary of Monitoring Results during This Reporting Period.** For the reporting period, the Project is at the implementation stage with four ADB funded civil works contracts under construction and three under completion. Based on the environmental monitoring during this reporting period, it is found that the IAs/contractors have undertaken relevant environmental mitigation measures specified in the IEE/ EMP and project domestic EIA reports, and shown enough concerns on the possible negative environmental impacts due to the project implementation. The potential adverse impacts of noise, dust and wastewater generated during construction have been minimized by relevant mitigation measures and there was minor significant impact on nearby sensitive receptors.

### **6.2 Action Plans for the Next Period**

- According to the schedule, the next (7<sup>th</sup> and 8<sup>th</sup>) EMRs will be submitted to ADB by 31 January 2023 and 31 July 2023.

**APPENDIX 1: IMPLEMENTATION STATUS SUMMARY OF EMP**

*(Applicable to all components)*

A.	Introduction .....
B.	Institutional Arrangements and Responsibilities for EMP Implementation.....
C.	Summary of Potential Impacts and Mitigation Measures .....
D.	Project Readiness Assessment.....
E.	Monitoring Requirements .....
F.	Environmental Safeguards Reporting Requirements.....
G.	Training.....
H.	Grievance Redress Mechanism, Consultation.....
I.	Cost Estimates.....

Requirements in the EMP dated June 2016	Compliance status	CAP required?
<b>A. Introduction</b>		
<p>1. This Environmental Management Plan (EMP) is for the Qinghai Haidong Urban-Rural Eco Development Project. It summarizes the potential project environmental impacts and defines mitigation measures and monitoring requirements for the design, construction, and operational stages of the project. It also defines the institutional arrangements and mechanisms, roles and responsibilities of different institutions, and costs for EMP implementation. The EMP seeks to avoid, reduce, and/or mitigate adverse impacts and risks. The EMP is based on the findings of the Initial Environmental Examination (IEE) and domestic environmental assessment reports.</p>	<p><b>Complied with. See this full report and the environmental due diligence report for the three NBF sub-components which was prepared and submitted to ADB at end Dec 2019, including the following: 1.3 Huangshui River Channel Ledu Rural Area Segment; 1.4 Ping'an District Huangshui River Riverside Greenbelt; and 2.1 Ping'an District Mountain Edge Green Belt. Also please see the environmental due diligence on two new subcomponents</b></p>	<p><b>Not applicable</b></p>

	(including comprehensive flood control and ecology improvement on the north bank of Huangshui River, and Yangjia water treatment plant (WTP) and water transmission and distribution network) were submitted to ADB in Nov 2021. In addition, environmental due diligence on the existing subcomponent HD-IF-W4: Huangshi River Ledu Rural Segment (upstream) was submitted to ADB in Dec 2020. Environmental due diligence on the Sanhe WTP site relocation was submitted to ADB in Dec 2021.	
2. The IEE and EMP have been disclosed on the ADB public website ( <a href="http://www.adb.org">www.adb.org</a> ) since 15 June 2016 and are also included in the Project Administration Manual (PAM). The EMP will be included as a separate annex in all bidding and	<b>Complied with.</b> <b>See section 3.1</b>	<b>Not applicable</b>

contract documents. The contractors will be informed of their obligations to implement the EMP, and to provide for EMP implementation costs in their bids for project works.		
3. The EMP includes a monitoring program. 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 relevant laws and regulations; (iii) trends of impacts; and (iv) overall effectiveness of the EMP.	<b>Complied with. See Part IV.</b>	<b>Not applicable</b>
4. The EMP also defines (i) reporting requirements (Section E); (ii) EMP-related training requirements (Section F); (iii) the project level grievance redress mechanism (GRM) and public consultation requirements during project implementation (Section G); and (vi) cost estimates for EMP implementation (Section H).	<b>Complied with</b>	<b>Not applicable</b>
<b>Institutional Arrangements and Responsibilities for EMP Implementation</b>		
5. The agencies involved in the project and their responsibilities for the environmental management of the project are set out in Table A1.1.	<b>Complied with. See Part II.</b>	<b>Not applicable</b>
6. The entities with direct and daily responsibilities under the EMP are the PMO and its Environment Specialist (PMO-ES); the IAs and their Environment Specialist (IA-ES); the local Environmental Monitoring Station (EMS); the Loan Implementation Consultants (LIC) including the Loan Implementation Environment Consultant (LIEC); contractors; and the Construction Supervision Companies hired by the IAs.	<b>Complied with. See Part II.</b>	<b>Not applicable</b>
<p><b>7. PMO, PMO Environment Specialist (PMO-ES).</b> The PMO has established the position of a PMO Environment Officer to coordinate EMP implementation. The terms of reference for this position are in <b>Annex A</b>. The PMO, through the PMO Environment Specialist (PMO-ES) and in coordination with the Loan Implementation Environmental Consultant (LIEC, see below), will do the following.</p> <ul style="list-style-type: none"> <li>(i) Update the EMP after detailed design and ensure its effective implementation;</li> <li>(ii) Ensure that the five implementing agencies (see below) understand their roles for EMP implementation and allocate adequate budgets;</li> <li>(iii) Prepare selection criteria for the project bidding procedures to ensure the EMP is included in tenders by the PMO and bids by applicants. These criteria will include clear directions for bidders on how to include actions and budgets for the EMP in their bids, enabling fair and transparent comparison between bids;</li> </ul>	<b>Complied with. See Part II.</b>	<b>Not applicable</b>

<ul style="list-style-type: none"> <li>(iv) Review tenders for conformance with selection criteria for EMP implementation;</li> <li>(v) With the assistance of a contracted Tendering Agency, prepare clauses to be included in the contractual terms and conditions for contractors to ensure full and effective implementation of the EMP;</li> <li>(vi) Prior to first civil works, and regularly thereafter, assess project readiness of PMO, IAs and contractors based on indicators defined in Section D;</li> <li>(vii) Arrange field visits to contractors prior to their site specific EMP preparation;</li> <li>(viii) Review and approve site-EMPs developed by contractors, supervise their environmental activities and compliance with the site-EMP;</li> <li>(ix) Monitor the progress of all agencies for EMP implementation;</li> <li>(x) Implement and coordinate the Grievance Redress Mechanism (Section G);</li> <li>(xi) Prepare and submit annual environmental monitoring reports (EMR), as well as environment appendixes to Midterm Report and Project Completion Report to ADB;</li> </ul>		
<p>7. Implementing Agencies (IAs). The five IAs will implement project components, administer and monitor contractors and suppliers, and be responsible for construction supervision and quality control at each subproject site. Implementing departments within the bureaus have been set up, including administration, engineering, safeguards, planning and financing and information management divisions. These departments worked with the PPTA consultants and design institutes during loan processing and will work with the PMO and Loan Implementation Consultant during loan implementation. Each IA has assigned an Environment Specialist (IA-ES) to work with their PMO counterpart.</p>	<p><b>Complied with. See Part II.</b></p>	<p><b>Not applicable</b></p>
<p>8. Environmental Monitoring Station (EMS). In Haidong, the EMS of the City Environment Protection Bureau (EPB) will be contracted by the IAs to implement the external environmental monitoring program described in this EMP (Section E). The PMO-ES will supervise this monitoring. The EMS will report to the local EPB and the PMO.</p>	<p><b>Complied with. See Part II.</b></p>	<p><b>Not applicable</b></p>
<p>9. Loan Implementation Environment Consultant (LIEC). LIEC will be hired under the loan implementation consultancy services. The LIEC will be international national environmental specialists. The terms of reference for the LIEC are in Annex B. The LIEC is essential to completion of environmental pre-construction activities and should be recruited as</p>	<p><b>Complied with. See Part II.</b></p>	<p><b>Not applicable</b></p>



<p>soon as possible after loan effectiveness. The LIEC will assist the PMO-ES with the following:</p> <ul style="list-style-type: none"> <li>• Assist the PMO and IAs to integrate the EMP mitigation and management measures into construction contracts and arrangements;</li> <li>• Ensure that relevant sections of the project EMP are incorporated in the construction contract documents;</li> <li>• Assist the PMO to establish and publicize the grievance redress mechanism (GRM);</li> <li>• Develop procedures to (i) monitor and report on the EMP implementation progress; and (i) record and collate complaints and resolution under the GRM;</li> <li>• Provide support and training to PMO, IAs, CSCs and contractors on the specific requirements of the EMP as required;</li> <li>• Assess the environmental readiness of project components prior to first civil works, and regularly thereafter, based on indicators defined in Section D;</li> <li>• Conduct regular EMP compliance assessments, undertake site visits, identify any environment-related implementation issues, and propose necessary responses in corrective action plans;</li> <li>• Assist PMO to prepare annual environmental monitoring progress reports for submission to ADB;</li> </ul>		
<p>10. The loan implementation consultancy services will also include water and wastewater specialists, river ecology/hydrology specialists, and ecology experts. In addition, separate contracts will be awarded to consulting firms specialised in municipal waste management (including landfill O&amp;M); wetland O&amp;M; forest management (including irrigation); and climate adaptation. The specialists will assist in the detailed design, construction and initial operation of project facilities components and TORs for the positions are defined in the Project Administration Manual (PAM).</p>	<p><b>Complied with. See Part II.</b></p>	<p><b>Not applicable</b></p>
<p>11. Construction Contractors, Construction Supervision Companies (CSC). Construction contractors, CSCs contracted by the AIs will be responsible for the daily inspection, monitoring, and evaluation of the implementation of mitigation measures. Construction contractors will be responsible for implementing the mitigation measures during construction under supervision of the IA-ES and the PMO-ES. In their bids, 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 (Onsite environment engineer, OEE). After project completion, environmental management responsibilities will be handed over to Project Facility Operators (PFOs). During the operational phase, the IAs and the Haidong EPB will supervise the environmental management and implementation of mitigation</p>	<p><b>Complied with. See Part II.</b></p>	<p><b>Not applicable</b></p>

measures by the subproject PFOs. The cost of mitigation measures in this phase will be borne by the relevant OEs, which have been identified for each project component.

**Table A1.1: Institutional Responsibilities for EMP implementation**

Requirements in the EMP dated June 2016		Compliance status	CAP required?
Agency	Environmental Management Roles and Responsibilities		
<b>Executing Agency (EA):</b> Haidong City Government (HCG)	<ul style="list-style-type: none"> <li>• Coordination with District governments</li> <li>• Provide overall guidance, coordination, supervision, and management for the project preparation and implementation</li> <li>• Responsible for providing counterpart funds</li> </ul>	<b>Complied with.</b> <b>See Part II.</b>	<b>Not applicable</b>
<b>PLG (Project Leading Group):</b> Headed by the Deputy Mayor of Haidong City and includes representatives from relevant government departments	<ul style="list-style-type: none"> <li>• Provide policy guidance during implementation; and facilitate interagency coordination and coordinate with other involved parties.</li> </ul>	<b>Complied with.</b> <b>See Part II.</b>	<b>Not applicable</b>
<b>Haidong project management office (PMO):</b> With Haidong City Finance Bureau (HCFB)	<ul style="list-style-type: none"> <li>• Provide oversight and daily management of the project preparation and implementation;</li> <li>• Assign PMO environment specialist (PMO-ES) and PMO social officer;</li> <li>• Direct project preparation and implementation activities;</li> <li>• Engage project implementation consultants, including loan implementation environment consultant (LIEC), and other relevant specialists;</li> </ul> <p>Update the EMP after detailed design and ensure its effective implementation;</p> <ul style="list-style-type: none"> <li>• Arrange field visits to contractors prior to their site specific EMP preparation;</li> <li>• Review and approve site-EMPs developed by contractors, supervise their environmental activities and compliance with the site-EMP;</li> <li>• Establish and coordinate GRM;</li> <li>• Coordinate training and capacity development activities;</li> <li>• Establish PPMS to monitor project progress, including regular monitoring of physical and financial progress, and safeguards compliance;</li> <li>• Prepare and submit (a) annual project progress reports, (b) annual environmental safeguard monitoring progress reports, (c) annual audit reports, (d) annual consolidated project financial statement, and (e) mid-term and project completion reports to ADB and HCG with assistance from the project implementation consultant;</li> </ul>	<b>Complied with.</b> <b>See Part II.</b>	<b>Not applicable</b>

Agency	Environmental Management Roles and Responsibilities		
	<ul style="list-style-type: none"> <li>Ensure project implementation compliance with loan agreement and project agreement;</li> </ul>		
<b>Implementing Agencies (IAs):</b>  a. Ledu Housing, Planning, and Construction Bureau b. Ledu Water Affairs Bureau c. Ping'an Housing, Planning and Construction Bureau d. Ping'an Forestry Resource Bureau e. Ping'an Water Affairs Bureau.	<ul style="list-style-type: none"> <li>Implement project components in their jurisdiction, including finance and administration, technical and procurement matters, monitoring and evaluation, and safeguard compliance;</li> <li>Coordinate with the PMO for project management and implementation;</li> <li>Appoint one environment specialist as EMP coordinator;</li> <li>Incorporate EMP into bidding documents;</li> <li>Supervise and monitor EMP implementation and semi-annual reporting to the PMO (with support of LIEC);</li> <li>Contract local EMS to conduct environmental monitoring;</li> <li>Contract construction supervision company (CSC) for construction supervision and quality control;</li> <li>Coordinate commissioning of completed facilities, including environmental and safety acceptance audits, as needed.</li> </ul>	<b>Complied with. See Part II.</b>	<b>Not applicable</b>
<b>Project Facility Operators (PFOs):</b>	<ul style="list-style-type: none"> <li>With the implementing agencies, commission the constructed facilities;</li> <li>Operate and maintain completed facilities, including environmental management, monitoring, and reporting responsibilities</li> </ul>	<b>Complied with. See Part II.</b>	<b>Not applicable</b>

ADB = Asian Development Bank, EMP = environmental management plan, EMS = environmental monitoring stations, GRM = grievance redress mechanism, LIEC = loan implementation environment consultant, PMO = project management office

Requirements in the EMP dated June 2016	Compliance status	CAP required?
<b>C. Summary of Potential Impacts and Mitigation Measures</b>		
12. Potential environmental issues and impacts during the project pre-construction, construction and operation phases, and corresponding mitigation measures, are summarized in Table A1.2. These measures were developed jointly by the PMO, local design institute (LDI), EIA Institute and PPTA team during the project preparation phase. The domestic EIA provided a list and costs for mitigation and environmental measures, and these have been adapted to the more detailed itemization included in Table A1.2. The costs total for mitigation and management measures have been derived by the PPTA team and approved by the PMO.	<b>Complied with. See Part III.</b>	<b>Not applicable</b>

Table A1.2: Summary of Potential Impacts and Mitigation Measures

Requirements in the EMP dated June 2016					Compliance status	CAP required?
Item	Environmental Issues and Impacts	Mitigation Measure	Who Implements	Who Supervises		
<b>Pre-construction (applicable to all subcomponents)</b>						
1.1 Design stage	Detailed design (embankments, landscaping, WTPs and landfill)	i. Finalize detailed designs for all infrastructures.	IA, LDI	PMO	Complied with. See Part I.	Not applicable
		ii. Include habitat features for aquatic and riverside flora, fauna and wetland birds in the design of embankments and landscaping				
		iii. Include all agreed climate change adaptation design measures in final design, including: <ul style="list-style-type: none"> <li>Height increase adjustment to selected embankments of an average of 8cm to accommodate projected increase in flood volumes</li> <li>Stormwater interception drainage increased by 10%</li> <li>Use of drought tolerant species as core areas of mountain edge shelterbelts</li> </ul>	Wetland and riparian experts, various LIC experts (CS01)	PMO	Complied with. See Part I.	Not applicable
	Water demand/supply for South Mountain to match sustainable WWTP discharge	Confirm short-term seasonal discharge rate of treated wastewater from Ping'an WWTP and define, through water demand calculations, the optimum area of landscaping which can be irrigated.	IA, LDI, Afforestation and wastewater specialists of LIC	PMO	Complied with. See Part I.	Not applicable
	Confirm seasonal water availability for irrigation	For mountain edge shelterbelts, undertake seasonal water balances to ensure that there is sustainable water supply, taking into account the CRVA finding of future water scarcity.	IA, LDI, Afforestation specialist of LIC	PMO	Complied with. See Part I.	Not applicable
	Ledu Landfill Zones 1&2 due diligence (groundwater contamination risk)	Detection and analysis of groundwater quality under and immediately downstream is needed to complete due diligence of Ledu Landfill Zones 1&2. The monitoring plan at Table A1.4 requires sampling in June-September to establish baseline groundwater quality.  Groundwater quality will be used to design remedial actions for	IA, LDI	PMO	Complied with. See Part I.	Not applicable

		zones 1 & 2, if needed. Remedial actions will be implemented during the initial stages of the development of zones 3 and 4 of the landfill.				
	Water Safety Plan	For the Fatai, Wenkuzhou and Sanhe WTPs, prepare a Water Safety Plan in compliance with WHO guidelines to ensure water quality at all stages of conveyancing and distribution.	IA, LDI	PMO, LIEC	<b>Complied with. See Part I.</b>	<b>Not applicable</b>
	Resettlement Plans (RP)	Update RPs for each project output to required ADB and PRC standards. i. Establish a resettlement office comprising local government officials to manage the resettlement process. ii. Conduct community consultation programs and ensure information is disseminated about entitlement based on the Land Administration Law. iii. Ensure that all relocation and resettlement activities are completed before construction starts on any subproject.	PMO, IAs	External Resettlement Monitor (CS02)	<b>Referring to resettlement monitoring reports</b>	<b>Not applicable</b>
1.2 Implementati on Support	Establish implementation support positions	Contract a Loan Implementation Environmental Consultant (LIEC), wetland and river ecology specialists, and various sectorial specialists (water and wastewater, solid waste)	PMO	ADB	<b>Complied with. See Part II.</b>	<b>Not applicable</b>
		Contract a Tendering Agency to ensure that the provisions of this EMP are included in bidding documents.	PMO	ADB	<b>Complied with. See Part II.</b>	<b>Not applicable</b>
		Contract Environmental Monitoring Station for external monitoring of construction and operations.	IAs	LIEC, PMO	<b>Complied with. See Part II.</b>	<b>Not applicable</b>
	Establish environmental staff positions at different levels of supervision	i. Appoint PMO Environment Specialist (PMO-ES) ii. Appoint IA Environment Specialists (IA-ES) in the five IAs	PMO, IAs	PMO, LIEC	<b>Complied with. See Part II.</b>	<b>Not applicable</b>

1.3 Constructi on Preparatio n Stage	Update EMP	Review EMP to assess if the current mitigation measures need to be updated due to any changes in the final engineering design. For changes in project locations, sites, or other changes that may cause new or greater environmental impacts or involve additional affected people: the PMO will conduct additional environmental assessment and public consultation. The revised environmental assessment reports will be submitted to the PMO, EPB and ADB for approval and disclosure.	PMO-ES, IAs- ES, LIEC	PMO, ADB,	Complied with. See Part I.	Not applicable
	Contract documents	i. Prepare and include clauses referencing this EMP in the terms of reference for bidders for construction contracts. ii. Prepare environmental contract clauses for contractors, especially the EMP and monitoring plan.	IAs with LDI and Tendering Agency	PMO-ES, LIEC	Complied with. See Part III.	Not applicable
	Grievance Redress Mechanism (GRM)	i. Implement the GRM described in this EMP. ii. Establish complaints recording procedures within PMO. iii. Publicize GRM at all construction sites.	PMO-ES, LIEC	ADB, PMO	Complied with. See Part V.	Not applicable
	Construction site planning	i. Prepare Site-specific EMP (SEMP), including health and safety plan (See IEE- Section VI.D.1). ii. Assign onsite environment engineer, OEE iii. IAs and PMO review and approve each SEMSP	Contractors	IAs-ES, PMO-ES	Complied with. See Part III.	Not applicable
	Environmental Protection Training	Provide training on implementation of this EMP to all relevant agencies, especially the IAs and contractors (see Table A1.7 for details). Includes training in GRM and environmental protection and monitoring.	LIEC, PMO-ES, Haidong EPB	PMO, ADB	Complied with. See Part I.	Not applicable
<b>Construction Phase (applicable all subcomponents under construction)</b>						
2.1 Water	Domestic wastewater from construction sites	Contractor to provide portable toilets at construction sites. Toilets to be emptied regularly and sewage transported to WWTP.	Contractors	CSC, IAs, PMO	Complied with. See Part III.	Not applicable
	Construction wastewater (washing aggregates, pouring / curing concrete, machinery repairs) is managed	Site planning, management and safeguards (in the SEMP to include: i. Interception of all construction wastewater and site runoff water ii. Sediment from construction wastewater and site runoff water to be separated in sedimentation traps before discharge of water iii. Sediment to be disposed at landfill iv. Site runoff water containing hazardous and harmful materials (see below) to be treated separately from site runoff.	Contractors	CSC, IAs, PMO	Complied with. See Part III.	Not applicable

	Handling of hazardous and harmful materials	<p>Site planning, management and safeguards (in the SEMP) to include:</p> <ul style="list-style-type: none"> <li>i. Storage facilities for fuels, oil, and other hazardous materials within secured areas on impermeable surfaces, and provided with bunds and cleanup installations;</li> <li>ii. Fuel supplier is properly licensed and follows the proper protocol for transferring fuel, and complies with JT 3145-88 (Transportation, Loading and Unloading of Dangerous or Harmful Goods).</li> <li>iii. Vehicles and equipment are properly parked in designated areas to prevent contamination of soil and surface water.</li> <li>iv. Vehicle, machinery, and equipment maintenance and refueling are carried out so that spilled materials do not seep into the soil or into water bodies.</li> <li>v. Fuel storage and refilling areas are located at least 300 m from stormwater drains, Huangshui River and its tributaries.</li> <li>vi. Oil traps for service areas, and parking areas.</li> </ul>	Contractors	CSC, IAs, PMO	<b>Complied with. See Part III.</b>	<b>Not applicable</b>
2.2 Air	Generation of dust by construction activities	<ul style="list-style-type: none"> <li>i. Transport containers and vehicles carrying soil, sand or other fine materials to and from the sites must be covered.</li> <li>ii. Materials storage and stockpile sites are covered or sprayed with water.</li> <li>iii. Water is sprayed on bare earth surfaces at construction sites and access roads twice daily.</li> <li>iv. All roads and tracks used by vehicles of the contractors or any subcontractors or supplier are kept clean and clear of all dust, mud, or extraneous materials dropped by vehicles.</li> </ul>	Contractors	CSC, IAs, EMS	<b>Complied with. See Part III.</b>	<b>Not applicable</b>
	Air emission from vehicles and equipment	<ul style="list-style-type: none"> <li>i. Equipment and machinery is maintained to a high standard to ensure efficient running and fuel-burning.</li> <li>ii. Avoid leaving machinery running or trucks and other vehicles idling when not in use;</li> <li>iii. A regular inspection and certification system for equipment and machinery is initiated.</li> </ul>	Contractors	CSC, IAs, EMS	<b>Complied with. See Part III.</b>	<b>Not applicable</b>

2.3 Noise and Vibration	Noise from vehicles and construction machinery	<ul style="list-style-type: none"> <li>i. Noise levels from equipment and machinery conform to PRC standard GB12523-2011.</li> <li>ii. Install portable noise shields near sensitive receptors listed in Table V.10 of the IEE.</li> <li>iii. When work is planned near sensitive receptors, residents will be notified by the IA and/or contractors and any site-specific concerns or working arrangements addressed.</li> <li>iv. Prohibit noise-generating construction work between 2000 and 0600 hours.</li> <li>v. Avoid minority religious activities or festivals (i.e., no construction allowed within 500 meters of any mosques during Friday prayer times, or during Muslim Corban, Kaizhai festivals).</li> <li>vi. If construction noise needs to continue into the night, the contractor must first consult with the PMO, IA, and local communities and obtain their agreement.</li> </ul>	Contractors	IAs, PMO, EMS	<b>Complied with. See Part III.</b>	<b>Not applicable</b>
2.4 Soil Quality	River blockage removal	Rocks, rubble and sand from slides into river will be reused as fill in embankments and greenbelt landscaping.	Contractors	CSC, IAs	<b>Complied with. See Part III.</b>	<b>Not applicable</b>
	Wetland excavations	The soil excavated from wetland ponds and channels at the Yizhou Wetland shall only be reused on-site if it complies with Class II of Soil Environmental Quality Standard (GB15618-1995), which is the equivalent soil quality for the adjoining agricultural lands.	Contractors, IA	PMO, EMS	<b>Complied with. See Part III.</b>	<b>Not applicable</b>
2.5 Soil erosion and stability	Erosion from construction sites	<ul style="list-style-type: none"> <li>i. Construct interception ditches and drains to prevent runoff entering construction sites, and to divert runoff from sites to existing drainage.</li> <li>ii. Limit construction and material handling during periods of rains and high winds.</li> <li>iii. Stabilize all cut slopes, embankments, and other erosion-prone working areas while works are going on.</li> <li>iv. All earthwork disturbance areas shall be stabilized within 30 days after earthworks have ceased at the sites.</li> <li>v. Preserve existing vegetation where no construction activity is planned.</li> </ul>	Contractors	CSC, IAs	<b>Complied with. See Part III.</b>	<b>Not applicable</b>



	Shelterbelt establishment	On sloping lands, all preparation for plantations must be conducted according to technical specifications of soil and water conservation for sloping land set in <i>Soil and Water Conservation Law of PRC</i> (2010). In particular, soil tillage on terraces must be carried out along contours, keeping any existing vegetation between contour terraces to prevent soil erosion.	IAs, contractors	PMO	Complied with. See Part III.	Not applicable
	Refurbishment of existing landfill	i. Protection of spoil and old garbage stockpiling during excavation. Excavated old garbage will be deposited on a prepared clay bed and compacted, underlying soil placed on top, with clean topsoil cover. No stockpile will exceed 1 in 3 slope and will be protected by interception drains; ii. Geotextile or hessian matting will be laid and pegged over exposed slopes	Contractors	CSC, IA, PMO	Complied with. See Part III.	Not applicable
2.6 Solid waste	Domestic waste from construction site	i. Provide appropriate waste storage containers; ii. Trash collection bins are regularly sprayed with pesticides to reduce flies; iii. Wastes are stored away from water bodies and regularly hauled to a suitable landfill or designated dumping site.	Contractors	CSC, IAs, PMO	Complied with. See Part III.	Not applicable
	Construction wastes causing adverse impacts on surrounding environments.	Construction wastes that cannot be reused will be regularly transported off-site for disposal, and not allowed to accumulate on site over long periods.	Contractors	CSC, IAs, PMO	Complied with. See Part III.	Not applicable
2.7 Flora and Fauna	Habitat retention	Loss of existing native trees and shrubs in embankment construction will be replaced by the same species in landscaping and in habitat re-establishment in embankments.  To minimize impacts on existing riverside habitats and wetlands: i. prohibit construction activities or use of noise-intensive machinery during bird migration season (end of March to end of April; mid-September to end of October); ii. prohibit construction activities at night; iii. avoid water pollution from construction spoils and oil leakage; iv. locate construction camp at least 500-m away from wetlands; v. awareness building and training of construction workers. In all cases, the taking or harming of any wildlife by construction workers will be strictly prohibited.	Contractors, IAs	PMO, wetland and river ecology specialists of LIC	Complied with. See Part III.	Not applicable

		At the construction site of the Sanhe WTP, ensure a buffer zone along creek to protect vegetation along banks.				
	Invasive species	Prohibit the use of any plant species classified in the PRC as weeds, as defined by the China National Invasive Plant Database ( <a href="http://www.agripests.cn">http://www.agripests.cn</a> ; 229 species) and by the Ministry of Environment Protection and Chinese Academy of Sciences (19 species).	LDI, IAs, contractors	PMO, LIEC	<b>Complied with. See Part III.</b>	<b>Not applicable</b>
2.8 Social and Cultural	Traffic management – all components	A traffic control and operation plan must be prepared by the contractor in consultation with the local traffic management authority prior to any construction. The plan will include: i. Selection of haulage routes to reduce disturbance to regular traffic. ii. Trucks hauling construction material and waste to be fully covered. iii. Divert or limit construction traffic at peak traffic hours.	Contractors	CSC, PMO, local traffic police	<b>Complied with. See Part III.</b>	<b>Not applicable</b>
	Work camp health and hygiene	i. Ensure awareness of communicable diseases for the construction work forces and nearby communities ii. Ensure construction sites, canteens, food, water and food handling, and toilets, are maintained under hygienic conditions iii. Construction site operations comply with PRC State Administration of Worker Safety Laws and Regulations.	Contractors	CSC, IAs	<b>Complied with. See Part III.</b>	<b>Not applicable</b>
	Community safety (all sites)	i. At all times during construction, safe and convenient passage must be given for community vehicles, and pedestrians to and from side roads. ii. Place signs around the construction areas to facilitate traffic movement, provide directions to various components of the works, and provide safety advice and warnings. iii. At the end of each day, all sites and equipment will be made secure (through fencing and/or lock-down of equipment) to prevent public access.	Contractors	CSC, IAs	<b>Complied with. See Part III.</b>	<b>Not applicable</b>

	Construction site safety (all sites)	i. To the furthest extent possible, protect all persons and nearby property from construction accidents. ii. Comply with all national and local safety requirements and any other measures necessary to avoid accidents. iii. Provide protective equipment and clothing (goggles, gloves, respirators, dust masks, hard hats, steel-toed boots) for construction workers and enforce their use. iv. Ensure sites and machinery are sealed or closed at night and off-limits to the general public. v. For residents next to construction (especially loud noise), ensure residents are aware of the duration and nature of works, potential hazards, and offer to provide ear plugs/dust masks/other basic safety equipment. vi. During heavy rains / emergencies, suspend all work.	Contractors	CSC, IAs	Complied with. See Part III.	Not applicable
	Construction site safety (pipe-laying)	Trenches will be dug, pipes laid, and the trenches closed, in the same operation. This will ensure that open trenches are not left over an extended period to pose a safety risk or to erode and cave-in.	Contractors	CSC, IA	Complied with. See Part III.	Not applicable
	Cultural, physical and natural heritage protection	If a cultural artefact is unearthed, stop work and immediately report the matter to the IAs, PMO and local Cultural Relics Preservation Bureau for guidance on next steps.	Contractors	CSC, IAs, PMO	Complied with. See Part III.	Not applicable
2.9 Unexpected environmental impacts		If unexpected environmental impacts occur during project construction phase, immediately inform the PMO; assess the impacts; and update the EMP	IA	PMO, LIEC	Complied with. See Section 3.6.	To be followed up.
<b>Operation Phase (applicable all subcomponents under operation)</b>						
<b>Component 1: Integrated flood plain management infrastructure for Huangshui River</b>						
3.1 Flora and fauna	Manage the built habitats – landscaped embankments and constructed wetlands	i. Maintain the landscaping – watering, weeding, stabilizing, survival and growth of planted trees, shrubs and herbs, with replacement and corrective action as necessary. ii. Provide security and surveillance to guard against misuse, theft and littering. iii. Regularly remove litter and transport to landfill.	O&M Unit	IA, PMO	Complied with. See Part III.	Not applicable

		<p>iv. The operating and maintenance units will provide monthly monitoring reports to the IAs and PMO on the survival and growth of planted trees, shrubs and herbs, with replacement and corrective actions as necessary.</p> <p>v. Establish a wetland management and monitoring system, including a wetland operations manual (supported by CS6) which will include a comprehensive biodiversity and habitat survey/monitoring program and the regulation of water flows in the wetland especially in the summer to control eutrophication and algal blooms.</p>			<b>Complied with. See Part III.</b>	<b>Not applicable</b>
	Plantation forest management	<p>Shelterbelt forests will require intensive management during the establishment phase and silvicultural management later. The project's capacity building and training will address proper fertilizer and pesticide use.</p>	O&M Unit	IA, PMO	<b>Complied with. See Part III.</b>	<b>Not applicable</b>
3.2 Emergency preparedness and response	Flood warning and emergency system	Review flood emergency preparedness and response system for the project area, and identify improvement opportunities.	IA, CS01 consultant	PMO, ADB	<b>Complied with. See Part III.</b>	<b>Not applicable</b>
3.3 Water	Wastewater discharged without meeting relevant standard for irrigation	<p>i. Install wastewater quality monitoring devices for real-time monitoring at Ping'an WWTP</p> <p>ii. Establish real-time monitoring framework</p>	WWTP O&M Units	IA, PMO	<b>Complied with. See Part III.</b>	<b>Not applicable</b>
3.4 Water	Water source protection	Protection measures for the watershed of Fatai reservoir will be formally delineated for water source protection zones and the zones enforced for both Wenkuzou and Fatai. These comprise: (i) a Prohibited Zone (Grade I Zone), closest to the water source; and (ii) a Protection Zone (Grade II Zone), adjoining the Prohibited Zone.	Haidong WRB	Haidong City Government	<b>Complied with. See Part III.</b>	<b>Not applicable</b>
3.5 Health and safety	Health and safety of WTP operating staff	<p>i. Compulsory use of safety equipment and clothing as necessary, including shoes or boots with non-slip soles, protective and chemical resistant clothing, safety goggles;</p> <p>ii. Wearing of respiratory mask in the sludge dewatering and de-odor workshops and when moving and transporting sludge;</p> <p>iii. Posting and briefing on safety instructions for the storage, transport, handling or pouring of chemicals, and entry into confined spaces</p>	WTP O&M Unit	IA, PMO	<b>Complied with. See Part III.</b>	<b>Not applicable</b>

	Hazardous materials handling	The chlorination room and chemical storage area will be equipped with automatic alarms, which will be triggered by chlorine dioxide leakage. The duty room will be equipped with gas masks, oxygen breathing apparatus and other rescue materials An emergency response plan will be developed and implemented.	Landfill O&M Unit	IA, PMO	Complied with. See Part III.	Not applicable
3.6 Water	Groundwater quality (landfill)	To ensure that leachate is not penetrating into the groundwater, a monitoring program will be implemented (see details in the EMP). Continuous groundwater monitoring will be carried out during operation.  Leachate holding tanks will be designed for 2 weeks' storage of leachate in the event of plant malfunction. In the event of longer malfunctions, the collected leachate will be back-pumped onto the landfill to obtain leachate volume reduction and leachate fixing.	O&M Unit	IA, PMO	Complied with. See Part III.	Not applicable
3.7 Air	Noise (landfill)	i. Scheduling working hours and transportation routes for garbage collection and disposal, avoiding urban traffic peak period and sensitive location; ii. Selecting low noise equipment and vehicles in the acquisition of machines and vehicles; and iii. Installing sound insulation at pumps and pumping stations.	O&M Unit	IA, PMO	Complied with. See Part III.	Not applicable
	Fugitive garbage (landfill)	i. All haulage vehicles will be covered, and progressively enclosed as the fleet is modernized. ii. Retaining fences will be erected around the landfill site to prevent the waste from spreading during windy or rainy season.	O&M Unit	IA, PMO	Complied with. See Part III.	Not applicable
	Landfill gas (CH <sub>4</sub> )	i. Collection of methane gas from decomposing garbage will be channeled through a specially constructed gas collection system comprising gas transmitting gabions, collecting pipes and gas flaring chimneys. ii. Regular monitoring of surface concentrations of CH <sub>4</sub> will ensure that below 2m height above landfill work surface, the concentration of methane should not exceed 0.1%.	O&M Unit	IA, PMO	Complied with. See Part III.	Not applicable
3.8 Health and safety	Odors and pests (landfill)	i. To reduce the breeding of flies, mosquitoes, rats and other vermin, and to prevent odor and wind-borne dispersal of garbage, ii. Compaction and earth covering of the active tip face or landfill cell will be undertaken daily. iii. Periodic spraying with approved pesticide will further control the breeding of flies and mosquitoes and iv. Regular rat trapping programs will be undertaken.	Landfill O&M Unit	IA, PMO	Complied with. See Part III.	Not applicable

All Components						
3.9 Unexpected environmental impacts	All areas	If unexpected environmental impacts occur during project operations, immediately inform the PMO; assess the impacts; and update the EMP	All O&M Units	IAs, PMO	Complied with. See Section 3.6.	To be followed up.

Sources: PMO; Project IEE. ADB = Asian Development Bank, LDI = local design institute, EIA = Environmental Impact Assessment, EPB = Environment Protection Bureau, IA = Implementing Agency, HCG = Haidong City Government, LIEC = Loan Implementation Environmental Consultant, O&M = Operation and maintenance, PMO = Project Management Office, RP = Resettlement Plan, SEMP = Site Environmental Management Plan, WTP = water treatment plant.

Requirements in the EMP dated June 2016	Compliance status	CAP required?
<b>D. Project Readiness Assessment</b>		
14. Before construction, the LIEC and PMO-ES will assess each IA's readiness in terms of environmental management based on a set of indicators (Table A1.3) and report it to ADB and the PMO. 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. The assessment will be repeated at regular intervals to account for new works contracts, and documented in the annual environment monitoring reports to ADB.	Complied with.	Not applicable

**Table A1.3: Project Readiness Assessment Indicators**

Indicator	Criteria	Assessment	
Environmental Supervision in place	LIEC is in place. Wetland and River Ecology Specialists contracted as part of LIC	Yes✓	No
	Qualified EMS contracted by the IAs	Yes✓	No
	Environment specialists assigned by PMO (PMO-ES) and IAs (IA-ES)	Yes✓	No
Compliance with loan covenants and assurances	The borrower complies with loan covenants related to project design and environmental management planning	Yes✓	No
Public involvement effectiveness	Meaningful consultation completed, construction activities publicized at construction sites	Yes✓	No
	GRM established with entry points publicized	Yes✓	No

Contracts with environmental safeguards	Bidding documents and contracts incorporating the environmental activities and safeguards listed as loan assurances	Yes✓	No (Incorporated the mitigation measures during detailed design: (i) habitat features for aquatic and riverside flora, fauna and wetland birds should be included in the design of embankments and landscaping; (ii) all agreed climate change adaptation design measures in the CRVA)
Site construction planning (environmental)	Site Environmental Management Plan prepared for each work site by the contractors and cleared by the IAs	Yes✓	No
EMP financial support	EMP budget established, and required funds set aside for EMP implementation by each IA	Yes✓	No

EMS = Environment Monitoring Station, IA = Implementing Agency, LIC = Loan Implementation Consultant, LIEC = Loan Implementation Environment Consultant, PMO = Project Management Office.

Requirements in the EMP dated June 2016		Compliance status	CAP required ?
<b>E. Monitoring Requirements</b>			
<p>15. Three types of project monitoring will be conducted under the EMP:</p> <ul style="list-style-type: none"> <li>a. Internal monitoring to be conducted by the contractors and the Construction Supervision Companies (CSCs);</li> <li>b. External monitoring, to be conducted by the Haidong EMS, contracted by the IAs;</li> <li>c. EMP compliance monitoring, to be conducted by the LIEC on behalf of the PMO.</li> </ul>		Complied with. See Part IV.	Not applicable
<p>16. Internal environmental monitoring includes the monitoring of air quality and noise at all construction sites as well as the quality of discharged construction wastewater, and erosion control. It also includes daily inspection and internal compliance assessment with the approved site-EMP of contractors. During operations, internal monitoring will cover the growth and survival of greenbelts, shelterbelt and wetland vegetation and the amount of habitat they provide through fauna inventories; quality of treated wastewater from the WWTP going to irrigation; and dust, noise and rubbish containment, and site security at the landfill.</p>		Complied with. See Part III and Part IV.	Not applicable
<p>17. External monitoring covers many of the same parameters and is a verification of the internal monitoring. It also measures effects at</p>		Complied	Not

<b>Requirements in the EMP dated June 2016</b>		<b>Compliance status</b>	<b>CAP required ?</b>
sensitive receptors including the monitoring of noise and dust at construction sites, or surface and groundwater downstream of the landfill.		<b>with. See Part IV.</b>	<b>applicable</b>
18.	EMP compliance monitoring is the systematic evaluation of the overall progress of the entire EMP – see Para. 15.	<b>Complied with. See Part IV.</b>	<b>Not applicable</b>
19.	Table A1.4 shows the environmental monitoring program designed for this project, defining the scope, location, parameter, duration and frequency, and responsible agencies, for monitoring during the construction and operational stages. Monitoring needs were identified in the environmental assessment and also reflect the requirements of national regulatory standards. Monitoring costs are estimates based on the experience of the PPTA team and PMO from other projects elsewhere in the PRC. ADB will oversee project compliance on the basis of the annual environmental monitoring reports provided by the PMO and site visits as required.	<b>Complied with. See Part IV.</b>	<b>Not applicable</b>
20.	The results of the environmental monitoring will be compared with relevant PRC performance standards as defined in Table A1.5. Non-compliance with these standards will be highlighted in the monitoring reports. Monitoring results will be submitted to the PMO and then reported by the PMO to ADB in annual environmental monitoring reports (prepared with the support of the LIEC – Table A1.6).	<b>Complied with. See Part IV.</b>	<b>Not applicable</b>
21.	EMP compliance monitoring. Evaluation of the compliance with the EMP will be undertaken regularly by the PMO-ES and the LIEC. The PMO-ES and the LIEC will report EMP implementation progress and compliance along with information on project implementation, environmental performance of the contractors, and environmental compliance through quarterly project progress reports and annual environmental monitoring reports (Table A.6). The LIEC will support the PMO-ES in developing the annual environmental monitoring reports (EMR). The reports will identify any environment related implementation issues and necessary corrective actions, and reflect these in a corrective action plan. Operation and performance of the project GRM, environmental institutional strengthening and training, and compliance with all covenants under the project will also be included in the report.	<b>Complied with. See Part IV.</b>	<b>Not applicable</b>



Table A1.4: Environmental Monitoring Program for Project Duration

Item	Parameter	Monitoring Location	Monitoring Frequency and Duration	Who Implements	Who Supervises	Compliance status	CAP required?
<b>Pre-construction</b>							
Soil	pH, TP, TN, Zn, Cu, Pb, Hg, As, Cd, pesticide residues	Sampling of areas proposed for excavation at Yizhou wetland	One sample per site analyzed before construction commences	IAs	PMO	<b>Complied with.</b> <b>See IEE.</b>	<b>Not applicable</b>
Ground-	pH, COD, BOD, NH <sub>3</sub> -N, TN, TP, E.coli, total turbidity, sulfate, chloride, Hg, Pb, Fl, Fe, Mn, Cu, Zn.	2 groundwater monitoring wells at 30m and 50 m north of leachate tank at Ledu landfill. The monitoring well shall be 30 m deep at least.	Once before detailed design is finalized for risk assessment of leakage and to establish baseline and inform remediation work for zones 1 & 2.	IA	PMO, EPB	Complied with. The environmental due diligence report for the three NBF sub-components which was prepared and submitted to ADB at end Dec 2019, including the following: 1.3 Huangshui River Channel Ledu Rural Area Segment; 1.4 Ping'an District Huangshui River	<b>Not applicable</b>

water					<p>Riverside Greenbelt; and 2.1 Ping'an District Mountain Edge Green Belt.</p> <p>Also please see the environmental due diligence on two new subcomponents (including comprehensive flood control and ecology improvement on the north bank of Huangshui River, and Yangjia water treatment plant (WTP) and water transmission and distribution network) were submitted to ADB in Nov 2021.</p>	
-------	--	--	--	--	---	--

<b>Construction Stage</b>							
<b>Internal monitoring</b>							
Dust and noise	TSP, $L_{Aeq}$	At each construction site boundary	One 24-hr continuous sampling period each week, during construction activity	CSC and contractor	IA, PMO	<b>Complied with. See Part IV.</b>	<b>Not applicable</b>
Surface water quality	SS, petroleum products	Construction wastewater released from construction sites	Once day per week during construction activity	CSC and contractor	IA, PMO	<b>Complied with. See Part IV.</b>	<b>Not applicable</b>
<b>External monitoring</b>							
Dust and noise	TSP, $L_{Aeq}$	At nearest sensitive receptor for each construction site; at construction site boundary	1 day (24-hr continuous sampling) per month during construction activity	EMS	PMO	<b>Complied with. See Part IV.</b>	<b>Not applicable</b>
Surface water quality	SS, petroleum products	Selected points 200 m downstream of active riverbank constructions	2 times per week at each site during construction activity.	EMS	PMO	<b>Complied with. See Part IV and the environmental due diligence report for the three NBF sub-</b>	<b>Not applicable</b>

					<p>components which was prepared and submitted to ADB at end Dec 2019, including the following: 1.3 Huangshui River Channel Ledu Rural Area Segment; 1.4 Ping'an District Huangshui River Riverside Greenbelt; and 2.1 Ping'an District Mountain Edge Green Belt. Also please see the environmental due diligence on two new subcomponents (including comprehensive flood control and ecology</p>	
--	--	--	--	--	---	--

						<p>improvement on the north bank of Huangshui River, and Yangjia water treatment plant (WTP) and water transmission and distribution network) were submitted to ADB in Nov 2021. In addition, environmental due diligence on the existing subcomponent HD-IF-W4: Huangshi River Ledu Rural Segment (upstream) was submitted to ADB in Dec 2020. Environmental due diligence on the Sanhe</p>
--	--	--	--	--	--	--

						WTP site relocation was submitted to ADB in Dec 2021.	
<b>Operational Stage</b>							
<b>Internal monitoring</b>							
Dust, noise and odor	Visual inspection for dust in household areas. $L_{Aeq}$ measure for noise and $NH_3$ and $H_2S$ for odor.	At nearest sensitive receivers from landfill site.	1 day per month for first 3 years of operation.	Landfill O&M Unit	PMO, EPB	To be complied with.	Not applicable in this reporting period
Waste water quality	pH, COD, BOD, $NH_3-N$ , TN, TP, E.coli,	Both influent and effluent discharge (to irrigation) of Ping'an WWTP	Continuous routine monitoring	WWTP O&M Unit	PMO EPB	To be complied with.	Not applicable in this reporting period
Embankment strength	Inspection of structural integrity by engineers	All riverside embankments	Monthly between June and September for first 3 years of operation	Ping'an and Ledu River Water Course Management Stations	PMO	Being complied with. See Part IV and the environmental due	Not applicable

					<p>diligence report for the three NBF sub-components which was prepared and submitted to ADB at end Dec 2019, including the following: 1.3 Huangshui River Channel Ledu Rural Area Segment; 1.4 Ping'an District Huangshui River Riverside Greenbelt; and 2.1 Ping'an District Mountain Edge Green Belt. Also please see the environmental due diligence on two new subcomponents (including</p>
--	--	--	--	--	--

					<p>comprehensive flood control and ecology improvement on the north bank of Huangshui River, and Yangjia water treatment plant (WTP) and water transmission and distribution network) were submitted to ADB in Nov 2021. In addition, environmental due diligence on the existing subcomponent HD-IF-W4: Huangshi River Ledu Rural Segment (upstream) was submitted to ADB in Dec 2020.</p>
--	--	--	--	--	---



						Environmental due diligence on the Sanhe WTP site relocation was submitted to ADB in Dec 2021.	
Built habitat quality	Re-vegetation of riverbank revetments. % cover of grasses, sedges and shrubs.	All riverside embankments	Semi-annually for first 3 years of operation.	O&M Units	PMO, EPB	Ibid	Not applicable
	Survival of greenbelt and shelterbelt plantings. % survival and replacement	All riverside greenbelts, mountain edge shelterbelts and South Mountain forest.	Semi-annually for first 3 years of operation.	O&M Unit	PMO, EPB	Ibid	Not applicable
Wetland habitats	Inventory of aquatic and fringing plants; Records of bird sightings and populations.	Yizhou wetland areas	Semi-annually for first 3 years of operation.	O&M Unit	PMO, EPB	Complied with. See Part IV.	Not applicable in this reporting period
Wetland water quality	pH, DO, COD, BOD, NH <sub>3</sub> -N, TN, TP, E.coli	Intake and outflow points of Yizhou wetland	Monthly for first 3 years of operation.	O&M Unit	PMO, EPB	Complied with. See Part IV.	Not applicable in this reporting

							period
Surface water quality	pH, DO, COD, BOD, NH <sub>3</sub> -N, TN, TP, E.coli	In Fatai and Wenkuzhou reservoirs at a point 50 m from water intake, 2 m depth.	Monthly for first 3 years of operation.	O&M Unit	PMO, EPB	Complied with. See Part IV.	Not applicable in this reporting period
Drinking water quality	pH, DO, COD, BOD <sub>5</sub> , N-NH <sub>3</sub> , TP, TN, Cu, Zn, F1, Se, Ar, Hg, Cd, Cr, Pb, SO <sub>3</sub> , fecal coliforms, SO <sub>4</sub> , Cl, Fe, Mn	At water outlet points at Fatai, Wenkuzhou and Sanhe WTPs	2 days per week. Ongoing monitoring.	WTP operators	PMO, EPB	Complied with. See Part IV.	Not applicable in this reporting period
Groundwater	pH, COD, BOD, NH <sub>3</sub> -N, TN, TP, E.coli	2 groundwater monitoring wells at 30m and 50 m north of leachate tank at Ledu landfill. The monitoring well shall be 30 m deep at least.	Monthly	Landfill operator	PMO, EPB	Complied with. See Part IV.	Not applicable in this reporting period
Treated leachate	COD, BOD <sub>5</sub> , NH <sub>3</sub> -N, SS, pH.	At leachate treatment plant outlet.	Monthly	Landfill operator	PMO, EPB	Complied with. See Part IV.	Not applicable in this reporting period

Met han e emis sion	CH <sub>4</sub> level (<0.1%)	At point 1 m above the ground at the northern edge of the landfill and 200m downslope northeast of landfill.	Monthly	Landfill operator	PMO, EPB	<b>Complied with. See Part IV.</b>	<b>Not applicable in this reporting period</b>
<b>External monitoring</b>							
Noise, dust and odor	TSP, L <sub>Aeq</sub> and odor detection scale	At nearest sensitive receivers from landfill site.	2 days per month until PCR stage	EMS	PMO, EPB	<b>Complied with. See Part IV and the environmental due diligence report for the three NBF sub-components which was prepared and submitted to ADB at end Dec 2019, including the following: 1.3 Huangshui River Channel Ledu Rural Area Segment; 1.4 Ping'an District Huangshui River</b>	<b>Not applicable</b>

					<p><b>Riverside Greenbelt; and 2.1 Ping'an District Mountain Edge Green Belt. Also please see the environmental due diligence on two new subcomponents (including comprehensive flood control and ecology improvement on the north bank of Huangshui River, and Yangjia water treatment plant (WTP) and water transmission and distribution network) were submitted to ADB in Nov 2021.</b></p>	
--	--	--	--	--	---	--

						<p>In addition, environmental due diligence on the existing subcomponent HD-IF-W4: Huangshi River Ledu Rural Segment (upstream) was submitted to ADB in Dec 2020.</p> <p>Environmental due diligence on the Sanhe WTP site relocation was submitted to ADB in Dec 2021.</p>	
Ground water quality	pH, COD, BOD, NH <sub>3</sub> -N, TN, TP, E.coli, total turbidity, sulfate, chloride, Hg, Pb, F, Fe, Mn, Cu, Zn.	A permanent monitoring well sunk 200m downstream of landfill plus the 2 groundwater monitoring wells at 30m and 50 m north of leachate tank used for internal monitoring.	Monthly for 12 consecutive months. Monitoring can cease when 100% compliance is achieved 3 consecutive times at the same site	EMS	PMO, EPB	To be complied with.	Not applicable

Surface water quality	pH, DO, COD, BOD, NH <sub>3</sub> -N, TN, TP, E.coli	In Fatai and Wenkuzhou reservoirs at a point 50 m from water intake, 2 m depth.	Quarterly until PCR stage	EMS	PMO, EPB	Complied with. See Part IV and the environmental due diligence report for the three NBF sub-components which was prepared and submitted to ADB at end Dec 2019, including the following: 1.3 Huangshui River Channel Ledu Rural Area Segment; 1.4 Ping'an District Huangshui River Riverside Greenbelt; and 2.1 Ping'an District Mountain Edge Green Belt.	Not applicable
-----------------------	--	---	---------------------------	-----	----------	--	----------------

						<p>Also please see the environmental due diligence on two new subcomponents (including comprehensive flood control and ecology improvement on the north bank of Huangshui River, and Yangjia water treatment plant (WTP) and water transmission and distribution network) were submitted to ADB in Nov 2021. In addition, environmental due diligence on the existing subcomponent HD-IF-W4: Huangshi</p>
--	--	--	--	--	--	---

					<p>River Ledu Rural Segment (upstream) was submitted to ADB in Dec 2020.</p> <p>Environmental due diligence on the Sanhe WTP site relocation was submitted to ADB in Dec 2021.</p>		
Drinking water quality	pH, DO, COD, BOD <sub>5</sub> , N-NH <sub>3</sub> , TP, TN, Cu, Zn, F, Se, Ar, Hg, Cd, Cr, Pb, SO <sub>3</sub> , fecal coliforms, SO <sub>4</sub> , Cl, Fe, Mn	At water outlet points at Fatai, Wenkuzhou and Sanhe WTPs		EMS	PMO, EPB	To be complied with	Not applicable
<p>BOD = biological oxygen demand, COD = chemical oxygen demand, EMS = Environmental Monitoring Station; EPB = Environment protection Bureau; O&amp;M = Operation and Maintenance; PMO = Project Management Office; IA = Implementing Agency, WTP = water treatment plant</p>							



Table A1.5: Monitoring Indicators and Applicable PRC Standards

Phase	Indicator	Standard	Compliance status	CAP required?
Preconstruction	Soil quality	Environmental Quality Standard for Soils (GB 15618-1995).	Complied with. See IEE.	Not applicable
Construction	Dust and noise at construction site boundary	Construction Site Noise Limits (GB12523—2011) Emission Standard of Environmental Noise for Boundary of Construction Site (GB 12523-2011)	Complied with. See Part IV.	Not applicable
	Dust and noise at sensitive receptors	Ambient Air Quality Standard (GB 3095-1996) Environmental Quality of Noise Standard (GB3096-2008)	Complied with. See Part IV.	Not applicable
	Surface water quality	Surface Water Ambient Quality Standard (GB3838—2002)	Complied with. See Part IV.	Not applicable
Operation	Odor	Classification of Temporary Odor Intensity	Not yet due	Not applicable
	Noise at landfill and WTPs	Emission Standard for Industrial Enterprises Noise at Boundary (GB 12348-2008)	Not yet due	Not applicable
	Wastewater discharge from WWTP	Discharge Standard for Municipal Wastewater (CJ3082-1999)	Not yet due	Not applicable
	Surface water quality	Surface Water Ambient Quality Standard (GB3838—2002)	Not yet due	Not applicable
	Drinking Water	National Drinking Water Quality Standard (GB 5749-2006)	Not yet due	Not applicable
	Built habitats (embankments, shelterbelts and wetlands)	Survival rate of planted vegetation >75% Comparison against baseline fauna species present (IEE)	Not yet due	Not applicable

Requirements in the EMP dated June 2016	Compliance status	CAP required ?
<b>F. Environmental Safeguards Reporting Requirements<sup>4</sup></b>		
22. Environmental safeguards reporting. Environmental monitoring and inspection activities and findings shall be documented for purposes of reporting, recording, verifying, referring on and evaluating the environmental performance of the Project. The documentation shall also be used as basis in correcting and enhancing further environmental mitigation and monitoring. Annual Environmental monitoring reports (EMRs) will be reviewed and cleared by ADB and disclosed on the ADB website. Environment safeguards reporting requirements are defined below.	Being complied with. For the subcomponents under NBF, please see the environmental due diligence report for the three NBF sub-components which was prepared and submitted to ADB at end Dec 2019, including the following: <b>1.3 Huangshui River Channel Ledu Rural Area Segment; 1.4 Ping'an District</b>	Not applicable

<sup>4</sup> Some EMRs were delayed due to various reasons, such as project implementation schedule lagged behind, late engagement of local EMS and loan implementation consultant, etc.

Requirements in the EMP dated June 2016	Compliance status	CAP required ?
<p>a. <b>Monthly internal progress reports by the Contractors</b> during construction, submitted to the IAs. These monthly reports will include; (i) physical construction progress; (ii) mitigation measures implemented; (iii) grievances received, resolved, closed and/or directed to other mechanisms; (iv) emergencies responded to; (v) internal monitoring conducted by CSCs, and (vi) corrective actions taken.</p> <p>b. <b>Quarterly progress reports by IAs.</b> The quarterly reports by the IAs to the PMO will include a separate section on EMP implementation progress and performance.</p> <p>c. <b>Semi-annual environmental impact monitoring reports by Haidong EMS</b> to report on the results of external environmental monitoring as specified in the EMP. The reports will include the analysis results and assessment of compliance/non-compliance with PRC and international standards.</p> <p>d. <b>Annual environment monitoring reports (EMRs) by the PMO</b> to be submitted to the EA and ADB to comply with environmental agreement in the loan and PRC Law on EIA. The annual EMRs will not only report on the progress and results of environmental monitoring and compliance of EMP implementation but will also briefly: (i) assess the effectiveness of instituted measures; (ii) point out violation/s, if any; (iii) assess/recommend corrective actions; and (iv) cite any coordination made for corrective actions and, if applicable, certifications for having instituted them effectively. It shall also feature possible innovative mitigation measures applied by the Contractor, Operator or affected residents themselves, and other lessons learned in EMP implementation. These will be useful in adjusting the EMP to adapt to real ground situations. Proposed adjustments/enhancement of the EMP must have prior ADB approval.</p> <p>e. <b>Environmental acceptance reporting.</b> Following the PRC Regulation on</p>	<p><b>Huangshui River Riverside Greenbelt; and 2.1 Ping'an District Mountain Edge Green Belt.</b></p> <p><b>Please also see the environmental due diligence on two new subcomponents (including comprehensive flood control and ecology improvement on the north bank of Huangshui River, and Yangjia water treatment plant (WTP) and water transmission and distribution network) were submitted to ADB in Nov 2021. In addition, environmental due diligence on the existing subcomponent HD-IF-W4: Huangshi River Ledu Rural Segment (upstream) was submitted to ADB in Dec 2020. Environmental due diligence on the Sanhe WTP site relocation was submitted to ADB in Dec 2021.</b></p>	

Requirements in the EMP dated June 2016	Compliance status	CAP required ?
<p>Project Completion Environmental Audit (MEP, 2001), within three months after the completion of all project components<sup>5</sup>, an environmental acceptance report for each shall be prepared by a licensed environmental monitoring institute. The report will be reviewed and approved by the Haidong City EPB and reported to ADB (Table A1.6). The environmental acceptance reports of the component completions will indicate the timing, extent, effectiveness of completed mitigation and of maintenance, and the needs for additional mitigation measures and monitoring during operations.</p>		

---

<sup>5</sup> Except Ping'an riverside greenbelt and mountain edge shelterbelt, which is Category C under MEP 2015 guidelines for project classification.

Table A1.6: Reporting Plan

Reports	From	To	Frequency	Compliance status	CAP required?
<b>Pre-construction Phase</b>					
Project Readiness	LIEC, PMO	ADB	1st EMR	Complied with.	Not applicable
<b>Construction Phase</b>					
Construction Implementation	Contractor, CSC	IAs	Monthly	Complied with.	Not applicable
Project progress reports	IAs	PMO	Quarterly	Complied with.	Not applicable
Environmental monitoring progress	EMS	EPB, PMO, IAs	Semi-annual	Complied with.	Not applicable
Environment progress and monitoring reports (EMR)	PMO	ADB	Annual	Complied with.	Not applicable
Environmental acceptance	Licensed acceptance institute	EPB	Once; within 3 months of completion of physical works	Complied with.	Not applicable
<b>Operational Phase</b>					
Environmental monitoring progress (until PCR is issued)	EMS	EPB, PMO, IAs	Semi-annually	Not yet due	Not applicable
Environment progress and monitoring reports (EMR)	PMO	ADB	Annually	Not yet due	Not applicable
EMP implementation completion	PMO, LIEC	ADB	At PCR stage	Not yet due	Not applicable
ADB = Asian Development Bank; EPB = Environment Protection Bureau; EMS = Environmental Monitoring Station; LIEC = Loan Implementation Environment consultant; PMO = Project Management Office					

Requirements in the EMP dated June 2016	Compliance status	CAP required ?
<b>G. Training</b>		
<p>23. The capacity of the PMO and IAs and their Environment and Social Specialists to implement this EMP will be strengthened through training. Initially the training will be in formal workshops, then will continue with on the job training by the LIEC and other specialists hired under the consulting services. The formal training will cover EMP implementation, supervision, and reporting, and the Grievance Redress Mechanism (Table A1.7). Training will be facilitated by the LIEC with the support of other experts under the loan implementation consultant services.</p>	<p><b>Complied with.</b>  <b>See Section 2.1.</b></p>	<p><b>Not applicable</b></p>
<p>24. Consultant services packages under the Capacity Building component of the project will provide the specialist input to the training. Training costs listed here represent that part of the CS packages that are directly applied to achieving full implementation of the EMP provisions. Attendees from the IAs will be staff from their environmental units and supervising engineers. Training of WTP and landfill operation and maintenance unit supervisors in environmental safeguards, and occupational safety will be undertaken by contracted specialists.</p>	<p><b>Complied with.</b>  <b>See Section 2.1.</b></p>	<p><b>Not applicable</b></p>

Table A1.7: Training Program

Training	Attendees	Contents	Times	Total Days	No. trainees	Compliance status	CAP required?
EMP implementation Part of CS1 Package	PMO, IAs, contractors	EMP roles and responsibilities, monitoring, supervision, reporting procedures, review of experience (after 12 months)	Once prior to, and once after, the first year of project implementation	4	16	Complied with.  See Section 2.1.	Not applicable
Grievance Redress Mechanism Part of CS1 Package	PMO, IAs, contractors	Roles and responsibilities, Procedures	Once prior to, and once after, the first year of project implementation	2	16	Complied with.  See Section 2.1.	Not applicable
Environmental protection and monitoring Part of CS1 Package	PMO, IAs, EPB	Pollution control on construction sites (air, noise, waste water, solid waste)	Once (during project implementation)	2	20	Complied with.  See Section 2.1.	Not applicable
WTP operation safeguards Part of CS1 Package	WTP O&M supervisors	Operation of treatment processes, environmental safeguards and safety (disinfection operation)	Once (before plant commissioning)	2	10	Not yet due	To be followed up in future EMRs
Landfill operation safeguards Part of CS5 Package	Landfill O&M supervisors	Daily operation of site, environmental safeguards and security. Operation of leachate treatment plant. Use of pesticides.	Once (before commissioning)	2	10	Not yet due. The civil works contract (HD-RUI-W4) was completed in 2020. And the implementation of landfill O&M equipment contract (HD-SW-G1) was generally completed in June	To be followed up in future EMRs

						2021. The IA informed that the facilities were entering commissioning during this reporting period. And the training on daily operation of leachate treatment plant, environmental safeguards and security will be undertaken in the <b>second</b> half of 2022, during landfill commissioning.	
Training in wetland and forest management	Staff of O & M agency for wetland.	Training in management of wetland ecological processes and habitat protection.	Prior to Project implementation	2	5	<b>Not yet due</b>	<b>To be followed up in future EMRs</b>
Part of CS6	Staff of O & M agency for wetland.	Training in management of insects and diseases within the context of the creation and maintenance of valuable wetland ecosystems. Safe pesticide use as part of integrated pest management.	Prior to Project implementation	2	5	<b>Not yet due</b>	<b>To be followed up in future EMRs</b>
	Staff of O & M agency for shelterbelt and landscaping.	Training in forest management including fertilizing and insect and pest control. Safe pesticide use as part of integrated pest management.	Prior to Project implementation	2	5	<b>Not yet due</b>	<b>To be followed up in future EMRs</b>

Requirements in the EMP dated June 2016	Compliance status	CAP required?
H. Grievance Redress Mechanism, Consultation		
<p>25. A Grievance Redress Mechanism (GRM) has been established as part of the project EMP to receive and manage any public environmental and/or social issues which may arise due to the Project. The PMO will ensure that potentially affected communities are informed about the GRM at an early stage of the project. During the project preparation phase, the IAs, PMO and Haidong City EPB personnel received training on the GRM from the PPTA team.</p>	<p><b>Complied with.</b> <b>See Part V.</b></p>	<p><b>Not applicable</b></p>
<p>26. The PMO is the lead agency responsible for overall management, implementation, and reporting of the GRM. The PMO-ES coordinates the GRM and: (i) instructs the IAs and contractors on their responsibilities in the GRM; (ii) establishes a simple registry system, to document and track grievances received (including forms to record complaints and how they have been resolved); and (iii) reports on progress of the GRM in the annual environmental monitoring and progress reports (EMR) to ADB.</p>	<p><b>Complied with.</b> <b>See Part V.</b></p>	<p><b>Not applicable</b></p>
<p>27. Each IA will assign a member of staff, who is responsible for implementation of the GRM and other relevant aspects of the EMP. This will be the IA-ES. Tasks include keeping a record of complaints. At least two months before construction commences, these contacts will be publicized at each construction site and forwarded to local village committees to ensure that entry points to the GRM are well known.</p>	<p><b>Complied with.</b> <b>See Part V.</b></p>	<p><b>Not applicable</b></p>
<p>28. GRM readiness procedures prior to start of construction. To be successful and reduce the likelihood of public concerns, the following measures will be implemented before any construction:</p> <p>1) On-site procedures: (i) all contractors and CSC staff will be briefed by the PMO-ES and IA-ES on the GRM. Contractors and workers will be instructed to be courteous to local residents and, in the event they are approached by the general public with an issue, to immediately halt their work and report the issue to the foreman; (ii) at least one sign will be erected at each construction site providing the public with updated project information (the purpose of the project activity, the duration of disturbance, the responsible entities on-site), the GRM process, and contact names and details for the GRM entry points.</p>	<p><b>Complied with.</b> <b>See Part V.</b></p>	<p><b>Not applicable</b></p>

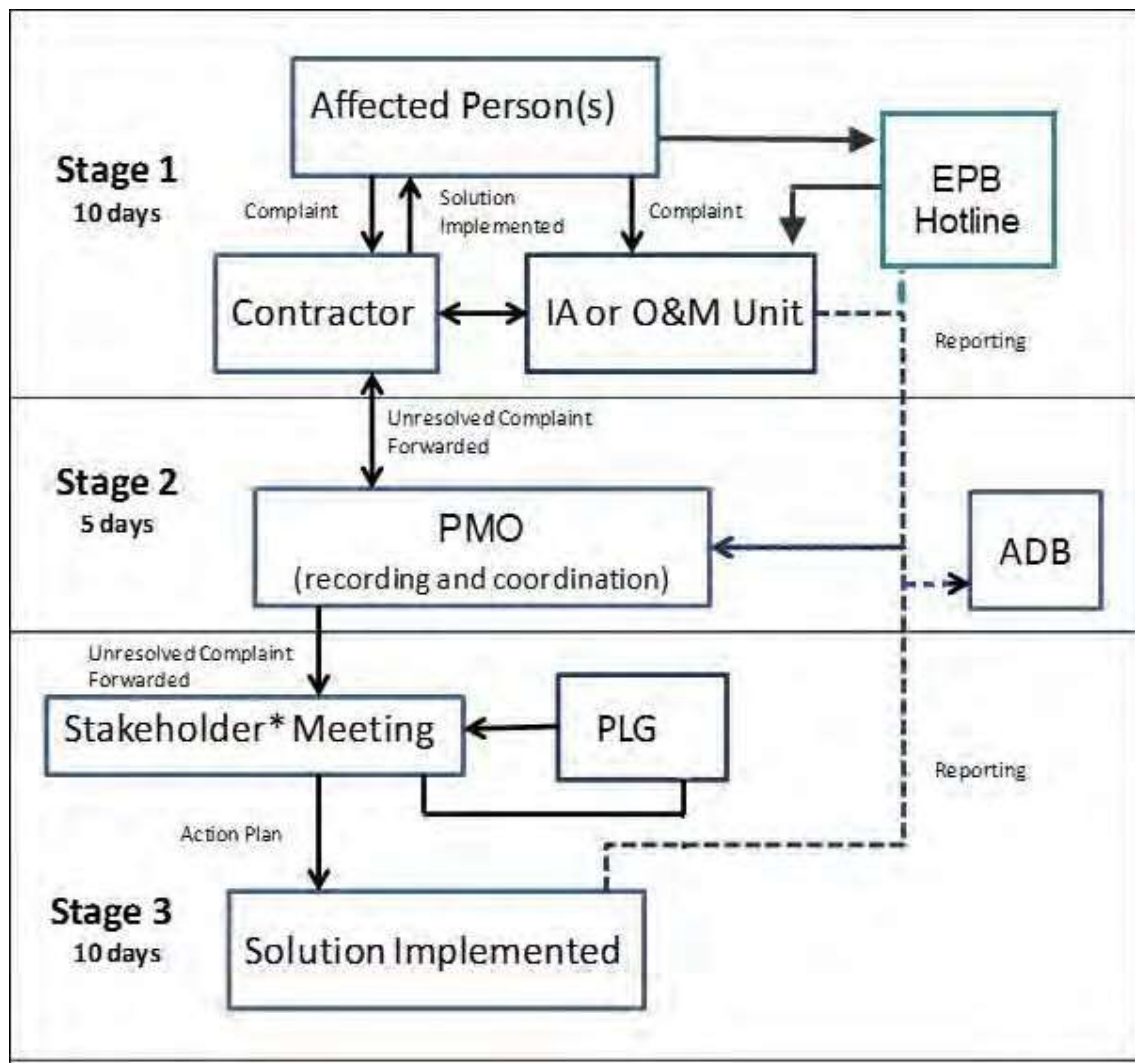


Requirements in the EMP dated June 2016	Compliance status	CAP required?
<p>2) Non-project agencies: Prior to project construction, the PMO-ES will notify all relevant agencies about the project and GRM, so that if these agencies receive complaints, they know to contact the PMO-ES and follow up as necessary. This will include, but not be limited to, the Haidong EPB, and local police.</p>		
<p>29. The procedure and timeframe for the GRM is shown in Figure A1.1 and is as follows.</p> <p><b>Stage 1 (maximum 10 working days):</b> Affected persons can submit a written or oral complaint to the contractor, CSC or IA. Complaints received by any other institutions will be referred back to the IA for action. The IA will notify the PMO-ES of the complaint within two days. The PMO-ES will enter the complaint in the Complaints Register.</p> <p>The contractor, in consultation with the IA, attempts to resolve the issue directly with the affected person. Within five working days of receiving the complaint, the agency will provide clear advice to the affected person on the proposed corrective action and by when it will be taken. The corrective action will be implemented not later than 10 working days from receipt of the complaint. The PMO-ES will enter the resolution in the Complaints Register.</p> <p>If quick corrective action is not possible, or the IA is unsure how to proceed, or the complainant is not satisfied by the initial corrective action, then the complaint will be referred to the PMO-ES for Stage 2.</p> <p><b>Stage 2 (maximum 5 working days):</b> For complaints not resolved in Stage 1, Stage 2 is initiated. The PMO-ES, contractor, CSC and IA will meet with the affected person and together discuss the issue and identify possible solutions. At the meeting, a possible solution will be agreed upon. The contractor or IA, as appropriate, will implement the agreed solution and report the outcome to the PMO-ES.</p> <p><b>Stage 3 (maximum 10 working days):</b> If Stage 2 is unsuccessful (i.e. no solution can be identified or the affected person is not satisfied with the proposed solution) the PMO-ES will convene a multi-stakeholder meeting and involve the Project Leading Group to ensure that any needed inputs from other project agencies are coordinated. The workshop will identify a solution acceptable to all. The agreed solution will be implemented and a report on the outcome provided to the PMO and ADB.</p> <p>The above steps relate to the construction phase where most complaints will be directed in the first instance to the contractor, CSC or IA. During initial operations, complaints will be received by the operations and maintenance (O&amp;M) units of the facilities.</p> <p>PMO will inform ADB of all complaints and actions under the GRM and include all relevant documents in its progress reports to ADB.</p>	<p><b>Complied with.</b></p> <p><b>See Part V.</b></p>	<p><b>Not applicable</b></p>
<p>30. Any costs incurred to receive and document grievances will be paid by the PMO. The grievance procedures will remain</p>	<p><b>Complied with.</b></p>	<p><b>Not</b></p>

Requirements in the EMP dated June 2016	Compliance status	CAP required?
valid throughout the duration of project construction and the first two years of project operation.	See Part V.	applicable
31. The tracking and documenting of grievance resolutions by the PMO will include the following elements: (i) tracking forms and procedures for gathering information from project personnel and complainant(s); (ii) regular updating of the GRM database by the PMO-ES; (iii) processes for informing stakeholders about the status of a case; and (iv) a simple but effective filing system, so that data can be retrieved for reporting purposes, including reports to ADB.	Complied with. See Part V.	Not applicable
32. If the above steps are unsuccessful, people 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 (in this case, the ADB East Asia Department). Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism. <sup>6</sup>	Complied with. See Part V.	Not applicable
33. Consultation. Meaningful consultation to safeguard the environment and local residents will continue throughout construction and operation phases. The PMO and the IAs will be responsible for organizing the public consultations, with the support of the loan implementation environmental consultant (LIEC). Civil works contractors will be required to frequently communicate and consult with the communities in the project area of influence, especially those near the project areas. Consultation will focus on public complaints about public nuisances from construction and operation activities, such as water quality, noise, asphalt fume nuisance, dust, odor, traffic disturbance.	Complied with. See Part V.	Not applicable

<sup>6</sup> See: [www.adb.org/accountability-mechanism](http://www.adb.org/accountability-mechanism)

Figure A1.1: The Project Grievance Redress Mechanism



\* Stakeholders involved will depend upon the nature of the complaint and will include as a minimum the affected person(s), PMO, IA (for the district), Haidong City EPB. Other stakeholder agencies relevant to particular concerns can be called upon to contribute through the PLG.

Note: AP = affected person, EPB = environmental protection bureau, O&M = operation and maintenance, PMO = project management office; IA = Implementing Agency.

Table A1.8: Environment Consultation and Communication Plan

Organizer	Format	Frequency	Subject	Attendees	Compliance status	CAP required?
<b>Construction Phase</b>						
PMO, IAs, LIEC	Public consultation & site visits	Once each year during construction	Adjusting of mitigation measures, if necessary; construction impact; comments and suggestions	Residents in project areas	<b>Complied with.</b> <b>See Part V.</b>	<b>Not applicable</b>
PMO, LIEC	Expert workshop	As needed, based on public consultation	Comments and suggestions on mitigation measures, public opinion	Experts of various sectors, District EPBs, HEPB	<b>Complied with.</b> <b>See Part V.</b>	<b>Not applicable</b>
PMO, LIEC	Public opinion survey	Once at MTR stage	Public satisfaction with EMP implementation	Residents in project areas	<b>Complied with.</b> <b>See Part V.</b>	<b>Not applicable</b>
<b>Operation Phase (until PCR)</b>						
PMO, IAs, LIEC	Public consultation and site visits	Once in the first year	Effectiveness of mitigation measures, impacts of operation, comments and suggestions	Residents in project areas	<b>Not yet due</b>	<b>Not applicable</b>
LIEC, PMO	Public satisfaction survey	Once at PCR stage	Public satisfaction with EMP implementation. Comments and suggestions	Residents in project areas	<b>Not yet due</b>	<b>Not applicable</b>

Requirements in the EMP dated June 2016					Compliance status	CAP required ?
<b>I. Cost Estimates</b>						
34. This section provides an estimate of the cost of implementing the EMP. The cost comprises three categories: mitigation measures (Table A1.2); environmental monitoring (Table A1.4); and, training (Table A1.6). Refer to Tables A1.2, A1.4 and A1.6 for more details of each item. Costs are presented for the construction and operational phases of the project over five years. The costs do not include: (i) detailed design revisions and adjustments; (ii) facility operating costs (which include environmental safeguards);					<b>Complied with.</b> <b>See Part III.</b>	<b>Not applicable</b>

Requirements in the EMP dated June 2016	Compliance status	CAP required ?
and (iii) the salaries of PMO environment staff. Costs for the mitigation measures are based on estimates in the domestic EIA and the experience of the PPTA team and PMO in other projects. Costs for the monitoring and training are estimates based on the experience of the PPTA team in similar projects and discussed with the PMO.		
35. The total estimated cost of implementing the EMP is CNY 2.566 million over five years (Table A1.8). It is anticipated that about CNY 1.275 million (50%) will be paid through the construction contractors, CNY1.13 million (44%) paid through the IAs (mainly for external monitoring) and CNY 161,000 (6%) by the PMO. Total costs are small given the large scale of the project and when spread over five years.	Complied with.  About CNY 4.2 million incurred so far.	To be followed up in future EMRs

**Table A1.8. Estimated<sup>7</sup> cost (CNY) of implementing the EMP over Five Years.** See Tables A1.2, A1.4 and A1.7 for details of activities.

Item	Total cost 5 years	PMO	IAs Ping'an	IAs Ledu	Contractors Ping'an	Contractors Ledu
<b>MITIGATION (EMP Table A1.2)</b>						
<b>PRE-CONSTRUCTION</b>						
1.1 Water Safety Plan	60,000		60,000			
1.1 Tendering Agency	20,000	20,000				
1.3 GRM	20,000	20,000				
<b>CONSTRUCTION</b>						
2.1 Domestic wastewater	80,000				60,000	20,000
2.1 Construction wastewater	320,000				200,000	120,000
2.1 Handling materials	210,000				140,000	70,000
2.2 Dust management	300,000				200,000	100,000
2.2 Vehicle emissions	25,000				15,000	10,000
2.3 Noise and vibration	120,000				90,000	30,000
2.4 Domestic waste	50,000				30,000	20,000

<sup>7</sup> The current EMP remains so far and is subject to update once the proposal on scope change is formally submitted and accepted by ADB.

2.8 Site hygiene	20,000				10,000	10,000
2.8 Community safety	30,000				20,000	10,000
2.8 Site safety	20,000				10,000	10,000
<b>Sub-total</b>	<b>1,275,000</b>	<b>40,000</b>	<b>60,000</b>	<b>0</b>	<b>775,000</b>	<b>400,000</b>
<b>MONITORING (EMP Table A1.4)</b>						
<b>PRE-CONSTRUCTION</b>						
Soil testing Yizhou wetland	50,000		50,000			
Groundwater testing at landfill	60,000			60,000		
<b>CONSTRUCTION</b>						
<b>Internal monitoring</b>						
Dust and noise	50,000				30,000	20,000
Water quality	50,000				30,000	20,000
<b>External monitoring</b>						
Dust and noise	360,000		260,000	100,000		
Water quality	180,000		90,000	90,000		
<b>OPERATION</b>						
<b>External monitoring</b>						
Noise, dust and odor (landfill)	120,000			120,000		
Groundwater (landfill)	60,000			60,000		
Water quality (reservoirs)	60,000		60,000			
Drinking water quality (WTPs)	180,000		180,000			
<b>Sub-total</b>	<b>1,170,000</b>	<b>0</b>	<b>640,000</b>	<b>430,000</b>	<b>60,000</b>	<b>40,000</b>
<b>TRAINING (EMP Table A1.7)</b>						
EMP implementation	40,000	40,000				
GRM	20,000	20,000				
Environmental monitoring	24,000	24,000				
WTP-safeguards	12,000	12,000				
Landfill - safeguards	12,000	12,000				
Wetland and forests env. management	18,000	18,000				
<b>Sub-total</b>	<b>121,000</b>	<b>121,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>GRAND TOTAL CNY</b>	<b>2,566,000</b>	<b>161,000</b>	<b>700,000</b>	<b>430,000</b>	<b>835,000</b>	<b>440,000</b>
<b>Total USD (USD1=CNY6.1)</b>	<b>420,656</b>	<b>26,393</b>	<b>114,754</b>	<b>70,492</b>	<b>136,885</b>	<b>72,131</b>
<b>Proportion of total (%)</b>	<b>100%</b>	<b>6.3</b>	<b>27.3</b>	<b>16.8</b>	<b>32.5</b>	<b>17.1</b>

GRM = Grievance Redress Mechanism; WTP = wastewater treatment plant.

Requirements in the EMP dated June 2016	Compliance status	CAP required?
ANNEX A. DRAFT TERMS OF REFERENCE FOR <u>PMO</u> ENVIRONMENT SPECIALIST (PMO-ES)		
<p><b>I. BACKGROUND</b></p> <p>Development projects which are assisted by the Asian Development Bank (ADB) routinely require the establishment of a Project Management Office (PMO). The PMO is responsible for project implementation. Compliance with the Loan and Project Agreements includes implementation of an Environment Management Plan (EMP), which is prepared as part of the project environment impact assessment. The EMP is the critical guiding document to manage, monitor, and report upon potential project environmental impacts. Implementation of the EMP is a full-time task. For this reason, the PMO assigns a full-time officer for this role. These terms of reference describe the requirements for this officer.</p> <p><b>II. SCOPE AND DURATION OF WORK</b></p> <p>The officer will work on behalf of the PMO to implement the project EMP. The officer will report directly to the PMO. The position is for the entire project duration (five years).</p> <p><b>III. QUALIFICATIONS</b></p> <p>The officer will have: (i) an undergraduate degree or higher in environmental management or related field; (ii) at least five years of experience in environmental management, monitoring, and/or impact assessment; (iii) ability to communicate and work effectively with local communities, contractors, and government agencies; (iv) ability to analyze data and prepare technical reports; and (v) ideally, proficiency in spoken and written English.</p> <p><b>IV. DETAILED TASKS</b></p>	<p>Complied with.</p> <p>See Section 2.1.</p>	<p>Not applicable</p>

Requirements in the EMP dated June 2016	Compliance status	CAP required?
<p>The PMO Environment Specialist will have a detailed understanding of the project EMP and supporting documents, including the domestic environmental reports, the project IEE, and project environmental assurances. The officer will have the following tasks.</p> <ul style="list-style-type: none"> <li>(i) Assess whether the EMP requires updating due to any changes in project design which may have occurred after the EMP was prepared.</li> <li>(ii) Distribute the Chinese language version of the EMP to all relevant agencies, including the implementing agencies, provincial and municipal agencies for environment protection. This should occur at least three months before construction begins.</li> <li>(iii) Conduct meetings with agencies as necessary to ensure they understand their specific responsibilities described in the EMP.</li> <li>(iv) Ensure that relevant mitigation, monitoring and reporting measures in the EMP are included in the bidding documents, contracts and relevant construction plans.</li> <li>(v) Confirm that the Implementing Agencies (IAs) responsible for the internal environment monitoring described in the EMP understand their tasks and will implement the monitoring in a timely fashion.</li> <li>(vi) At least two months before construction begins, establish and implement the project Grievance Redress Mechanism (GRM) described in the EMP. This will include: (a) prepare a simple table and budget identifying the type, number and cost of materials needed to inform local communities about the GRM and starting dates and scope of construction; (b) design, prepare and distribute these materials, and plan and conduct the community meetings; (c) prepare a form to record any public complaints; (d) prepare a summary table to record all complaints, including dates, issues, and how they were resolved; and (e) ensure that all relevant agencies, including contractors, understand their role in the GRM.</li> <li>(vii) Prior to construction, ensure that IAs and their contractors have informed their personnel, including all construction workers, of the EMP requirements. This will include all mitigation measures relating to impacts to air, water, noise, soil, sensitive sites, ecological values, cultural values, worker and community health and safety, respectful behavior when communicating with local communities, and responding to and reporting any complaints.</li> <li>(viii) During project construction, make regular site visits with LIEC to assess progress, meet with contractors and/or local communities, and assess compliance with the EMP.</li> <li>(ix) Ensure that all relevant agencies submit required progress reports and information, including environmental monitoring and reports of any issues or grievances.</li> <li>(x) Compile, review, and store environmental progress reports from the IAs, records of any grievances, and any other relevant issues. Maintain digital copies of all information. When necessary, enter data into summary tables in digital format (e.g. to transfer records of grievances from hard copy forms). Ensure that all information is stored in the PMO filing system, backed up, and can be easily retrieved.</li> </ul>		



Requirements in the EMP dated June 2016	Compliance status	CAP required?
<p>(xi) Prepare annual environment progress reports for ADB.</p> <p>(xii) Work closely with the PMO, IAs, loan implementation consultants, and other agencies and personnel as necessary to conduct these tasks.</p> <p><b>V. REPORTING REQUIREMENTS</b></p> <p>Annual environment monitoring reports, using the template provided by ADB or a domestic format reviewed and approved by ADB.</p> <p><b>VI. LOGISTICAL SUPPORT PROVIDED BY PMO TO THE ENVIRONMENT OFFICER</b></p> <p>(i) Provision of hard and soft copies of the project EMP, domestic and project environmental reports, feasibility study reports, loan and project agreements, maps, and other supporting materials as necessary to ensure the officer can implement the tasks.</p> <p>(ii) Vehicle transport, office materials, and other logistical support as necessary for the officer to visit the project construction sites and local communities, arrange and conduct meetings, and prepare and distribute consultation materials.</p> <p>(iii) Overall coordination, including review of the draft annual monitoring reports and final responsibility for submission of the monitoring reports to ADB.</p>		
<b>ANNEX B. DRAFT TERMS OF REFERENCE FOR LOAN IMPLEMENTATION ENVIRONMENTAL CONSULTANT</b>		
<p><b>BACKGROUND</b></p> <p>Implementation of the Qinghai Haidong Urban-Rural Eco Development Project will be overseen and coordinated by a Project Management Office (PMO). The PMO will be assisted by a Loan Implementation Consultant team. The Loan Implementation Environmental Consultants (LIEC) will be a part of this team and will assist the PMO with implementation of the project Environmental Management Plan (EMP).</p> <p><b>II. SCOPE AND DURATION OF WORK</b></p> <p>This position could be a firm or two individuals (one international, 4 person-months; one national, 14 person-months) engaged by the PMO. It is not part of the PMO in-house environmental specialist or the implementing agencies. The specialists will report directly to the PMO. The positions are for the entire project duration (5 years). The LIEC should be recruited as soon as possible after loan effectiveness,</p>	<p><b>Complied with.</b></p> <p><b>See Section 2.1.</b></p>	<p><b>Not applicable</b></p>

Requirements in the EMP dated June 2016	Compliance status	CAP required?
<p>as the first task is to confirm project environmental readiness (EMP Table A1.3).</p> <p><b>III. QUALIFICATIONS</b></p> <p>The specialists will have: (i) a Master's degree or higher in environmental management or related field; (ii) at least five years of experience in environmental management, monitoring, and/or impact assessment; (iii) familiarity with ADB project management requirements and national environmental management procedures; (iv) ability to communicate and work effectively with local communities, contractors, and government agencies; (v) ability to analyze data and prepare technical reports; and (vi) proficiency in spoken and written English.</p> <p><b>TASKS Before construction</b></p> <ul style="list-style-type: none"> <li>(i) Ensure project environmental readiness, including: (a) checklist in Table A1.3 of the EMP is achieved; (b) all contractor contracts include, and will comply with, the EMP; and (c) relevant sections of the EMP are incorporated in construction plans and contracts.</li> <li>(ii) Assist the PMO to implement the GRM, including: (a) establish and publicize the GRM; and (b) collate and evaluate grievances received.</li> <li>(iii) Develop procedures to: (a) monitor EMP implementation progress; (b) collate and evaluate data collected in the EMP environmental monitoring program; and (c) prepare and submit the annual environmental monitoring reports to ADB (to continue until Project Completion Report).</li> <li>(iv) Undertake training of project agencies as required by the EMP training plan.</li> <li>(v) Provide hands-on support and on-the-job training to the PMO, IAs and contractors on the specific requirements of the EMP as required.</li> </ul> <p><b>During project implementation</b></p> <ul style="list-style-type: none"> <li>(i) Undertake site visits to all IAs and project sites during subproject construction and operating phase.</li> <li>(ii) Assist in the ongoing public consultation process as described in the project IEE (EMP Table A1.8).</li> <li>(iii) Conduct EMP compliance assessments, identify any environment-related implementation issues, and propose necessary responses in corrective action plans.</li> <li>(iv) Assist in training of project agencies as required by the EMP training plan (EMP Table A1.7).</li> </ul> <p style="text-align: right;">Assist PMO to prepare annual environmental monitoring progress reports for submission to ADB.</p>		
<b>ANNEX C. DRAFT TERMS OF REFERENCE FOR IA ENVIRONMENT SPECIALISTS</b>		

Requirements in the EMP dated June 2016	Compliance status	CAP required?
<p><b>I. BACKGROUND</b></p> <p>Development projects which are assisted by the Asian Development Bank (ADB) require compliance with the Loan and Project Agreements. This includes implementation of an Environment Management Plan (EMP), which is prepared as part of the project environment impact assessment. The EMP is the critical guiding document to manage, monitor, and report upon potential project environmental impacts. Implementation of the EMP by each IA and their contractors requires the full time assignment of an Environmental Specialist within the construction management team of each IA. These terms of reference describe the requirements for this officer.</p> <p><b>II. SCOPE AND DURATION OF WORK</b></p> <p>The IA-ES will work with the PMO Environment Specialist, contractors and other relevant personal, to implement the EMP. The manager will report to IA construction manager. Duration will be for the project implementation period up to Project Completion Report stage.</p> <p><b>III. QUALIFICATIONS</b></p> <p>The IA-ES will have: (i) an undergraduate degree or higher in a relevant field; (ii) experience in environmental management, monitoring, and/or impact assessment; (iii) ability to communicate and work effectively with local communities, contractors, and government agencies; (iv) ability to analyze data and prepare technical reports; and (v) willingness and health to regularly visit the sub-project sites.</p> <p><b>IV. DETAILED TASKS</b></p> <p>Working closely with the PMO Environment Specialist, and contractors, the IA-ES will:</p> <ol style="list-style-type: none"> <li>1. Develop a high level of familiarity with the EMP;</li> <li>2. Assist the contractors to prepare Site Environmental Management Plans (SEMPs) for each major work location, which incorporates all relevant EMP provisions;</li> <li>3. Assist the PMO-ES in setting up and publicizing the GRM at the local level;</li> <li>4. Coordinate the receiver of complaints and corrective responses at the local level for the GRM;</li> <li>5. Undertake, coordinate and supervise internal monitoring as per EMP Table A1.7;</li> <li>6. Receive and evaluate monthly reports of work performance from contractors;</li> <li>7. Prepare environmental monitoring reports for quarterly submission to the PMO;</li> <li>8. Attend training as required.</li> </ol>	<p>Complied with.</p> <p>See Section 2.1.</p>	<p>Not applicable</p>

Requirements in the EMP dated June 2016	Compliance status	CAP required?
<p><b>V. REPORTING REQUIREMENTS</b></p> <p>Quarterly environmental reports to the PMO, using the template provided by ADB or a domestic format reviewed and approved by ADB.</p>		
<p><b>Attachment 2: Contract Clauses Related to the Environment Management Plan (EMP)</b></p>	<p><b>Complied with.</b></p> <p><b>See Section 3.1.</b></p>	<p><b>Not applicable</b></p>
<p>The following contract clauses for safeguarding the environment during construction will be incorporated into all the tender documents.</p> <p><b>General Environmental Clauses for all Bidding Documents and Contracts</b></p> <p><u>Site specific environmental management plan (SEMP):</u></p> <p>The contractor shall prepare a site-specific environmental management plan (SEMP) prior to the commencement of construction works, and shall submit the plan to the implementing agency (IA) and project management office (PMO) for review and approval. The plan shall include method statements on the implementation of pollution control and mitigation measures, adherence to energy and resource-efficient construction practices, as well as an emergency spill contingency plan for containing and cleaning up accidental chemical spills on construction sites. The SEMP shall be updated as needed as and when environmental issues not covered by the plan arise.</p> <p><u>Siting of construction facilities:</u></p> <p>Locations of asphalt mixing stations and concrete batching plants shall be at least 300 m downwind of the nearest air quality and noise protection target.</p> <p>Locations of borrow areas shall be at least 500 m from residential areas.</p> <p>Borrow areas and spoil disposal sites with long, steep slopes, susceptible to erosion shall be avoided and shall include small level cut-off drains to break up and redirect runoff.</p> <p>Access and haul roads shall be constructed at sufficient distances from residential areas, in particular, local schools, health clinics and</p>	<p><b>Complied with.</b></p>	<p><b>Not applicable</b></p>

Requirements in the EMP dated June 2016	Compliance status	CAP required?
<p>hospitals.</p> <p><u>Construction time:</u> There shall be no night time (between 22:00 and 06:00 hours) construction.</p> <p><u>Protection of air quality</u></p> <p>Provide dust masks to construction workers;</p> <p>Build access and hauling roads at sufficient distances from residential areas, particular, from local schools and hospitals.</p> <p>Assign haulage routes and schedules to avoid transport occurring in the central areas, traffic intensive areas or residential areas. For the areas with high-demand on environmental quality, transport should be arranged at night.</p> <p>Spray water regularly on unpaved haul roads and access roads (at least once a day) to suppress dust; and erect hoarding around dusty activities.</p> <p>Cover material stockpiles with dust shrouds or tarpaulin. For the earthwork management for backfill, measures will include surface press and periodical spraying and covering. The extra earth or dreg should be cleared from the project site in time to avoid long term stockpiling.</p> <p>Minimize the storage time of construction and demolition wastes on site by regularly removing them off site.</p> <p>Equip asphalt, hot mix and batching plants with fabric filters and/or wet scrubbers to reduce the level of dust emissions.</p> <p>Install wheel washing equipment or conduct wheel washing manually at each exit of the works area to prevent trucks from carrying muddy or dusty substance onto public roads.</p> <p>Keep construction vehicles and machinery in good working order, regularly service and turn off engines when not in use.</p> <p>Vehicles with an open load-carrying case, which transport potentially dust-producing materials, shall have proper fitting sides and tail boards. Dust-prone materials shall not be loaded to a level higher than the side and tail boards, and shall always be covered with a strong tarpaulin.</p> <p>In periods of high wind, dust-generating operations shall not be permitted within 200 m of residential areas. Special precautions need to be applied in the vicinity of sensitive receptors such as schools, kindergartens and hospitals.</p> <p>Unauthorized burning of construction and demolition waste material and refuse shall be subject to penalties for the Contractor, and withholding of payment.</p>		

Requirements in the EMP dated June 2016	Compliance status	CAP required?
<p><u>Protection of the acoustic environment</u></p> <p>Noise levels from equipment and machinery shall conform to the PRC standard for Noise Limits for Construction Sites (GB12523-2011) and the WBG EHS Standards, and properly maintain machinery to minimize noise.</p> <p>Equipment with high noise and high vibration shall not be used near village or township areas and only low noise machinery or the equipment with sound insulation is employed.</p> <p>Temporary noise barriers or hoardings shall be installed around the equipment to shield residences when there are residences within 20 m of the noise source.</p> <p>Regularly monitor noise levels at construction site boundaries. If noise standards are exceeded by more than 3 dB, equipment and construction conditions shall be checked, and mitigation measures shall be implemented to rectify the situation.</p> <p>Provide the construction workers with suitable hearing protection (ear muffs) according to the worker health protection law of the PRC.</p> <p>Control the speed of bulldozer, excavator, crusher and other transport vehicles travelling on site, adopt noise reduction measures on equipment, step up equipment repair and maintenance to keep them in good working condition.</p> <p>Limit the speed of vehicles travelling on site (less than 8 km/h), forbid the use of horns unless absolutely necessary, minimize the use of whistles.</p> <p>Maintain continual communication with the villages and communities near the construction sites, and avoid noisy construction activities during school examination periods.</p> <p><u>Protection of water quality</u></p> <p>Portable toilets and small package wastewater treatment plants shall be provided on construction sites for the workers and canteens; If there are nearby public sewers, interim storage tanks and pipelines will be installed to convey wastewater to those sewers.</p> <p>Sedimentation tanks shall be installed on construction sites to treat process water (e.g. concrete batching for bridge construction) and muddy runoff with high concentrations of suspended solids. If necessary, flocculants such as polyacrylamide (PAM) will be used to facilitate sedimentation.</p> <p>Construction machinery shall be repaired and washed at special repairing shops. No onsite machine repair and washing shall be allowed.</p> <p>Storage facilities for fuels, oil, and other hazardous materials will be within secured areas on impermeable surfaces, and provided with bunds and cleanup kits.</p> <p>The contractors' fuel suppliers must be properly licensed, follow proper protocol for transferring fuel, and must be in compliance with</p>		

Requirements in the EMP dated June 2016	Compliance status	CAP required?
<p>Transportation, Loading and Unloading of Dangerous or Harmful Goods (JT 3145-88).</p> <p>Material stockpiles will be protected against wind and runoff waters which might transport them to surface waters.</p> <p>Spills shall be cleaned up according to PRC norms and codes within 24 hours of the occurrence, with contaminated soils and water treated according to PRC norms and codes. Records must be handed over without delay to the PMO and Haidong EPB.</p> <p>All process wastewater and muddy runoff from construction sites and supernatant water from dredged sediment storage or disposal sites shall be treated to GB 8978-1996 Class I standard before discharging.</p> <p><u>Protection of biological resources and wildlife</u></p> <p>Preserve existing vegetation where no construction activity is planned.</p> <p>Protect existing trees and grassland during construction; where a tree has to be removed or an area of grassland disturbed, replant trees and re-vegetate the area after construction</p> <p>Remove trees or shrubs only as the last resort if they impinge directly on the permanent works or necessary temporary works</p> <p>Construction workers are prohibited from capturing any wildlife in the project areas.</p> <p><u>Solid waste management, earth works and soil erosion</u></p> <p>Establish enclosed waste collection points on site, with separation of domestic waste and construction &amp; demolition (C&amp;D) waste.</p> <p>Set up centralized domestic waste collection point and transport offsite for disposal regularly by sanitation department.</p> <p>Maximize the reuse of earth cut materials and C&amp;D waste for filling and foundations of other construction works specified by the municipal and planning departments, or transport in enclosed containers to designated C&amp;D landfill site.</p> <p>Confirm location of the borrow pit and temporary spoil storage and final disposal sites.</p> <p>Develop borrow pit and spoil disposal site management and restoration plan, to be approved by responsible authority; obtain permit for the clearance of excavated earthworks</p> <p>Construct intercepting ditches and drains to prevent runoff entering construction sites, and diverting runoff from sites to existing drainage.</p> <p>Construct hoardings and sedimentation ponds to contain soil loss and runoff from the construction sites. Limit construction and material handling during periods of rains and high winds</p>		

Requirements in the EMP dated June 2016	Compliance status	CAP required?
<p>Stabilize all cut slopes, embankments, and other erosion-prone working areas while works are going on.</p> <p>Stockpiles shall be short-termed, placed in sheltered and guarded areas near the actual construction sites, covered with clean tarpaulins, and sprayed with water during dry and windy weather conditions.</p> <p>All earthwork disturbance areas shall be stabilized with thatch cover within 30 days after earthworks have ceased at the sites.</p> <p>Immediately restore, level and plant landscape on temporary occupied land upon completion of construction works.</p> <p>Implement all soil erosion protection measures as defined in the soil and water conservation reports.</p> <p><u>Occupational safety</u></p> <p>A person responsible for environmental, health and safety during construction shall be appointed for the project.</p> <p>Personal protective equipment (safety hats and shoes and high visibility vests) shall be provided to all construction workers.</p> <p>Ear defenders for hearing protection shall be provided to workers operating and working near noisy power mechanical equipment.</p> <p>Safety goggles and respiratory masks shall be provided to workers doing asphalt road paving and tunnel blasting.</p> <p>Method statements shall be prepared and approvals obtained for hazardous activities such as blasting, tunnel works, excavation and working near water.</p> <p><u>Food safety</u></p> <p>Food hygiene in canteens on site shall be inspected and supervised regularly. Canteen workers must have valid health permits.</p> <p>If food poisoning is discovered, effective control measures shall be implemented immediately to prevent it from spreading.</p> <p><u>Disease prevention and health services</u></p> <p>All contracted labor shall undergo a medical examination which shall form the basis of an (obligatory) health/accident insurance and welfare provisions to be included in the work contracts. The contractors shall maintain records of health and welfare conditions for each person contractually engaged.</p> <p>A person responsible for health and epidemic prevention and education and training on food hygiene and disease prevention shall be specified (by the IA and contractors) to raise the awareness of workers.</p> <p>Induction and training by local health departments on prevention and management of communicable diseases shall be provided.</p> <p><u>Social conflict prevention</u></p> <p>The following shall be prioritized: (i) employ local people for works, (ii) ensure equal opportunities for women and men, (iii) pay equal wages for work of equal value, and to pay women's wages directly to them; and (iv) not employ child or forced labor.</p>		



Requirements in the EMP dated June 2016	Compliance status	CAP required?
<p><u>Community health and safety</u></p> <p>A traffic control and operation plan shall be prepared together with the local traffic police prior to any construction. The plan shall include provisions for 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, controls and planning in advance. Haulage routes and schedules shall be assigned to avoid transport occurring in the central areas, traffic intensive areas or residential areas.</p> <p>Residents and businesses shall be informed in advance of the road improvement activities, given the dates and duration of expected disruption, dusty and noisy activities, and access to the grievance redress mechanism. Local communities shall be alerted of the time and location of hazardous activities such as blasting. Construction billboards, which include construction contents, schedule, responsible person and complaint hotline number, will be erected at each construction site.</p> <p>Clear signs shall be placed at construction sites in view of the public, warning people of potential dangers such as moving vehicles, hazardous materials, excavations etc. and raising awareness on safety issues. Heavy machinery shall not be used at night, where possible, and all such equipment shall be returned to its overnight storage area/position before night. All sites shall be made secure, discouraging access by members of the public through appropriate fencing, signage and/or security personnel, as appropriate.</p> <p>Continual communication with the villages and communities along the road alignments shall be maintained and the grievance redress mechanism shall be accessible and effective.</p> <p><u>Utility interruption</u></p> <p>Contractors shall assess construction locations in advance and identify potential for disruption to services and risks before starting construction. Any damage or hindrance/disadvantage to local businesses caused by the premature removal or insufficient replacement of public utilities shall be subject to full compensation, at the full liability of the contractor who causes the problem.</p> <p>If temporary disruption is unavoidable the contractor shall, in collaboration with relevant local authorities such as power company, water supply company and communication company, develop a plan to minimize the disruption and communicate the dates and duration in advance to affected persons.</p>		



## APPENDIX 2: QUALIFICATION CERTIFICATE AND ABTRACTED TESTING RESULTS (SAMPLES) OF LOCAL EMS

副本



### 检测报告

报告编号: Z20306881

项目名称: 湟水河治理工程平安段环境监测  
(2022年3月份)

委托单位: 海东城市环境综合治理利用银行贷款项目  
建设管理办公室

检测类别: 地表水、环境空气、噪声

报告日期: 2022年4月2日

青海民生环保科技有限公司



### 检验检测机构 资质认定证书

证书编号: J182912050044

名称: 青海民生环保科技有限公司

地址: 青海省西宁市城东区经济开发区开元路5号

经审查, 该机构符合国家标准、行政法规规定的基  
本条件和能力, 准予认定。可以向社会出具具有证明作用的数据和结果。有效期: 三年。资质认定包括检验检测机构计量认证。

许可使用标志:  发证日期: 2018年12月12日  
有效期至: 2021年10月11日  
发证机关: 青海省质量技术监督局

本证书由国家市场监督管理总局印制, 在中华人民共和国境内有效。

湟水河治理工程平安段环境监测 (2022年3月份)

报告编号: Z20306881

检测结果

一、地表水检测数据:

检测点位	检测项目	检测频次	检测结果 (mg/L)							
			03-15	03-17	03-23	03-25	03-29	03-31		
上游 S1 102°40'51.3"E 36°30'31.7"N	总溶解	第一次	126	119	115	116	128	131		
		第二次	124	121	109	115	131	129		
		第三次	129	132	115	119	129	132		
		平均值	126	121	113	117	129	131		
		石油类	第一次	0.02	0.02	0.01	0.01	0.02	0.03	
			第二次	0.01	0.02	0.01	0.01	0.02	0.02	
	第三次		0.02	0.02	0.01	0.02	0.02	0.03		
	平均值		0.02	0.02	0.01	0.01	0.02	0.03		
	上游 S2 102°07'13.0"E 36°30'30.2"N		总溶解	第一次	133	130	123	124	141	140
				第二次	136	128	126	127	149	142
		第三次		135	133	126	129	143	139	
		平均值		135	130	124	127	141	140	
石油类		第一次		0.01	0.02	0.01	0.02	0.02	0.02	
		第二次		0.02	0.02	0.02	0.02	0.02	0.02	
		第三次	0.02	0.02	0.01	0.02	0.03	0.03		
		平均值	0.02	0.02	0.01	0.02	0.03	0.02		
		下游 S3 102°11'07.0"E 36°29'11.3"N	总溶解	第一次	131	126	117	118	131	126
				第二次	129	124	116	117	128	130
第三次				128	121	119	114	130	127	
平均值				129	123	117	116	130	128	
石油类	第一次			0.02	0.02	0.02	0.02	0.02	0.03	
	第二次			0.02	0.03	0.03	0.02	0.02	0.03	
	第三次		0.02	0.02	0.02	0.02	0.02	0.03		
	平均值		0.02	0.02	0.02	0.02	0.02	0.03		

第 4 页 共 5 页

青海晟昆环保科技有限公司

第 4 页 共 5 页      青海民生环保科技有限公司

湟水河治理工程平安段环境监测 (2022年3月份)      报告编号: Z20306881

**二、环境空气检测数据:**

检测点位	点位坐标	检测因子	检测结果 (mg/m <sup>3</sup> )
小峡峡 Q1	101°58.28022"E; 36°32.36617"N	总悬浮颗粒物	0.252
高寨峡 Q2	101°59.63199"E; 36°31.47115"N	总悬浮颗粒物	0.264
峡南村 Q3	102°02.26843"E; 36°30.56192"N	总悬浮颗粒物	0.292
马棚村 Q4	102°03.31329"E; 36°30.68478"N	总悬浮颗粒物	0.263
香营村 Q5	102°07.18735"E; 36°30.48816"N	总悬浮颗粒物	0.272
大峡村 Q6	102°08.39457"E; 36°29.31506"N	总悬浮颗粒物	0.288
香点村 Q7	102°09.63377"E; 36°29.33693"N	总悬浮颗粒物	0.290
香寨村 Q8	102°09.84930"E; 36°29.57816"N	总悬浮颗粒物	0.246
峡北村 Q9	102°08.29504"E; 36°29.58589"N	总悬浮颗粒物	0.231
马营村 Q10	102°07.42114"E; 36°30.53304"N	总悬浮颗粒物	0.217
上峡村 Q11	102°06.66492"E; 36°29.84568"N	总悬浮颗粒物	0.276
建设施工点 Q12	102°06.63097"E; 36°30.88830"N	总悬浮颗粒物	0.239

**三、建设施工噪声检测数据:**

检测点位编号	点位坐标	昼间 Leq[dBA]
小峡峡 Z1	101°58.28022"E; 36°32.36617"N	47.5
高寨峡 Z2	101°59.63199"E; 36°31.47115"N	47.1
峡南村 Z3	102°02.26843"E; 36°30.56192"N	58.1
马棚村 Z4	102°03.31329"E; 36°30.68478"N	47.3
香营村 Z5	102°07.18735"E; 36°30.48816"N	47.5
大峡村 Z6	102°08.39457"E; 36°29.31506"N	47.5
香点村 Z7	102°09.63377"E; 36°29.33693"N	58.2
香寨村 Z8	102°09.84930"E; 36°29.57816"N	49.6
峡北村 Z9	102°08.29504"E; 36°29.58589"N	58.0
马营村 Z10	102°07.42114"E; 36°30.53304"N	48.2
上峡村 Z11	102°06.66492"E; 36°30.84568"N	52.9
建设施工点 Z12	102°06.63097"E; 36°30.88830"N	54.9

报告编制: [Signature]      审核: [Signature]      签发: [Signature]

日期: 2022年4月2日      日期: 2022年4月2日      日期: 2022年4月2日

第 5 页 共 5 页      青海民生环保科技有限公司

检测点位置及编号	检测坐标	检测因子	检测结果 (mg/m <sup>3</sup> )
东角村 Q1	101°56'40.2"E ; 36°22'31.3"N	总悬浮颗粒物	0.274
东角村 Q3	101°56'43.1"E ; 36°24'17.4"N	总悬浮颗粒物	0.233
东角村 Q5	101°57'36.1"E ; 36°23'38.3"N	总悬浮颗粒物	0.343
东角村 Q4	101°56'48.2"E ; 36°23'22.1"N	总悬浮颗粒物	0.221
东角村 Q2	101°57'34.2"E ; 36°23'108.2"N	总悬浮颗粒物	0.218
龙塘村东角建设工地周边 Q6	101°59'33.8"E ; 36°23'03.3"N	总悬浮颗粒物	0.256
龙塘村东角建设工地周边 Q7	101°57'34.8"E ; 36°23'03.4"N	总悬浮颗粒物	0.218
龙塘村东角建设工地周边 Q8	101°57'34.8"E ; 36°23'03.3"N	总悬浮颗粒物	0.247
下沙角村 Q8	101°57'32.8"E ; 36°21'26.4"N	总悬浮颗粒物	0.221
沙角东岸建设工地周边 Q10	101°57'33.1"E ; 36°21'35.4"N	总悬浮颗粒物	0.223
沙角东岸建设工地周边 Q11	101°57'33.5"E ; 36°21'39.3"N	总悬浮颗粒物	0.229
沙角东岸建设工地周边 Q12	101°57'32.1"E ; 36°21'39.3"N	总悬浮颗粒物	0.238
东岸沙角 Q13	101°57'32.4"E ; 36°22'36.3"N	总悬浮颗粒物	0.244

检测点位置及编号	检测坐标	检测因子 Leq(dB(A))
东角村 Q1	101°56'40.2"E ; 36°22'31.3"N	68.8
东角村 Q3	101°56'43.1"E ; 36°24'17.4"N	67.1
东角村 Q5	101°57'36.1"E ; 36°23'38.3"N	67.2
东角村 Q4	101°56'48.2"E ; 36°23'22.1"N	66.8
东角村 Q2	101°57'34.2"E ; 36°23'108.2"N	66.5
龙塘村东角建设工地周边 Q6	101°59'33.8"E ; 36°23'03.3"N	69.2

广东工业大学      广东海洋大学环境检测中心

## 1. 社会管理

受海晏城乡环境综合治理项目农村贷款项目建设管理办公室委托,青海美尼特环保科技有限公司于2022年4月26日至4月29日对海晏城乡供水安全与保障工程项目区附近环境空气和噪声进行采样检测。基本情况如下表1-1:

表 1-1 基本情況

委托单位	海东城市环境综合治理局海东市政府 海东市建筑垃圾整治办公室	地址	海东市平安县
联系人及电话	吴工 18797329252	委托日期	2022-04-26-2022-04-29
检测项目	委托检测项	分析日期	2022-04-26-2022-05-01
采样地址	青海省海东市平安县		

### 2. 繪圖內容

表 2-1 检测内容一览表

检测类别	检测点位	检测项目	检测频次
环境空气	宁波台村 Q1、油库老库改建工地周边 Z2、Z3、Z4、Z5 高塔村 Q3、三角塔 Q6、李家村 Q7、新街村 Z8、香台村 Q9、三角塔 Q10、北郊村老库改建工地周边 Q11、Q12、Q13	总悬浮颗粒物	1 次/月，共 1 次
噪声	宁波台村 Z1、油库老库改建工地周边 Z2、Z3、Z4、Z5 高塔村 Z5、三角塔 Z6、李家村 Z7、新街村 Z8、香台村 Z9、三角塔 Z10、北郊村老库改建工地周边 Z11、Z12、Z13	环境噪声等效声压	每周 1 次，共 1 次

图 2-1 检测点位示意图



定祥撰錄定修原四方姓劉德資料

### APPENDIX 3: IMPLEMENTATION STATUS SUMMARY OF CRVA

Key concerns in the CRVA (June 2016)	Implementation status as of Jun 2022	Follow-ups action plans needed?
1. The CRVA reviewed the effects of climate change on provincial water resources using the water balance method (i.e. precipitation minus potential evaporation). It concluded that regional water resources in Qinghai Province will not change significantly in total volumes in 2030, but seasonal and annual variability will increase. Hydrological modeling results show that river flow volumes will decline slightly under the low climate change scenario but will increase under medium and high scenarios. The mixed change signals are interaction results between projected rising temperature and increased precipitation across regional Qinghai Province. However, there are will increased climate risks due to increased seasonal and annual variability in precipitation and hence river flow volumes. Shrinking glacier areas caused by rising temperature is also posing risks to the river headwaters.	Complied with. Discussed with the local DI and PMO.	No corrective action is applicable. To be closely monitored and reported in future EMRs by further discussions with local DI, IAs and PMO.
2. Predicted Changes in Temperature and Precipitation. Climate change scenarios have been constructed by the project CRVA from climate projections of AR5 global climate models. Because the timeframe of those plans are up to 2030 only, the climate change scenarios were finalized with GCM projections from 2020 to 2040. Hydrological models, including ArcSWAT and HEC-HMS, were used in simulating climate change impact on the river flow volumes and flood levels of the Huangshui River. Likely impact of climate change on regional water resources are also assessed based on the modeling outcomes for the Huangshui River in combination with spatial water balance analysis.	Complied with. Discussed with the local DI and PMO.	No corrective action is applicable. To be closely monitored and reported in future EMRs.
3. The annual mean temperature in the Huangshui River basin is projected to increase approximately 0.7°C, 0.9°C, and 1.8°C in 2030 under the low, medium, and high emission scenarios, respectively. The projected temperature increases for the Huangshui River basin is approximately the average increases of the whole province. The lower Huangshui valley is still one of the warmest areas in the province.	Complied with. Discussed with the local DI and PMO.	No corrective action is applicable. To be closely monitored and reported in future EMRs.
4. Annual mean precipitation is projected to increase approximately 2%, 3.5%, and 8.5% in 2030 under low, medium, and high climate change scenarios. Similar to temperature, the projected precipitation increases in the Huangshui basin is also close to the provincial average.	Complied with. Discussed with the local DI and PMO.	No corrective action is applicable. To be closely monitored and reported in future EMRs.
5. Climate risk, climate adaptation. Initial climate risk screening determined that the project was medium climate risk. A climate risk and vulnerability assessment (CRVA) was conducted at two levels: (i) at regional level to assess the vulnerability of the Integrated Water Management Plan for the Huangshui River Basin (IWMPHRB); and (ii) at Haidong city level to assess the vulnerability of the designs of proposed project components, and the water resource management elements of the Haidong City Master Plan (HCMP). The CRVA found that (i) total water resources in Qinghai Province will not change significantly in future, but seasonal and annual variability are likely to increase; (ii) climate risks along Huangshui River are likely to	Complied with. Discussed with the local DI and PMO.	No corrective action is applicable. To be closely monitored and reported in future EMRs.

Key concerns in the CRVA (June 2016)	Implementation status as of Jun 2022	Follow-ups action plans needed?
<p>increase due to increased seasonal and annual variability in precipitation and hence river flow volumes. Key recommendations of the CRVA were incorporated in the component design including (i) increased embankment heights to accommodate projected average increase in flood flows resulting from climate change (8%); (ii) provision of alternative water supply source for the Ping'an urban district to reduce increasing water security risk; and (iii) increased capacity of drainage and leachate collection system at landfill site. The project's contribution to climate adaptation was estimated to amount to 9.44 million USD.</p>		
<p>6. A capacity development sub-module for climate-resilient urban development planning and regional water resources management has been included to Component 4 of the project. The sub-module will be coordinated and provided by climate change and water resources management specialists. They will, amongst others, help the HMG to review and climate-proof the HCMP, and assess the feasibility to establish a provincial-level Huangshui River coordination body to address Huangshui water resources management issues at watershed level.</p>	<p>Complied with. Discussed with the local DI and PMO.</p>	<p>No corrective action is applicable. To be closely monitored and reported in future EMRs.</p>
<p>7. Greenhouse gas emissions. The project will generate greenhouse gas (GHG) emissions in a number of ways, including use of fossil fuels and electricity for machinery and vehicles, emissions from constructed wetlands and emissions from landfill decomposition. The project construction phase is unlikely to produce large GHG emissions because existing construction equipment will be used and diverted to the current project (and therefore unlikely to result in large new GHG emissions in the context of existing city developments). The main generation of GHGs from the project will be from the operation of the wetland and landfill components. The indirect generation of GHG from power consumption for operational machinery (mainly pumps) will be a minor contribution. By the fifth full year of operations wetland and landfill will generate 51,000 and 20,000 t/yr CO<sub>2</sub>e respectively, before emission savings measures are taken into consideration. At the same time, the large areas of greenbelt and shelterbelt plantations established by the project will significantly offset these emission levels through carbon sequestration. It is estimated that by year 10 after project commissioning cumulative carbon storage will be 35,000 t CO<sub>2</sub>e (increasing to 220,000 t CO<sub>2</sub>e at year 20) with a long term sequestration rate of 22,000 t/yr CO<sub>2</sub>e. Aggregated CO<sub>2</sub>e emissions are estimated at 16,000 t/yr CO<sub>2</sub>e during project operation.</p>	<p>Complied with. Discussed with the local DI and PMO.</p>	<p>No corrective action is applicable. To be closely monitored and reported in future EMRs.</p>

**Table: Adaptation Design Adjustments for Project Components**

Subcomponents with climate proofing	Total Costs of sub-components	Contribution to Climate Adaptation (%)	Climate Adaptation Costs (million USD)	Notes	Implementation status as of Jun 2022	Follow-up actions needed?
Flood protection works	67	0.5%	0.34	50% of embankments will be increased in height by average of 8-10 cm to accommodate projected increase in flood volumes (CRVA recommendation).	Discussed with the local DI and PMO. The recommended additional heights are covered by the safety margins at design.	No corrective action is applicable. To be closely monitored and reported in future EMRs by further discussions with local DI, IAs and PMO.
Water Reclamation	4.2	100.0%	4.20	Water reclamation was promoted by the project team at project concept stage as important measure to increase climate resilience of irrigation systems.	Discussed with the local DI and PMO.	No corrective action is applicable. To be closely monitored and reported in future EMRs.
Mountain Forest	19.5	10.0%	1.95	Mountain forest will limit urban sprawl on fragile hills and reduce soil erosion from wind and water, which is likely to increase as a result of projected increased intensity of storms.	Discussed with the local DI and PMO.	No corrective action is applicable. To be closely monitored and reported in future EMRs.
Water Supply	12.9	20.0%	2.58	Sanhe WTP will be used as secondary source and back-up water supply for Ping'an urban district, increasing resilience to water shortages that are projected to increase in future.	Discussed with the local DI and PMO. As planned, Sanhe WTP will be used as secondary source and back-up water supply for Ping'an urban district.	No corrective action is applicable. To be closely monitored and reported in future EMRs.
Landfill	7.6	2.0%	0.15	Stormwater interception drainage and leachate holding tank capacities increased by 10% and 20%, respectively (CRVA recommendation).	Discussed with the local DI and PMO.	No corrective action is applicable. To be closely monitored and reported in future EMRs.
Capacity Development	2.2	10.0%	0.22	Capacity building component includes sub-module on climate adaptation (CRVA recommendation).	Discussed with the local DI and PMO.	No corrective action is applicable. To be closely monitored and reported in future EMRs.

Subcomponent s with climate proofing	Total Costs of sub- component s	Contributio n to Climate Adaptation (%)	Climate Adaptatio n Costs (million USD)	Notes	Implementation status as of Jun 2022	Follow-up actions needed?
<i>Total</i>			<b>9.44</b>			



## Appendix 4: Public Consultation Records

Note: The following questionnaire survey was remotely undertaken via Wechat based Questionnaire Star mobile phone App through June 2022. The response please see below.

第 1 题 您的姓名 Your name: [填空题]  
(confidential)

第 2 题 您的性别 Your gender: [单选题]

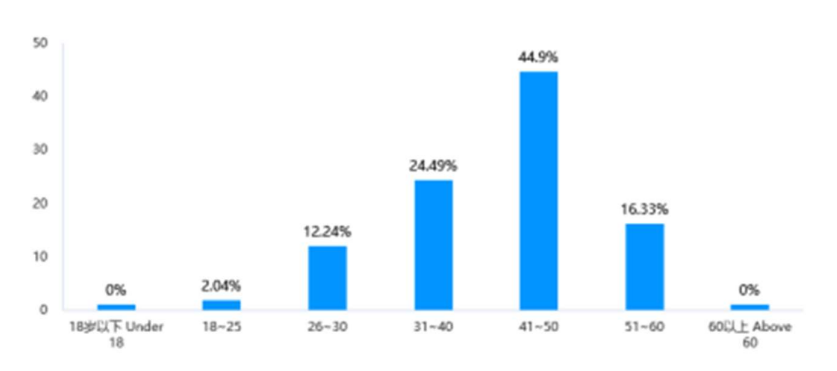
选项	小计	比例
男 Male	34	<div><div></div></div> 69.39%
女 Female	15	<div><div></div></div> 30.61%
本题有效填写人次	49	



第 3 题 您的年龄段 Your age group: [单选题]

选项	小计	比例
18 岁以下 Under 18	0	<div><div></div></div> 0%
18~25	1	<div><div></div></div> 2.04%
26~30	6	<div><div></div></div> 12.24%
31~40	12	<div><div></div></div> 24.49%
41~50	22	<div><div></div></div> 44.9%
51~60	8	<div><div></div></div> 16.33%
60 以上 Above 60	0	<div><div></div></div> 0%

本题有效填写人次	49	
----------	----	--



第 4 题 您所在单位或住址位置与项目之间关系（方向（东南西北）、离场界距离（米）） The relationship between your unit or residential address location and the project (direction , distance from the plant boundary (m)) [填空题]

1	500m
2	西、400 米
3	南 300 米
4	200m
5	西北 1000 米
6	100m
7	东南方自 200 米
8	150 米
9	1000 米
10	100
11	南，1000 米
12	居住区在项目东南方向，距离 800 米
13	北 1 公里
14	北 200 米
15	北 500 米
16	北 2 公里
17	北 5 公里

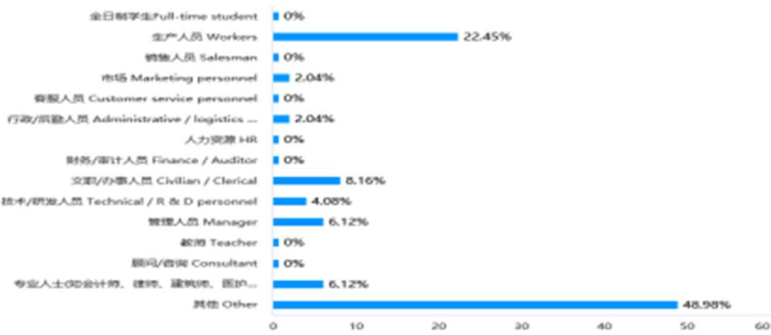
18	向北 1.3 公里
19	北 1500 米
20	正南方 700 米
21	正南方位 3 公里
22	东南方 1000 米
23	西北方 800 米
24	东南 100 米
25	南 100 米
26	新鑫建设集团有限公司项目部
27	四川省绵阳市，青海省海东市三合镇三合村
28	新鑫建设集团有限公司项目部
29	青海省海东市平安区三合镇三合水厂生活区，劳动关系，项目西边，距离项目 150 米左右
30	西边 150 米
31	1 百迷
32	50 米
33	50 米
34	。
35	西南 580
36	二百米
37	南 100 米
38	青海海东市三合镇东西方 500 米
39	北边 50 米
40	3 公里
41	北、3000
42	北面 3 公里
43	北面

44	3000 米
45	向西 150 米
46	三合镇水厂离场 100 米左右
47	新鑫建设集团有限公司项目部，正南方向，距离 500 米
48	100
49	20 公里

第 5 题 请输入您的手机号码 Please input your mobile number: [填空题]  
(confidential)

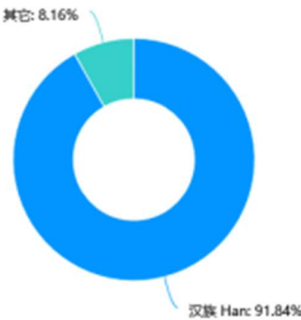
第 6 题 您目前从事的职业 Your current occupation: [单选题]

选项	小计	比例
全日制学生 Full-time student	0	0%
生产人员 Workers	11	22.45%
销售人员 Salesman	0	0%
市场 Marketing personnel	1	2.04%
客服人员 Customer service personnel	0	0%
行政/后勤人员 Administrative / logistics personnel	1	2.04%
人力资源 HR	0	0%
财务/审计人员 Finance / Auditor	0	0%
文职/办事人员 Civilian / Clerical	4	8.16%
技术/研发人员 Technical / R & D personnel	2	4.08%
管理人员 Manager	3	6.12%
教师 Teacher	0	0%
顾问/咨询 Consultant	0	0%
专业人士(如会计师、律师、建筑师、医护人员、记者等)Professionals (such as accountants, lawyers, architects, medical staff, journalists, etc.)	3	6.12%
其他 Other	24	48.98%
本题有效填写人次	49	



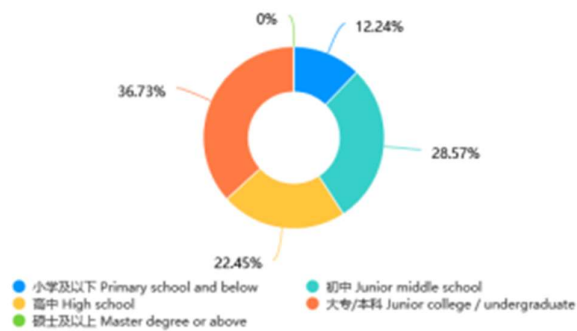
第 7 题 民族 Nationality [单选题]

选项	小计	比例
汉族 Han	45	<div><div></div></div> 91.84%
其他 Other	4	<div><div></div></div> 8.16%
本题有效填写人次	49	



第 8 题 文化程度 Education [单选题]

选项	小计	比例
小学及以下 Primary school and below	6	<div><div></div></div> 12.24%
初中 Junior middle school	14	<div><div></div></div> 28.57%
高中 High school	11	<div><div></div></div> 22.45%
大专/本科 Junior college / undergraduate	18	<div><div></div></div> 36.73%
硕士及以上 Master degree or above	0	<div><div></div></div> 0%
本题有效填写人次	49	



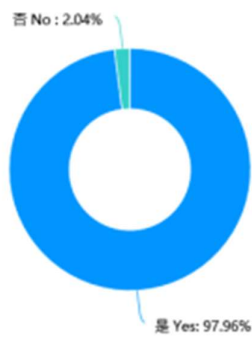
二、Question 讨论问题

第 9 题 Please specify the relevant subproject or contract name 请说明相关子项目或合同名称 [填空题]



第 10 题 Has contractor taken dust control measures, as necessary? 承包商是否在需要时采取了粉尘控制措施? [单选题]

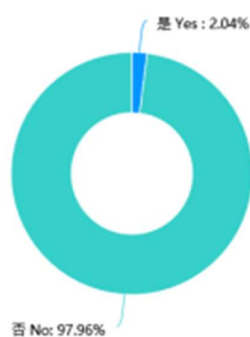
选项	小计	比例
是 Yes	48	<div><div></div></div> 97.96%
否 No	1	<div><div></div></div> 2.04%
本题有效填写人次	49	



第 11 题 Has noise or vibration from construction activities affected local residents' work or life?

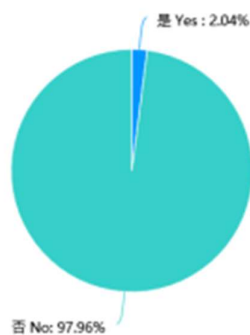
施工噪声/振动是否影响当地居民的正常工作/生活? [单选题]

选项	小计	比例
是 Yes	1	2.04%
否 No	48	97.96%
本题有效填写人次	49	



第 12 题 Did construction activities impact local water supply or drainage system? 施工活动是否影响当地的供水系统/排水系统? [单选题]

选项	小计	比例
是 Yes	1	2.04%
否 No	48	97.96%
本题有效填写人次	49	



第 13 题 Did construction or domestic waste cause any negative environmental impacts 施工营地生活垃圾或建筑垃圾是否对环境造成影响？ [单选题]

选项	小计	比例
是 Yes	0	<div><div></div></div> 0%
否 No	49	<div><div></div></div> 100%
本题有效填写人次	49	



第 14 题 Was there any adverse ecological impacts from construction activities, including flora an fauna and soil erosion? 施工活动是否对当地生态环境（动植物、水土流失）有影响？ [单选题]

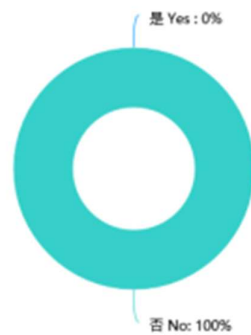
选项	小计	比例
是 Yes	0	<div><div></div></div> 0%
否 No	49	<div><div></div></div> 100%
本题有效填写人次	49	



第 15 题 Was local traffic impacted during construction period? 在施工期间当地/行人交通活动是否受到影响？ [单选题]

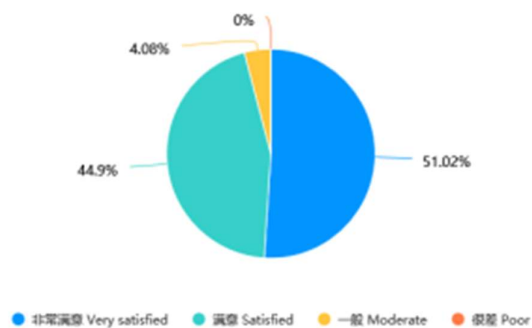


选项	小计	比例
是 Yes	0	0%
否 No	49	100%
本题有效填写人次	49	



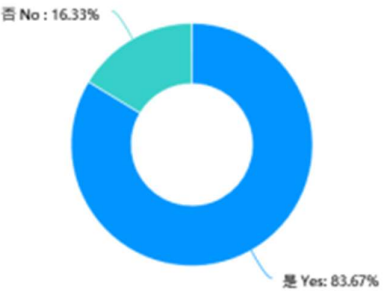
第 16 题 Overall opinions on the construction environmental management (excellent/good/normal/poor) 施工期的总体意见 (良好 / 满意 / 不太满意 / 差) [单选题]

选项	小计	比例
非常满意 Very satisfied	25	51.02%
满意 Satisfied	22	44.9%
一般 Moderate	2	4.08%
很差 Poor	0	0%
本题有效填写人次	49	



第 17 题 Were you aware of GRM? 是否知晓项目申诉解决机制? [单选题]

选项	小计	比例
是 Yes	41	<div><div></div></div> 83.67%
否 No	8	<div><div></div></div> 16.33%
本题有效填写人次	49	



第 18 题 Any comments or suggestions? 您对本工程还有哪方面意见及建议? [填空题]



### Appendix 5 implementation status of COVID-19 –health and safety plan checklist

Item	Good Practices	Who implements	Who supervises	Implementation status, issues identified and corrective actions
Awareness materials	<ul style="list-style-type: none"> <li>Preparation of awareness materials on COVID-19 e.g., signs, posters</li> <li>Installation of awareness signs at work sites, for visibility to workers and the general public</li> </ul>	Contractor	CSC, IA, PMO, LIEC	Implemented , no corrective action is needed
Detection Measures	<ul style="list-style-type: none"> <li>Control and document the entry/exit to the work site for both workers and other parties.</li> <li>Prevent sick workers from entering the site through checking temperatures of workers and other people entering the site. Require self-reporting prior to entering the site.</li> <li>All workers to self-monitor their health, possibly with the use of questionnaires, and take their body temperature regularly.</li> <li>Thermal screening at the workplace to be considered only in the context of a combination of measures for prevention and control of COVID-19 at the workplace and along with risk communication.</li> </ul>	Contractor	CSC, IA, PMO, LIEC	Implemented , no corrective action is needed
Physical Distancing measures	<ul style="list-style-type: none"> <li>Keep a distance of at least 1 meter between workers and minimize physical contact, ensure strict control over external access, and queue management (marking on the floor, barriers).</li> <li>Reduce density of people in the building (no more than 1 person per every 10 square meters), physical spacing at least 1 meter apart for work stations and common spaces, such as entrances/exits, lifts, pantries/canteens, stairs, where congregation or queuing of employees or visitors/clients might occur.</li> <li>Avoid crowding by staggering working hours to reduce the congregation of employees at common spaces such as entrances or exits.</li> <li>Implement or enhance shift or split-team arrangements, or teleworking.</li> <li>Minimize the movement of local workers in and out of the site (e.g., avoid workers returning home to affected areas, or returning to site from affected areas).</li> <li>Minimize the workers' contact with local community.</li> </ul>	Contractor	CSC, IA, PMO, LIEC	Implemented , no corrective action is needed

Item	Good Practices	Who implements	Who supervises	Implementation status, issues identified and corrective actions
Respiratory measures	<ul style="list-style-type: none"> <li>All workers should wear a face mask.</li> <li>If a worker is sick, they should not come to work if a member of staff or a worker feels unwell while at work, provide a medical mask so that they may get home safely.</li> <li>Where masks are used, whether in line with government policy or by personal choice, it is very important to ensure safe and proper use, care, and disposal</li> </ul>	Contractor	CSC, IA, PMO, LIEC	Implemented , no corrective action is needed
Hand Hygiene measures:	<ul style="list-style-type: none"> <li>Regular and thorough handwashing with soap and water or hand hygiene with alcohol-based hand-rub (a) before starting work, before eating, frequently during the work shift, especially after contact with co-workers or customers, (b) after going to the bathroom, after contact with secretions, excretions and body fluids, after contact with potentially contaminated objects (gloves, clothing, masks, used tissues, waste), and immediately after removing gloves and other protective equipment but before touching eyes, nose, or mouth.</li> <li>Hand hygiene stations, such as hand washing and hand rub dispensers, should be put in prominent places around the workplace and be made accessible to all staff, contractors, clients or customers, and visitors along with communication materials to promote hand hygiene</li> </ul>	Contractor	CSC, IA, PMO, LIEC	Implemented , no corrective action is needed
Cleaning and Disinfection	<ul style="list-style-type: none"> <li>Cleaning and Disinfection off all site facilities, including offices, accommodation, canteens, and common spaces:</li> <li>Cleaning (soap, water, and mechanical action) to remove dirt, debris, and other materials from surfaces. Disinfection of dirty surfaces and objects only after cleaning.</li> <li>Most common disinfectants – sodium hypochlorite (bleach) of surface at concentration 0.1% or alcohol at least 70% concentration for surfaces which can be damaged by sodium hypochlorite.</li> <li>Priority disinfection of high-touch surfaces - commonly used areas, door and window handles, light switches, kitchen and food preparation areas, bathroom surfaces, toilets and taps, touchscreen personal devices, personal computer keyboards, and work surfaces.</li> <li>Disinfectant solutions must always be prepared and used according to the manufacturer's instructions, including instructions to protect the safety and health of disinfection workers, use of personal protective equipment, and avoiding mixing different chemical disinfectants.</li> </ul>	Contractor	CSC, IA, PMO, LIEC	Implemented , no corrective action is needed

Item	Good Practices	Who implements	Who supervises	Implementation status, issues identified and corrective actions
	<ul style="list-style-type: none"> <li>• Provide appropriate PPEs to the cleaners.</li> <li>• Manage the waste as the medical waste and dispose of it in accordance with local regulations.</li> </ul>			
Response measures if workers found with COVID-19 symptoms	<ul style="list-style-type: none"> <li>• Workers who are unwell or who develop symptoms consistent with COVID-19 to stay at home, self-isolate, and contact a medical professional or the local COVID-19 information line for advice on testing and referral (consider telemedicine and flexible sick leave policy).</li> <li>• Standard operating procedures to be prepared to manage a person who becomes sick at the workplace and is suspected of having COVID-19, including isolation, contact tracing and disinfection.</li> <li>• People who were in close contact at the workplace with persons with laboratory-confirmed COVID-19 should be quarantined for 14 days from the last time of the contact in accordance with WHO recommendations.</li> <li>• Set out differentiated procedures for the treatment of sick persons, based on the case severity. Pay workers throughout periods of illness, isolation, or quarantine.</li> <li>• Set aside a part of worker accommodation for precautionary self-quarantine.</li> <li>• Establish communications with local medical services and refer sick workers to there.</li> </ul>	Contractor	CSC, IA, PMO, LIEC	Not applicable
Adjusting Work Practices and Manage Work Related Travels	<ul style="list-style-type: none"> <li>• Consider changes to work processes and timings to minimize contact between workers (e.g., decreasing the size of work team, changing to a 24-hour work rotation).</li> <li>• Cancel or postpone non-essential travel to areas with community transmission of COVID-19.</li> <li>• Provide hand sanitizer to workers who must travel, advise workers to comply with instructions from local authorities where they are travelling, as well as information on whom to contact if they feel ill while travelling.</li> <li>• Workers returning from an area where COVID-19 transmission is occurring should monitor themselves for symptoms for 14 days and take their temperature twice a day; if they are feeling unwell, they should stay at home, self-isolate, and contact a medical professional.</li> </ul>	Contractor	CSC, IA, PMO, LIEC	Implemented , no corrective action is needed

Item	Good Practices	Who implements	Who supervises	Implementation status, issues identified and corrective actions
Communication and Contact with the Community	<ul style="list-style-type: none"> <li>• Carefully manage the relations with the community with clear and regular communication.</li> <li>• Made aware of the procedures put in place at the site to address issues related to COVID-19.</li> <li>• Practice social distancing with the local community.</li> </ul>	Contractor	CSC, IA, PMO, LIEC	Implemented , no corrective action is needed
Risk communication , training, and education	<ul style="list-style-type: none"> <li>• Provide posters, videos, and electronic message boards to increase awareness of COVID-19 among workers and promote safe individual practices at the workplace, engage workers in providing feedback on the preventive measures and their effectiveness.</li> <li>• Provide regular information about the risk of COVID-19 using official sources, such as government agencies and WHO, and emphasize the effectiveness of adopting protective measures and counteracting rumors and misinformation.</li> <li>• Special attention should be given to reaching out to and engaging vulnerable and marginalized groups of workers, such as those in the informal economy and migrant workers, domestic workers, subcontracted and self-employed workers, and those working under digital labor platforms.</li> <li>• Train the workers on procedures in place by the project, and their own responsibilities in implementing them.</li> </ul>	Contractor	CSC, IA, PMO, LIEC	Implemented , no corrective action is needed

## **Appendix 6: The compliance audit on afforestation including subcomponents 1.4 and 2.1**

**(Subcomponents 1.4 Ping'an District Huangshui River Riverside Greenbelt (HD-IF-W6); and 2.1 Ping'an District Mountain Edge Green Belt (HD-SE-W1))**

The original Subcomponents 1.4 Ping'an District Huangshui River Riverside Greenbelt (HD-IF-W6); and 2.1 Ping'an District Mountain Edge Green Belt (HD-SE-W1) were divided into two parts: the main urban area of Ping An and the eastern section of the mountain border shelterbelt, and the Haidong Industrial Park and the mountain border shelterbelt of Ping'an New City, with a total area of about 104.7 hectares. Those were fully completed by domestic funds, with the actual area of 899.47 ha, as part of Haidong Airport Surrounding Area Landscaping Project.<sup>8</sup>

Haidong Airport Surrounding Area Landscaping Project is a key project of landscaping acceleration action in Qinghai Province, also large-scale landmark forestry farming project in Huangshui River basin. The project has created 33,300mu of landscape ecology forest, at a total investment of CNY 133 million. The project layout at completion includes artificial afforestation, through these two regional ecological construction to comprehensively promote the city's green shelterbelt construction.

### **A. Project progress.**

On March 25, 2018, 34 bids on the north slope and 20 bids on the south slope of the airport mobilized construction, and the landscaping project around the airport was fully launched. However, due to the slow progress of water conservancy projects, the irrigable area was very limited, which seriously restricted the progress of spring planting and afforestation. As of September 5, 2018, only 1,400 mu of afforestation had been completed in the north and south areas, accounting for 4.5% of the total project. At the beginning of October 2018, the water conservancy projects on the northern slopes and the Jianshan area around the airport were fully completed, and irrigation conditions were initially provided. Haidong Forestry Bureau seized this favorable opportunity to mobilize all contractors to conduct full-scale autumn reforestation. As of November 15, 2018, it had been completed 33,300 mu of afforestation.

### **B. Main practices and measures.**

The first is to maintain a high priority and strengthen organizational security. In order to strengthen and guarantee the construction quality of the landscaping project around the airport, the landscaping project management office was set up. The mayor was the commander, and the deputy secretary was the deputy commander, while the deputy mayor in charge was the field commander, and the heads of the relevant government departments were members of the landscaping project management office. The landscaping project management office has a comprehensive coordination office, a hydraulic engineering construction office, a forestation and landscaping office, a road engineering construction office, a power

---

<sup>8</sup> This domestic project overall includes these two subcomponents (see the subject name of this appendix) that were fully funded by domestic funds, among others. And this report is prepared on basis of limited information from the PMO. The PMO confirmed that the two subcomponents themselves' scope remains within the original overall ADB funded project scope. The domestic completion had been accepted by local authorities in August 2019. Most of the project operational impacts are positive to improve the regional ecology and environment. And the potential negative operational environmental impacts are expected insignificant.

engineering office, and an airport security office. And the landscaping project management office dispatched technical staff on-site office to coordinate related matters.

The second is to adhere to the departmental linkage and control project investment. In order to ensure the smooth progress of the landscaping project around the airport, the forestry, water conservancy, transportation, and power departments interacted and coordinated with each other through multiple channels, speeding up the construction of water conservancy facilities, landscaping roads and other projects, creating good conditions for afforestation.

The third is to strengthen project management and implement the "four systems" of project construction. (i) implemented the project construction legal person system mainly based on the airport landscaping headquarters and related business departments to manage the project construction and operation; (ii) according to the requirements of government procurement, adopted "open tendering, fair competition, and fair evaluation of bids" for project construction public bidding to hire the project construction contractors; (iii) signed construction contracts with the successful bidders to implement the contract construction and clarify the rights and obligations of both parties; and (iv) implemented project supervision and hired the Qinghai Forestry Engineering Consulting Company to supervise the entire process of the project construction to strictly control the quality of the project.

The fourth is to strengthen technical guidance and implement afforestation technology responsibility system. For the afforestation work, Haidong Forestry Bureau selected two senior engineers as the chief technical leaders in the two areas of North and South. At the same time, 18 professional technicians were deployed to provide on-site technical guidance for 54 bids, including on-site control of site preparation quality, afforestation density, seedling specifications, plant quarantine, and area control.

The fifth is to strengthen project management and implement process management. In project construction, a combination of staged acceptance and mid-term acceptance and completion acceptance is implemented. After each link is completed, the supervisor and the landscaping project management office must pass the acceptance check before passing the next link. The quality control is carried out step by step, and the land preparation, seedlings, and planting customs are qualified. At the same time, the landscaping project management office actively did a good job in the collection and management of archives.

(i) Compiled schemes for forest landscaping. In December 2017, the Municipal Forestry Bureau was in charge. According to the "one afforestation and one green", after the high-density mixed afforestation, the bare land was basically covered, and the requirements of a forest-based, diverse, and reasonable structure forest were established. The Ping'an Forestry Survey Planning and Design Team and the Huzhu Fengyuan Forestry Survey Planning and Design Team conducted field survey planning for the airport's south slope Jianshan area and the airport's north slope area, respectively, and formulated two regional afforestation project implementation plans, divided into 512 small classes, identified 18 site types and 18 typical afforestation designs.

(ii) Demarcated the bidding sections. The survey and planning team of the Municipal Forestry Bureau combined the topography, geomorphology, and small class boundaries of the afforestation area to divide the area of each bidding section according to the principles of convenient construction and moderate area. Through the zoning, 54 bidding sections were divided, of which, the southern slope of the airport with 20 bids in Jianshan area; and 34 bids in the northern slope of the airport.



(iii) In February 2018, with the strong support and cooperation of the Haidong Municipal Finance Bureau, Haidong Forestry Bureau completed the recording of the Government Procurement Plan; meanwhile, in accordance with the requirements of government procurement, it entrusted Qinghai Wanglixin company and Jiangsu Dazhou Engineering Project Management Co., Ltd. Qinghai Branch as tender agent. On February 28, Qinghai Wanglixin Company issued a tender announcement on the northern slope of the airport; on March 1, Jiangsu Dazhou Engineering Project Management Co., Ltd. Qinghai Branch issued a tender announcement on the landscaping of the Xiaoxia Jianshan area around the airport. On March 22, public bidding for the northern slope of the airport was completed, and 34 contractors won the bids; on March 26, bidding for Xiaoxia Jianshan was completed, and 20 contractors won the bids. Immediately after the bidding work was completed, Haidong Forestry Bureau organized the winning bidders to sign the "Construction Safety Commitment Letter" and "Contract Letter" to ensure the safe and smooth progress of this project. And

(iv) Hire an engineering supervision company. In order to ensure the quality of the project construction, on March 5, 2018, in accordance with the relevant government procurement requirements, Zhengxin Weiye Bidding Company Qinghai Branch was entrusted to conduct a public bidding for the project supervision, and the Qinghai Forestry Engineering Supervision Center won the bid as the project construction supervisor.

#### **C. Self-examination results.**

From November 20th to December 15th, 2018, the landscaping project management office organized professional and technical personnel to conduct a comprehensive acceptance of the northern slope area and Jianshan area around the airport for comprehensive self-inspection of the completion of afforestation of 512 small classes in 54 bids in the northern slope area of the airport and Jianshan area. The completion status of afforestation is reported as follows: **During the acceptance process, the staff used GPS and ARCGIS professional tools to conduct on-site mapping surveys of each afforestation site, and used ARCGIS to calculate the area. Through self-inspection, artificial afforestation was completed, and the average survival rate of the area reached 87%. (against the survival rate of planted vegetation >75%, defined in the (IEE))**

#### **D. Additional clarifications.**

Recently, due to the construction of the third-phase expansion project of Caojiabao Airport, a borrowing site for the third-phase expansion project of the airport was set up at the northeast corner of the airport with a controlled area of 1,047 mu. This occupied part of the unforested area in the 33rd, 32nd, 34th, and 30th sections of the northern slope of the airport in 2018. Among them, 33rd occupied 379 mu, 32nd occupied 206.11 mu, 34th occupied 64.31 mu, 30th occupied 9.61 mu, and at a total of 659.03 mu.

In order to strengthen project management and do a good job of filing, on June 6, 2019, the landscaping project management office organized personnel to carry out comprehensive acceptance of the 33rd, 32nd, 34th, and 30th sections. A total of 2,334 mu of afforestation were completed in the four tender sections, of which 578 mu were completed in 30th section, 533 mu were completed in 32nd section, 695 mu were completed in 33rd section, and 528 mu were completed in 34th section. The survival rates of the standard segments were between 91-95%.

On June 26, 2019, the final completion acceptance application was submitted by the Haidong Forestry Bureau, and the Qinghai Provincial Forestry and Grass Bureau organized personnel to conduct a special acceptance of the above four bids. The

acceptance result was recognized as consistent with the original completion acceptance application report, so agreed to pass the provincial level acceptance.

#### **E. Implementation Effect**

The "Ant Forest" project was launched in the large-scale forest farm in Huangshui, Qinghai. According to the Qinghai Provincial Forestry and Grassland Bureau, the "Ant Forest" project was launched in the Huangshui large-scale forest farm in Qinghai. The project aims to broaden the financing channels for forestry ecological construction and explore a new model of attracting social capital to carry out public afforestation. The picture below shows the afforestation site in the Huangshui River Basin in Qinghai.



The Huangshui large-scale forest farm in Qinghai Province includes the Huangshui River and its tributaries in the four districts and counties of Xining City and Haidong City, Ping'an, Huzhu, Ledu and Minhe, with a total construction area of 2379.13 square kilometers. In 2018, the construction of large-scale forest farms in the Huangshui River Basin of Qinghai Province was included in the national pilot program. The picture below shows the afforestation site in the Huangshui River Basin in Qinghai.



According to the Qinghai Provincial Forestry and Grassland Bureau, according to the preliminary plan for the key layout of the "Ant Forest" public tree planting project in Qinghai Province, the project has a planned total area of 860,000 mu in Qinghai Province, of which the "Ant Forest" Qinghai Huangshui Large-scale Forest Farm Project in 2019 is the first project. It is planned to carry out afforestation of 5 million points of Caragana sticks in Huzhu County, Haidong City, covering a total of 45,000 mu, with an investment of 21.35 million yuan (RMB, the same below). The picture below shows Xining, the capital of Qinghai Province, under the shade of green trees.



It is understood that up to now, the "Ant Forest" project has accumulated more than one million mu of forest in China, and nearly 500 million netizens have participated.

In addition, according to the plan of the China Green Foundation, in 2020, it is determined to continue the implementation of the "Ant Forest" Caragana afforestation project in Haidong City, Qinghai, with 9 million holes, a total of 81,000 mu, and an investment of 38.47 million yuan.

The State Forestry and Grassland Administration announced on January 26, 2022 that the large-scale forest farm in the upper reaches of Baiyangdian in Xiongan New Area of Hebei Province, the large-scale forest farm in the Hunshandake Sandy Land in Inner Mongolia Autonomous Region, and the large-scale forest farm in the Huangshui River Basin in Qinghai Province are the national development and reform commission, finance The Ministry of Natural Resources, the Ministry of Natural Resources and the State Forestry and Grassland Administration jointly launched the pilot project of new large-scale forest farms.

Since the start of the pilot work, the Three North Shelter Forest Administration of the State Forestry and Grassland Administration has conscientiously implemented the relevant requirements of the State Forestry and Grassland Administration on promoting the pilot work of new large-scale forest farms, starting from strengthening organization and coordination, innovating management and financing mechanisms, standardizing daily management, and ensuring Steady progress was made in the pilot construction tasks. By the end of 2021, a total of 3,891,400 mu of construction tasks have been completed, accounting for 47.72% of the 8,155,400 mu of planned tasks.