

# Environment and Social Compliance Audit Report

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Project Number: 54401-001  
Final Asset-Level Report - Harbin  
April 2021

## People's Republic of China: Asia Cube Wastewater Treatment Upgrade Project

Prepared by Stantec Environmental Engineering (Shanghai) Co., Ltd. ("Stantec") for the China Cube Water Company (the "Client") and the Asian Development Bank.

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## ASSET-LEVEL E&S AUDIT REPORT – HARBIN

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**CURRENCY EQUIVALENTS**

(as of 12 April 2021)

Currency unit	–	yuan (CNY)
CNY1.00	=	\$0.1526
\$1.00	=	CNY6.5522

**ABBREVIATIONS**

AAOV	Average Annual Output Value
ACMs	Asbestos Containing Materials
ADB	Asian Development Bank
ADB's SPS	ADB Safeguard Policy Statement
AESR	Applicable E&S Requirements
AO	Anoxic Oxidation
BOD	Biochemical oxygen demand
BOLAR	Bureau of Land and Resources
BOT	Build-Operate-Transfer
CAI	Completion Acceptance Inspection
CAP	Corrective Action Plan
Capex	Capital Expenditure
CCW	China Cube Water
COD	Chemical oxygen demand
COVID-19	Coronavirus disease-19
ECAI	Environment Completion Acceptance Inspection
E&S	Environmental and Social
EEB	Ecology and Environment Bureau
EIA	Environmental Impact Assessment
EIF	Environmental Impact Form
EIR	Environmental Impact Registration
EMP	Environmental Management Plan
ERP	Emergency Response Plan
ESMS	Environmental and Social Management System
EHS	Environmental, Health and Safety
EHSS	Environmental, Health, Safety and Social
FCAI	Fire-fighting Completion Acceptance Inspection
FSR	Feasibility Study Report
GRM	Grievance Redress Mechanism
HR	Human Resource
HW	Hazardous wastes
IFC	International Finance Centre
IH	Industrial Hygiene
IR	Involuntary Resettlement
IP	Indigenous Peoples
ISQ	I Squared Capital
MEE	Ministry of Ecology and Environment



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MEP	Ministry of Environmental Protection
MSDS	Material Safety Data Sheet
NGO	Non-Governmental Organizations
ODH	Occupational Disease health
ODSs	Ozone Depleting Substances
Opex	Operating Expenses
PAHs	Project Affected Households
PCB	Polychlorinated Biphenyls
PDP	Pollutant Discharge Permit
PPE	Personal Protective Equipment
PRC	People's Republic of China
SEP	Stakeholder Engagement Plan
SOP	Standard Operating Procedure
SPS	Safeguard Policy Statement
SS	Suspended Solids
WWTP	Wastewater Treatment Plant

## WEIGHTS AND MEASURES

m	meter	mg/m <sup>3</sup>	milligram per cubic meter
km	kilometre	ha	hectare
km <sup>2</sup>	square kilometre	t/a	tons per annum
m <sup>2</sup>	square meter	h	hour
m <sup>3</sup>	cubic meter	t	metric ton
mg/kg	milligram per kilogram	°C	degree centigrade
µg/m <sup>3</sup>	microgram per cubic meter	dB	decibel
t/d	tons per day	MPN/L	Most Probable Number per liter



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## Executive Summary

The Asian Development Bank (ADB) is considering provision of financing to the I Squared Capital (ISQ), an independent fund which 100% owns China Cube Water Limited (CCW or the Company). CCW focuses on wastewater treatment projects alongside major rivers in China, and operates nine wastewater treatment plants (WWTPs) with a total capacity of 222,500 tons/day, serving over 2 million population in Henan Province (6 WWTPs), Shaanxi Province (1 WWTP), Heilongjiang Province (1 WWTP) and Guangdong Province (1 WWTP), PRC.

ADB engaged Stantec Environmental Engineering (Shanghai) Co., Ltd. ("Stantec") to conduct an Environmental and Social (E&S) audit at CCW in support of the proposed loan. On 1 February 2021, Stantec conducted the E&S audit at Harbin Daowai District Tuanjie Town WWTP (Harbin WWTP or the Site). This E&S audit was conducted based on Harbin WWTP's current E&S management performance against the Applicable E&S Requirements (AESRs) detailed as Section 1.2. Due to the local COVID-19 situation and requirements, no site visit was able to be arranged at Harbin WWTP. Video conference and desktop document review were performed instead of site visit.

The Site is located at the junction of Baicai Ditch and Huangjiawaizi Road, Tuanjie Town, Daowai District, Harbin City, Heilongjiang Province, PRC. In 2014, CCW signed the Build-Operate-Transfer (BOT) agreement with Harbin City Water Affair Bureau and established Harbin WWTP. Harbin WWTP started to operate in 2016. The Site covers a total land area of 34,256.7 m<sup>2</sup> and receives domestic wastewater (majority) and industrial wastewater (minority) from the whole Tuanjie Town with the service area of 76.7 square kilometres (km<sup>2</sup>). The designed wastewater treatment capacity is 40,000 tons per day (t/d), and the actual treatment scale is about 19,000 t/d.

During the audit, no Red Flag or High Risk (as defined in **Table 2-3**) issues were identified at the Site, whilst lack of a formalized E&S Management System (ESMS) was identified as a High Risk issue. Overall, the Site has developed and implemented certain health and safety related management procedures, which is in consistent with CCW corporate EHS procedures. However, no dedicated EHS officer leading its implementation, and a formal E&S Management System (ESMS) was not in place. During the Audit, the Site representatives and management expressed knowledge and experience for E&S management (mainly health and safety oriented), as well as willingness for improvement and positive attitude for the risks identified. For the gaps identified and the corresponding recommendations, please refer to Chapter 4.



# 1. INTRODUCTION

## 1.1 PROJECT BACKGROUND

The Asian Development Bank (ADB) is considering provision of financing to the I Squared Capital (ISQ), an independent fund focusing on infrastructure investment around the globe. In Asia, ISQ owns and manages infrastructure projects including co-generation of heat and power, renewable energy (solar and wind), telecom, data centre, highway, wastewater treatment via multiple platform companies.

Established in 2006, Jiangsu Jiaqing Water Development Co., Ltd. (Jiangsu Jiaqing) headquarters in Nanjing, Jiangsu province, focuses on municipal and industrial wastewater treatment. Jiangsu Jiaqing introduced ISQ as its strategic investor. By the end of 2018, ISQ acquired 100% share of Jiangsu Jiaqing, making Jiangsu Jiaqing its wholly owned flagship platform company in the field of environmental protection industry. In May 2019, Jiangsu Jiaqing changed the company name to China Cube Water Limited (CCW or the Company).

CCW focuses on wastewater treatment projects alongside major rivers in China, such as the Yellow River and Huai River. As of January 2021, CCW operates nine wastewater treatment plants (WWTPs) with a total capacity of 222,500 tons/day, serving over 2 million population in Henan Province (6 WWTPs), Shaanxi Province (1 WWTP), Heilongjiang Province (1 WWTP) and Guangdong Province (1 WWTP), PRC.

Harbin Daowai District Tuanjie Town WWTP (Harbin WWTP or the Site) was established in 2014 by Harbin Jiaqing Water Technology Development Co., Ltd. Harbin WWTP has a total wastewater treatment capacity of 40,000 tons per day (t/d). CCW holds 60% of shares of Harbin WWTP whilst the remaining 40% is held by an individual, Mr. Liu. At the time of the Environmental and Social (E&S) audit, the subproject was in operation.

ADB engaged Stantec Environmental Engineering (Shanghai) Co., Ltd. (“Stantec”) to conduct an E&S audit at CCW in support of the proposed loan. On 1 February 2021, Stantec conducted the E&S audit at Harbin WWTP. This report presents the findings of the E&S audit and provides a gap analysis of Harbin WWTP’s current E&S management performance against the Applicable E&S Requirements (AESRs) detailed as Section 1.2.

## 1.2 SCOPE OF THE ASSET-LEVEL E&S AUDIT

The objective of the E&S audit was to (1) determine the Site’s E&S performance; (2) identify potential risks during the construction and operation of the Site, and (3) verify the compliance status of the Site with the following AESRs:

- ADB Safeguard Policy Statement (SPS) (including SPS SR1, SR2, SR3 & SR4), June 2009;
- ADB’s Social Protection Strategy, 2001;
- ADB Gender and Development Policy, May 1998;
- ADB Access to Information Policy, 2018;
- World Bank Group’s General Environmental, Health and Safety Guidelines, 2007;
- World Bank Group’s EHS Guidelines for Water and Sanitation, 2007; and
- Applicable national, provincial and local laws and regulations pertaining to E&S (including land acquisition and resettlement), health and safety and labour in the RPC.





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## INTRODUCTION

In particular, the scope of the Asset-level E&S audit is to:

- Provide a description of the Site, including types of wastewater treated, water treatment technology; amount and quality of influent and effluent; methane generation and use, if relevant; electricity consumption, any resource conservation technology currently used and/or to be used in the future.
- Review past, current and potential environmental, involuntary resettlement (IR) and indigenous peoples (IP) impacts from construction and operation of the Site and confirm categorization based on ADB's SPS.
- Determine where the Site, including ancillary facilities such as sludge disposal site and pipelines, may cause or are causing environment, occupational and community health and safety (EHS) impacts and risks and opine on the suitability of the existing ESMS or EMP of the Site, including management of COVID-19 risks, monitoring and reporting and related organizational structure and capacity.
- Review any impacts from extreme weather events due to climate change such as floods, and recommended commensurate adaptation measures, as necessary.
- Review related documents, such as the domestic Environmental Impact Assessment (EIA) documents submitted to or approved by the local environmental authorities, Feasibility Study Reports (FSRs), conditions and requirements in the in the EIA approval documents, permits/clearances/certificates, external/internal monitoring results, and any associated reporting requirements to authorities, and opine on the Site's EHS and social aspects and determine if the Site is in compliance with the AESRs.
- Review the suitability and implementation status of any Corrective Action Plans (CAPs) prepared, if any.
- Review any prior land acquisitions done by the local government for the Site and determine if these were undertaken in compliance with PRC's national laws and ADB's requirements.
- Determine if the Site's operation has any impacts on ethnic minorities and assess whether these have been addressed in accordance with PRC's national laws and ADB's SPS.
- Review the Site's stakeholder engagement activities and information disclosure procedures.
- Review the Site's internal and external grievance redress mechanisms, identify past and ongoing complaints issues or feedbacks and review the current status or resolution.

## 1.3 REPORT STURCTURE

The remainder sections of this report are structured as follows:

- Section 2: Application Standards and Methodology;
- Section 3: Site Assessment;
- Section 4: Corrective Action Plan.

This report is supported by the following annexures:

Annex A: List of Documents Reviewed

Annex B: Stakeholders Engaged during the E&S Audit

Annex C: Photo Log

## 1.4 LIMITATIONS

The report was prepared in accordance with a scope of work agreed by ADB. The results of the Site are based on conditions at the time of the E&S audit and documents provided by Harbin WWTP. A change in any of these conditions may alter the findings, observations and report content presented



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### INTRODUCTION

herein by Stantec. Further investigations would be required to identify the presence or absence of potential Environmental, Health, Safety and Social (EHSS) liabilities but are beyond detection by performance of the scope of this Site. Laws and regulations, if referenced in this report, are provided for information purposes only and should not be construed as legal opinion or recommendation.

The limitations encountered during the E&S audit include the following:

- 1) Due to the local COVID-19 situation and requirements, no site visit was able to be arranged at Harbin WWTP. Video conference and desktop document review were performed instead of site visit, hence, the onsite operation and the corresponding E&S practices were not observed.
- 2) Only the payroll records in July 2020 were provided for review, whilst the attendance records and payroll records in other months were not provided for review.
- 3) The land acquisition was undertaken by the local government before 2013. CCW management is not aware of the detailed information about the land acquisition and no interview was conducted with representatives from corresponding stakeholders such as affected person and the local authority.



## 2. APPLICATION STANDARDS AND METHODOLOGY

### 2.1 APPLICABLE STANDARDS

This E&S audit was undertaken in accordance with the following AESRs:

- ADB Safeguard Policy Statement (SPS) (including SPS SR1, SR2, SR3 & SR4), June 2009;
- ADB's Social Protection Strategy, 2001;
- ADB Gender and Development Policy, May 1998;
- ADB Access to Information Policy, 2018;
- World Bank Group's General Environmental, Health and Safety Guidelines, 2007;
- World Bank Group's EHS Guidelines for Water and Sanitation, 2007; and
- Applicable national, provincial and local laws and regulations pertaining to E&S (including land acquisition and resettlement), health and safety and labour in the RPC.

In the PRC, wastewater treatment projects are governed by the following key applicable Chinese E&S regulations listed in *Error! Not a valid bookmark self-reference..*

**Table 2-1: Related E&S Laws and Regulations**

Title	General Description
<b>Environment</b>	
<i>Law on Environment Protection (2015)</i>	The law is an umbrella under which relevant laws on air, noise and wastewater emissions, as well as waste management and disposal are integrated. The Law authorizes environmental authorities to establish two types of standards: environmental quality (ambient) standards and discharge/emission standards. Ambient standards are the maximum allowable concentrations of pollutants in water, air or soil. Discharge / emission standards are the maximum allowable concentrations of pollutants' emissions or discharges. The standards provide a basis for the inspection activities of the environmental authorities. The Law on Environmental Protection allocates responsibility for the implementation of environmental protection policies and environmental monitoring to relevant government organizations. Specific details, permits and procedures are stipulated under the relevant State laws for air, water, noise, waste management etc.
<i>Law on Environmental Impact Assessment (2018)</i>	<p>All construction projects are required to comply with a series of environmental protection procedures and policies, principally the following:</p> <ul style="list-style-type: none"> <li>• Environmental Impact Assessment (EIA) Policy;</li> <li>• "Three Synchronies" Policy; and</li> <li>• Pollutant Discharge Permitting.</li> </ul> <p>There are three categories of EIA in the PRC, including (a) Full EIA report for projects with significant environmental impacts, (b) Environmental Impact Form (EIF) for project with moderate environmental impacts, and (c) Environmental Impact Registration (EIR) for projects with limited environmental impacts.</p>
<i>Management Regulations for Environmental Protection for Construction Projects (2017)</i>	
<i>Catalogue for Management of Environmental Impact</i>	



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### APPLICATION STANDARDS AND METHODOLOGY

Title	General Description
<i>Assessment of Construction Projects (2021)</i>	between 500 tons and 100,000 tons, and the EIR is applicable for the rest WWTP with the daily treatment capacity below 500 tons.
<i>Measures on Environmental Impact Post-Assessment of Construction Project (2016)</i>	The measure stipulates the legal requirements of Environmental Impact Post-Assessment for required construction projects, and the post-assessment registration requirement.
<i>Catalogue for management of Pollutant Discharge Permit (2019)</i>	According to the amount of pollutants generated and discharged by the enterprises, public institutions or other business operators and the degree of environmental hazards, three types of pollutant discharge permits (key regulatory, simplified regulatory and registration management) shall be implemented.
<i>Law on the Prevention and Control of Atmospheric Pollution (2018)</i>	The Law on the Prevention and Control of Atmospheric Pollution (2018) provides the basis for air quality protection in China. The Integrated Emission Standard of Air Pollutants (1996) specifies the discharge standards for air emissions.
<i>Integrated Emission Standard of Air Pollutants (1996)</i>	
<i>Law on the Prevention and Control of Water (2017)</i>	The Law on the Prevention and Control of Water (2017) is the key law for water pollution control. It applies to the pollution prevention and control of groundwater and all surface water bodies excluding the sea. It contains water pollution prevention and control standards; monitoring requirements and the management guidelines for water pollution prevention and control; measures for water pollution prevention and control; the pollution prevention and control measures for special water bodies including drinking water sources; the treatment of water pollution events; and legal liabilities. For industrial projects, a Water Pollutant Discharge Permit is required from the Ecology and Environment Bureau (EEB) prior to operational discharges to surface water.
<i>Discharge Standard of Pollutants for Municipal Wastewater Plant (2002)</i>	
<i>Environmental Quality Standards for Surface Water (2002)</i>	
<i>Integrated Wastewater Discharge Standard (1996)</i>	
<i>Law on the Prevention and Control of Environmental Noise Pollution (2018)</i>	Noise is regulated by the Law on the Prevention and Control of Environmental Noise Pollution (2018). This Law sets out the general requirements for noise control including noise from industrial sites, construction sites and transportation.
<i>Emission Standard of Environmental Noise for Boundary of Construction Site (2011)</i>	The Emission Standard of Environmental Noise for Boundary of Construction Site (2011) and the Emission Standard for Industrial Enterprises Noise at Boundary (2008) are applicable for construction and operational activities, respectively.
<i>Emission Standard for Industrial Enterprises Noise at Boundary (2008)</i>	
<i>Law on the Prevention and Control of Solid Waste Pollution (2020)</i>	Law on the Prevention and Control of Solid Waste Pollution (2020) stipulates the requirements for general industrial waste, domestic waste, and hazardous



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### APPLICATION STANDARDS AND METHODOLOGY

Title	General Description
<i>Management Regulation for Hazardous Waste Transfer Manifests (1999)</i>	waste management including collection, storage, transportation, treatment, recycling and disposal.
<i>Standard for Pollution Control on Industrial Solid Waste Storage and Landfill (2020)</i>	The on-site storage and disposal of industrial solid waste is subject to the Standard for Pollution Control on Industrial Solid Waste Storage and Landfill (2020). The Management Regulation for Hazardous Waste Transfer Manifests (1999) stipulates the documentation and tracking procedures for hazardous waste generators, transporters and disposal operators.
<i>Law on Energy Conservation (2018)</i>	The Law on Energy Conservation (2018) and Law on Cleaner Production Promotion (2012) stipulates the legal requirements on energy saving during both construction and operation of a development project.
<i>Law on Cleaner Production Promotion (2012)</i>	
<i>Law on the Prevention and Control of Soil Pollution (2019)</i>	The Environmental Quality Standards for Construction Soil Pollution Risk Control (Trial) (2018), Environmental Quality Standards for Agriculture Soil Pollution Risk Control (Trial) (2018), Law on the Prevention and Control of Soil Pollution (2019) and the Quality Standard for Ground Water (2017) define the quality standards applicable for soil and groundwater depending on the different uses.
<i>Environmental Quality Standards for Construction Soil Pollution Risk Control (Trial) (2018)</i>	
<i>Environmental Quality Standards for Agriculture Soil Pollution Risk Control (Trial) (2018)</i>	
<i>Environmental Quality Standard for Ground Water (2017)</i>	
<i>Methods for Public Participation in Environmental Impact Assessment (2019)</i>	The Methods for Public Participation in Environmental Impact Assessment (2019) prescribes the requirements for public consultation during the process of EIA for a development project. And it requires that public consultation should be conducted while preparing full EIA Report, whilst there is no specific legal requirement regarding consultation with communities for EIF and EIR.
Health & Safety	
<i>Law on Work Safety (2014)</i>	These laws stipulate principles on work safety, occupational health and fire protection issues, including work safety and occupational hazards assessment, facility design and construction, completion acceptance inspection, training, monitoring and medical check-up, facility inspection and maintenance, etc.
<i>Law on Occupational Diseases Prevention (2018)</i>	
<i>Law on Fire Protection (2019)</i>	
Biodiversity	
<i>Law for Wildlife Protection (2018)</i>	Law for Wildlife Protection (2018) and Regulation on Wild Plant Protection (2017) stipulates the requirements for protecting and saving wildlife or wild



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### APPLICATION STANDARDS AND METHODOLOGY

Title	General Description
<i>Regulation on Wild Plant Protection (2017)</i>	plant, defines the wildlife or wild plant habitat, and establishes disciplinary measures.
Land Acquisition and Resettlement	
<i>Law on Land Administration (2020)</i>	The Land Administration Law stipulates that where land acquisition is necessary <sup>1</sup> , compensation shall be made in accordance with the original usage of the acquired land, which shall include a land compensation fee, a resettlement subsidy (if applicable) and a compensation fee for land “attachments“ (e.g. various trees and houses) and standing crops. The land compensation fee for cultivated land is six to10 times the average annual output value (AAOV) of the land in the three years preceding the land acquisition. The relevant compensation standards for land “attachments” and standing crops are to be determined by the local government.
<i>Regulations on Implementation of Land Administration Law (2014)</i>	
Labour	
<i>Labour Law (2018)</i>	Labour law (2018) stipulates the rights and corresponding obligations of workers, states that “employees enjoy the rights of equal employment and choice of occupation, the right to receive labour remuneration, the right to rest and vacation, the right to obtain labour safety and health protection, the right to receive vocational skill training, the right to enjoy social insurance and welfare, the right to apply for settlement of labour disputes and other labour rights stipulated by law” and “laborers should complete their labour tasks, improve their professional skills, implement labour safety and health regulations, and abide by labour discipline and professional ethics”.
<i>Labour Contract Law (2012)</i>	
Cultural Heritage	
<i>Cultural Relics Protection Law (2017)</i>	It stipulates project proponents to undertake baseline archaeological surveys to determine the presence and condition of cultural relics where construction works have the potentiality to damage them.
<i>Implementation Regulations of the Law on Cultural Relics Protection (2017)</i>	
Public Consultation and Information Disclosure	
<i>Methods for Public Participation in Environmental Impact Assessment (2019)</i>	It stipulates that construction projects that may have significant effects on the environment should incorporate public comments into the EIA report. Either the Project proponent (or the EIA agency on behalf of the Project proponent) should provide project information to the public and to the local EEB during the process of environmental impact assessment. A summary EIA report shall be provided for public review in hard copy format at a designated location or in electronic format on a public website.
Gender	
<i>Law on the Protection of Women's Rights and Interests (2018)</i>	It stipulates women's rights in social and economic life, including political rights, cultural and educational rights and interests, labour and social security rights and interests, property rights, personal rights, marriage and family rights and interests.

<sup>1</sup> The Project Affected Households (PAHs) can reject the land acquisition as long as it is not for the public good projects. The land law applies to all land acquisition activities, as long as it is ‘land acquisition/ expropriation’.



Title	General Description
<b>Ethnic Minorities</b>	
<i>Law on Regional National Autonomy (2001)</i>	It stipulates that regional ethnic autonomy is a basic political system in China. Article 10 emphasizes that the organs of self-government in national autonomous areas shall guarantee the freedom of all ethnic groups in the region to use and develop their own languages and characters, and the freedom to maintain or reform their own customs and habits.

In addition, in regard to flood risk control, as per the Code of Design of Outdoor Wastewater Engineering (GB 50014-2006 amended in 2014), the site selection should not be impacted by flooding, and the flood control standard of the site should be as least meeting the local city flood control standard (as per the Standard for Flood Control (GB 50201-2014), mainly taking the population and economic of the city into consideration) with good drainage condition. In both the FSR and EIA documents, a simple description of the local meteorological condition is included, stating the status quo of temperature, precipitation, wind direction, etc. in the local area, however, it is not an extreme weather impact assessment covering historic and future situations, nor mentioning the historical events as only the historical max precipitation data is included.

## 2.2 E&S PERMITTING REQUIREMENTS

In general, for a wastewater treatment project, the following key topical assessments and applications are required (**Table 2-2**).

**Table 2-2: E&S Permitting Requirements**

E&S Permit	Applicable Standard Type	Description
Site selection application	National Standard	An approval issued by the local authorities on whether the project comply with local planning requirement.
Feasibility Study Report (FSR)	National Standard	A comprehensive analysing report based on economic, technological, production, supply and marketing, social, environmental and legal factors, to determine the feasibility of the project.
Land Use documents	National Standard	Land users are required to obtain Construction Land Use Certificate. The land certificate is issued by the local government. It is a written document certifying that the holder has the ownership or right to use a certain area of land.
Environmental Impact Assessment (EIA) documents	National Standard	Based on Catalogue for Management of Environmental Impact Assessment of Construction Projects (2021), the EIF report is applicable for the Site as the WWTP with the daily treatment capacity between 500 tons and 100,000 tons. However, the full EIA report was prepared as local EEB requirement.  The EIA report is generally consisting of applicable standards, project description, pollution control analysis, ecological impacts, extreme weather analysis (including climate, flooding, earthquake, etc.) and public participation.
Environmental Completion Acceptance Inspection (ECAI)	National Standard	Since November 2017, China government has been implementing self-conducting ECAI procedures (meaning the corresponding monitoring and acceptance are conducted by the project owner) for environmental protection by phases.



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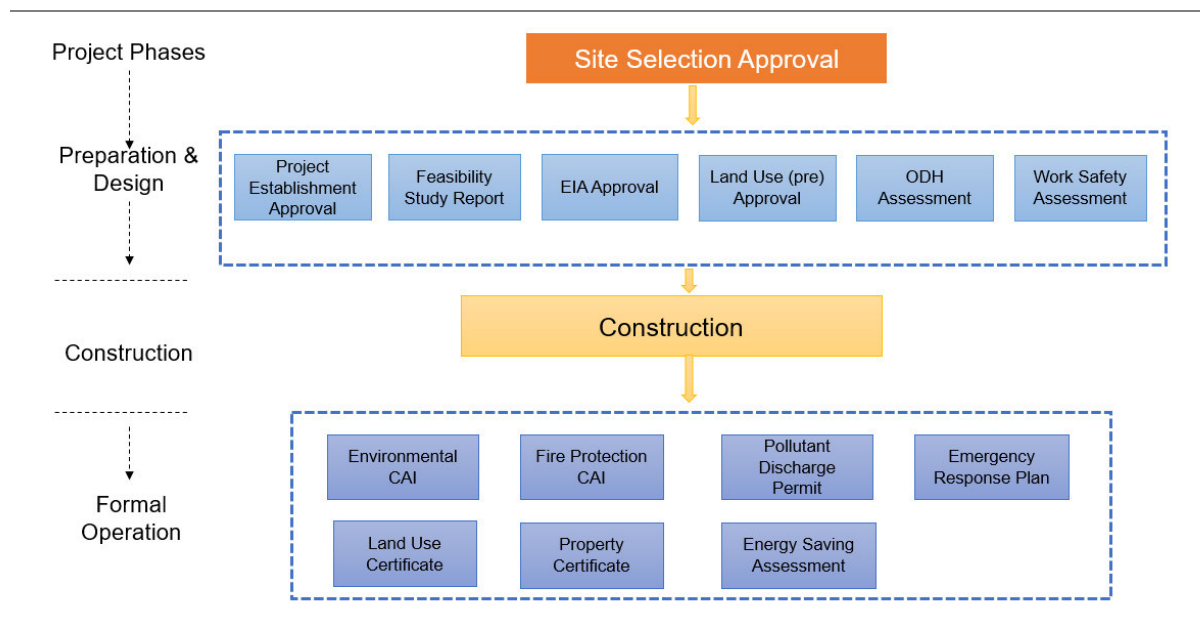
### APPLICATION STANDARDS AND METHODOLOGY

		<p>In November 2017, the air emission self-conducting ECAI has been commenced;</p> <p>In January 2018, the wastewater discharge self-conducting ECAI has been commenced;</p> <p>In December 2018, the boundary noise self-conducting ECAI has been commenced;</p> <p>In September 2020, the solid waste self-conducting ECAI has been commenced.</p>
Pollutant Discharge Permit (PDP)	National Standard	For wastewater and air emission discharge companies, the PDP was required from local EEB, which illustrate the pollutant discharge capacity, discharge points, and monitoring programme.
Fire Protection CAI	National Standard	An approval issued by the local authorities on whether the project comply with fire protection design and implementation requirement.
Work Safety Assessment	National Standard	The report identifies and analysis of project's production and business operation activities of potential danger and harmful factors, and safety standards, to predict the likelihood of accidents and its severity, and then puts forward feasible safety control measures.
Occupational Disease Hazards (ODH) Assessment	National Standard	The report identifies and analysis of potential occupation health hazards within the project's production processes and compare with local standards to predict the likelihood of occupational health hazard and its severity, and then puts forward feasible safety control measures.
Emergency Response Plan (ERP)	National Standard	<p>The ERP includes sudden environment and safety ERPs.</p> <p>The sudden environment ERP consists of applicable standard, environmental risk analysis (including chemical storage and spills, water pollution, soil pollution, ecological conditions, etc.), and emergency response methods.</p> <p>The safety ERP consists of applicable standard, safety risk analysis (including fire, explosion, equipment hazards etc.), and emergency response methods.</p>
Energy Saving Assessment	National Standard	The Energy Saving Assessment consists of applicable standard, energy supply and consumption conditions, and applicable energy saving measures.

*Error! Reference source not found.* below presents the general permitting process that a project will need to maintain compliance over the full life cycle with applicable E&S regulations.





**Figure 2-1: Indicative Project Permitting Flowchart by Project Phases**

Please note that the above flowchart is indicative only under the current regulatory regime, which has been and continues to evolve rapidly. Meanwhile, local implementation of the national level laws and regulations often varies, which may lead to variations to the permitting flowchart presented in this report.

## 2.3 METHODOLOGY

### 2.3.1 Approach

An integrated approach with three steps was proposed by Stantec for subproject level E&S audit as stated below. This approach was subsequently agreed by the ADB.

#### Step 1: Document Request and Desktop-based Review:

Stantec requested documents from Harbin WWTP including (i) CCW and Harbin WWTP ESMS or policies and official commitments related to environmental, health, safety and social safeguards, policies and procedures that would typically be covered by an ESMS; (ii) Information about the system for project planning to manage environmental and social risks; (iii) Information about Harbin WWTP's training records for staff regarding environmental and social safeguards; (iv) Human Resource (HR) management and procurement policies and procedures, gender disaggregated information, labour contract, attendance sheet and salary records in Harbin WWTP; (v) Information about Harbin WWTP's main stakeholder groups, activities through which they are engaged and consulted, and any grievance redress system and its results log; and (vi) Information about the environmental, health, safety and social monitoring records, pollutant prevention and reporting system.

Stantec conducted a review of documentation of Harbin WWTP through intermediaries. Annex A lists the key documents provided by Harbin WWTP and reviewed by Stantec during this E&S audit.

#### Step 2: Video Conference



## ASSET-LEVEL E&S AUDIT REPORT – HARBIN

### APPLICATION STANDARDS AND METHODOLOGY

Stantec conducted a video conference with representative of Harbin WWTP on 1 February 2021. During the video conference, Stantec's E&S team conducted interview with site representative and briefly observed the condition of the Site via video, including the production facilities and auxiliary facilities and surrounding land uses of the Site.

#### Step 3: Gap Analysis and Reporting

Based on the information obtained during Steps 1 and 2, gaps against the AESRs were identified at the Site (refer to Section 3). A CAP setting out the steps that would be required to close the identified gap(s) is outlined in Section 4.

#### 2.3.2 Risk Categorization

Risk levels were adopted in evaluating identified E&S risks and issues against the AESRs: "Red Flag", "High", "Medium", "Low" and "Best Practice" risks as defined in **Table 2-3**.

**Table 2-3: Definition for Risk Categorization**

Risk Level	Definition
<b>Red Flag</b>	Trigger of ADB SPS Prohibited Activities or issue with potential severe consequences and limited opportunities of mitigating, leading to operation shut down (e.g. catastrophic or multiple-casualty accidents; large community or NGO protest(s); reputational damage/possibilities of significant reputational risks arising in the future; impacts to sensitive environmental and social receptors including critical habitats and Indigenous Peoples/Ethnic Minorities/Tribes and criminal proceedings).
<b>High</b>	Significant non-conformance with the AESRs, which may result in operation /construction interruption; and/or affect sensitive receptors, and/or induce community opposition that may damage Owner's/Investor's reputation.
<b>Medium</b>	Non-conformance with the AESRs, which may result in rectification cost or fine, and is unlikely to result in the short-term business discontinuity in current regulatory enforcement context.
<b>Low</b>	Minor regulatory or safeguard non-compliance, which may result in limited cost or only require management time to address the issue.
<b>Best Practice</b>	Best practice; approach is considered prudent but does not pose a compliance issue.



### 3. SITE ASSESSMENT

#### 3.1 BASIC INFORMATION

The Site is located at the junction of Baicai Ditch and Huangjiawaizi Road, Tuanjie Town, Daowai District, Harbin City, Heilongjiang Province, PRC. The location of the Site is shown in *Error! Reference source not found.*

The Site history is mainly obtained through interview with CCW's senior management and onsite management, and is summarized as below:

- Prior to 2013: The history was unknown by the Site representatives;
- 2014: CCW signed the Build-Operate-Transfer (BOT) agreement with Harbin City Water Affair Bureau; construction of the Site conducted by the minority shareholder of the Site, Mr. Liu, was commenced;
- August 2015: Construction of the Site was completed;
- June 2016: Operation of the Site was commenced. Given the municipal wastewater network was not ready in the local area, the treatment scale was about 2,000 t/d;
- January 2018: The treatment scale was gradually expanded to 10,000 t/d;
- 2018 and 2019: An upgrade by adding cloth filter and using chlorine dioxide as disinfectant was conducted;
- 2020: Chlorine dioxide was replaced by sodium hypochlorite as disinfectant.

The scope of the BOT agreement covers the operation of Harbin WWTP for 30 years. No offsite auxiliary facilities such as pipelines, valves or sludge treatment stations are included in the BOT agreement. The wastewater collection pipelines are managed by the local authority including the portions within the site boundaries connecting to the onsite wastewater collection tank. The wastewater collection tank and other wastewater pipelines within the site boundaries are operated and maintained by the site. The Site receives domestic wastewater (majority) and industrial wastewater (minority) from the whole Tuanjie Town with the service area of 76.7 square kilometres (km<sup>2</sup>). The designed wastewater treatment capacity is 40,000 tons per day (t/d), and the actual treatment scale is about 19,000 t/d. The Site runs in a two-shifts working system for 365 days a year, with 23 staffs (including two seasonal workers).

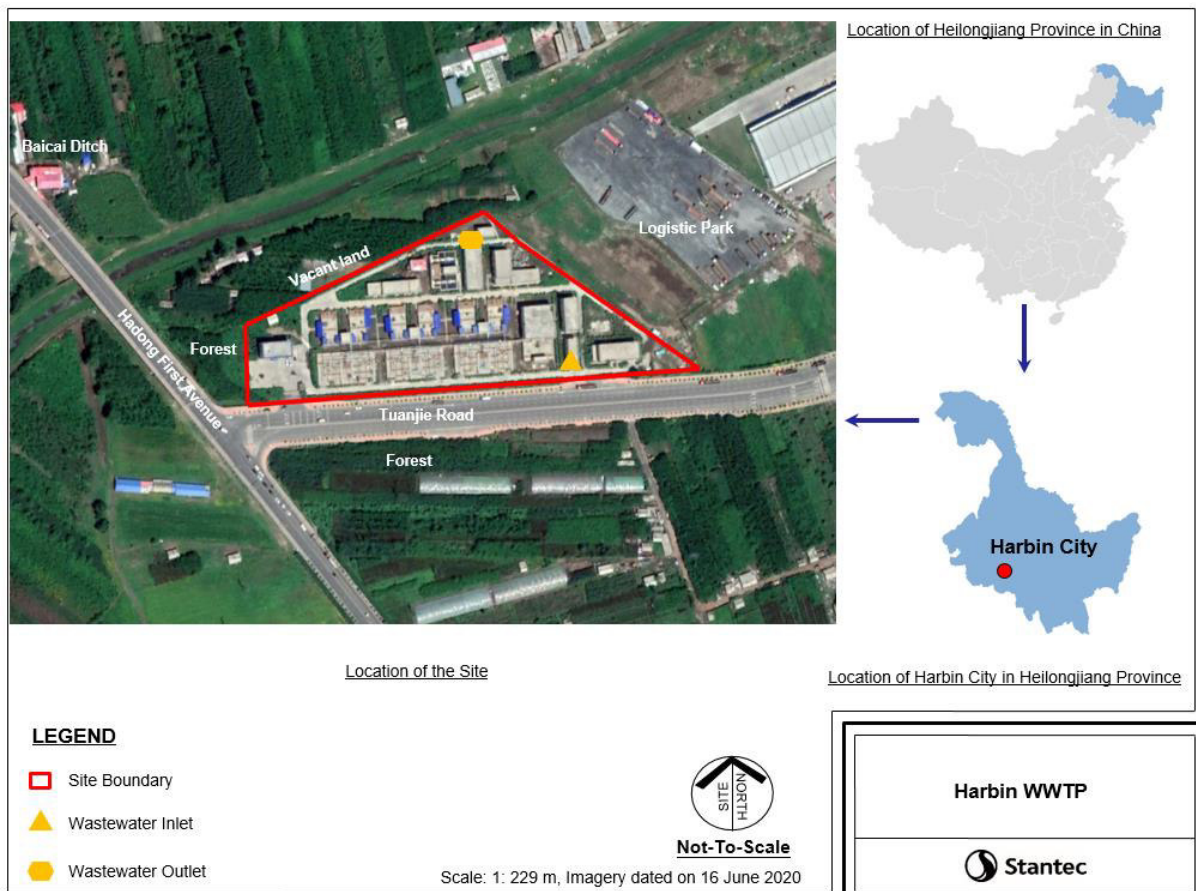
The Site covers a total land area of 34,256.7 m<sup>2</sup>. According to the Site EIA report dated 2012, the buffer zone area is determined as a 150 m radius of the production area. The Adjacent facilities and properties of the Site are described as follows:

- South: Tuanjie Road. Further south is forest.
- North: Vacant land. Further north is the Baicai Ditch residential area (located about 70 m away from the Site).
- West: Forest and Hadong First Avenue.
- East: A logistic park.

The Site is classified as a construction land and is not within area of the ecological red line (which in China refers to the strictly controlled boundary demarcated in accordance with law in key ecological function zones, sensitive and fragile areas of the ecological environment). There are no natural reserves, drinking water protection zone, scenic spot, national key protected animals and plants, seed fields, cultural relics and historic sites located in the 1 km area around the Site. The Site meets the requirements of the overall planning of Harbin City. The buffer zone determined by the EIA reports is 150 m from the Site boundary, and there are no sensitive receptors located within the buffer zone based on review of the documents.



**Figure 3-1: Site Location**



Source: Google Earth Pro

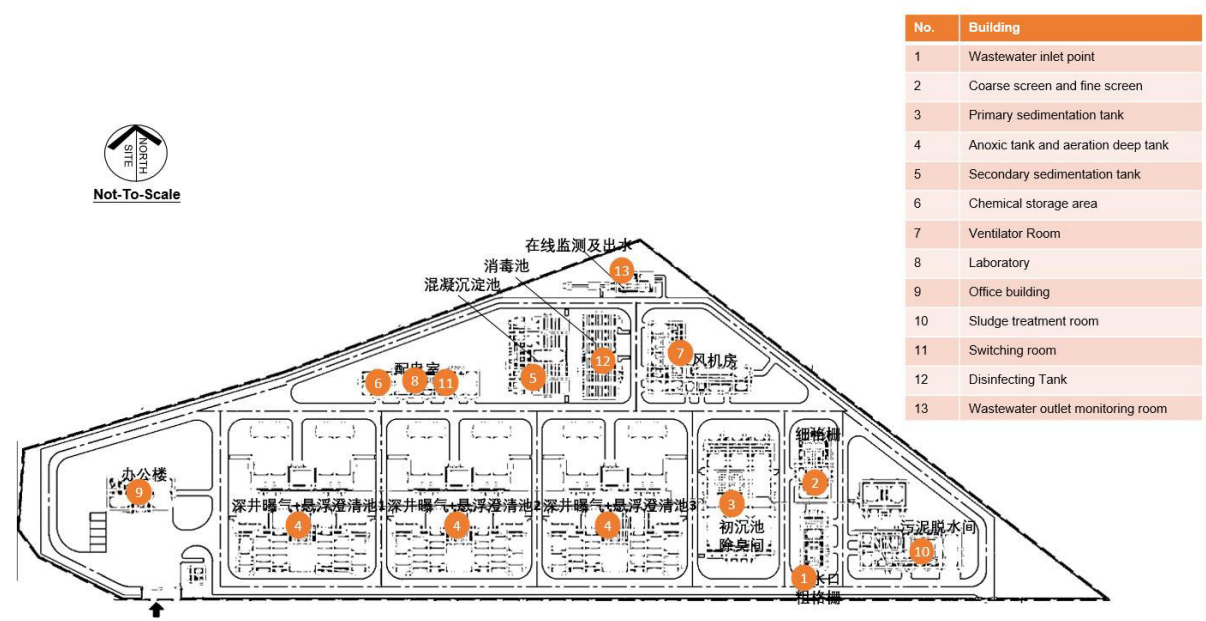
## 3.2 SITE DESCRIPTION

The main structures of the Site cover wastewater treatment facilities, environmental protection facilities, and office building. Pumps houses, switching room, and ventilation room were built, operated and maintained by the Site. The wastewater collection pipelines are managed by the local authority including the portions within the site boundaries connecting to the onsite wastewater collection tank. The wastewater collection tank and other wastewater pipelines within the site boundaries are operated and maintained by the site. In addition, the outlet monitoring room was built by the Site, operated and maintained by the local EEB.

The layout of the Site is presented in **Figure 3-2**.



Figure 3-2: Site Layout



The main treatment processes are Wastewater Feeding, Coarse Screen and Fine Screen, Primary Sedimentation Tank, Anaerobic Tank, Anoxic Tank, Aeration Deep Tank, Sludge Blanket Clarifier, Flocculation Reaction Sedimentation Tank, Continuous Sand Filtration, Disinfection and Final Discharge. Chemical used for wastewater treatment including polymeric ferric sulphate, polyacrylamide, hydrogen chloride, sodium acetium, and sodium hypochlorite. These chemicals are in bulk storage and the corresponding storage condition is described in Section 3.3.3.

The Site adopts Anaerobic-Anoxic-Oxic and Filtration Technologies which are commonly adopted for WWTPs for industrial and domestic wastewater treatment in PRC. Based on review of the available document and interview with site management, no violation with regard to wastewater discharge has been taken place at the Site.

Sludge is dehydrated onsite to around 80% and is transferred by the sludge truck owned and operated by the subproject company to the sludge treatment vendor appointed by the local government as per the BOT agreement.

The treated wastewater shall comply with the Class I Level A Discharge Standard of Pollutants for Municipal Wastewater Plant (2002) and then discharged to the Ashi River.

### 3.3 EHS ASSESSMENT

#### 3.3.1 EHS Management Overview

The EHS issues arising from the Site are under the jurisdiction of Harbin City EEB, Harbin City Health Bureau, Harbin City Emergency Management Bureau and Fire Brigade of Harbin City Public Security Department. Mr. Li Derong (WWTP General Manager) is responsible for the general on-site EHS management. The day-to-day EHS status are reported to the Production Technology Department of CCW corporate directly via weekly, monthly and annual reports.





## ASSET-LEVEL E&S AUDIT REPORT – HARBIN

### SITE ASSESSMENT

The Site inherits the EHS policies and procedures of CCW corporate. Based on interview, a formal Environmental and Social Management System (ESMS) has not been established at the Site.

According to the management interview, at subproject level, all subprojects safety inspections were conducted as follows:

- Subsidiary-level safety overall inspection conducted by the manager of the Tier 2 subsidiaries on a yearly basis. The inspection reports and corresponding mitigation measures are submitted for the corporate for review.
- Subproject-level daily safety and operational inspection is conducted by the representative of Operation Department.

Based on the management interview and document review, the E&S related capital expenditure (Capex) and operating expenses (Opex) application for the subproject is prepared by the subproject manager in October every year, and then submitted for General Manager Office of CCW corporate for review and approval. The Capex (including items such as safety correction, COVID-19 prevention material, etc.) and Opex (including items such as environmental monitoring, equipment maintenance, laboratory material, routine check-ups, PPE, etc.) for Harbin WWTP in 2021 was provided for review, with a total budget of RMB 840,293.

#### Key EHS related findings and issues were summarized as follow:

- A formal environmental and social management system was not developed and implemented by Harbin WWTP.

### 3.3.2 EHS Permit

The permit compliance status of the Site is summarized as follows in the **Table 3-1**:

**Table 3-1: Permit Compliance Status**

Permit	Review
Site Selection Application	Site Selection Application approval approved by Harbin City Housing and Urban-Rural Development Bureau on 21 December 2010
FSR and its approval	FSR approval issued by Harbin City Development and Reform Committee on 23 October 2013
Land Permit	<ul style="list-style-type: none"><li>• Approval of conversion of agricultural land to construction land issued by Harbin City People's Government on 16 October 2011</li><li>• Construction Land-use Certificate of area 34,256.7 m<sup>2</sup> (51 mu) issued by Harbin City People's Government on 22 July 2014</li></ul>
EIA, ECAI and the approvals	<ul style="list-style-type: none"><li>• EIA report and the approval for the initial design of Harbin WWTP, issued by Heilongjiang Provincial EEB on 14 December 2012</li><li>• EIA report and the approval for the technical modification of Harbin WWTP, issued by Harbin City EEB on in 2013. This is for the modification of capacity change, from 50,000 t/d to 40,000 t/d</li><li>• EIA report and the approval for the second time of technical modification of Harbin WWTP, issued by Harbin City EEB on 18 May 2017</li><li>• ECAI report and approval for noise abatement and solid waste treatment issued by the Harbin City EEB on 29 October 2018</li></ul>
PDP	PDP issued by Harbin EEB valid between 14 June 2019 and 13 December 2021
Water Abstraction Permit	Not applicable as Harbin WWTP does not utilise groundwater
Fire Protection CAI	FCAI Online Registration Record issued by Fire-fighting Brigade of Daowai District
Work Safety CAI	Work Safety CAI report prepared by Heilongjiang Hehua Safety and Hygiene Technology Consulting Co., Ltd in August 2017



## ASSET-LEVEL E&S AUDIT REPORT – HARBIN

### SITE ASSESSMENT

Permit	Review
Occupational Disease Hazards Assessment	Occupational Disease Hazards Control Effectiveness Assessment prepared by Heilongjiang Puhua Environmental Testing Co., Ltd in February 2018
Sudden Environmental Emergency Response Plan (ERP) and its registration record	Sudden Environmental Emergency Response Plan (ERP) and its registration record issued by Daowai District EEB dated 25 September 2018
Safety Production ERP and its registration record	Safety Production ERP dated August 2018
Energy Saving Assessment and its approval	Issued by Heilongjiang Provincial Development and Reform Committee on 8 August 2013

The EIA reports prepared for this project during the permitting phase identified air emission/odour and solid waste/sludge as the key environmental impacts during construction and operation and the project was required implementing corresponding dust control measures such as sprinkler for construction vehicles, proper treatment of construction waste, etc. during construction and regular boundary odour monitoring and ensuring sludge is treated by the third party appointed by the local government during operation. The content of the EIA report is generally in line with an environmental assessment required by ADB's SPS.

During construction, there are typical EHS requirements in PRC, including the dust control, solid waste management, Personal Protective Equipment (PPE), regular monitoring, etc. No findings were identified.

The project started its operation in 2016, and the ECAI was obtained in 2018 which confirmed the that the WWTP complied with the standards of boundary odour, wastewater discharge, boundary noise and solid waste treatment.

#### **Key EHS related findings and issues were summarized as follow:**

- The Work Safety Assessment and Occupational Disease Hazards Assessment should be conducted every three years. Site management reported that these assessments will be conducted in 2021.
- No Safety Production ERP registration records was provided for review as required.

### **3.3.3 EHS Performance**

#### **Water Supply, Domestic and Storm Wastewater**

According to the management interview, water used for sanitary purpose is municipal tap water; water for drinking purpose is purchased bottled water; water for production purposes (wastewater treatment) is the treated wastewater from the onsite facility.

A wastewater drainage system has been installed on the Site, whilst no storm water drainage system has been installed. The domestic wastewater generated onsite is collected and discharged to the onsite facility for further treatment, and is ultimately discharged to the Baicai Ditch, which is connected to the Ashi River.

#### **Wastewater and Sludge from the Wastewater Treatment Process**



## ASSET-LEVEL E&S AUDIT REPORT – HARBIN

### SITE ASSESSMENT

According to the Site's EIA documents, the Ashi River is a Type V water body as defined in the Environmental Quality Standards for Surface Water (2002), which refers to surface water mainly used for agriculture and landscape. Site management reported that the treated wastewater discharge from Harbin WWTP is strictly monitored as the following:

- Harbin City EEB has installed the real-time influent and effluent wastewater online monitoring system at the wastewater discharge point of the Site to conduct pollutant tests on a two-hour basis;
- Heilongjiang Provincial EEB conducts treated wastewater sampling test on an annual basis;
- Harbin City EEB conducts treated wastewater sampling test on a random basis;
- Daowai District EEB conducts treated wastewater sampling test about 7-8 time per year;
- Harbin WWTP engages a licensed third party to conduct wastewater test on a monthly basis;
- The laboratory of Harbin WWTP conducts the influent and effluent wastewater test once a day.

The five pollutants including chemical oxygen demand (COD), suspend solids (SS), total nitrogen, total phosphorus and ammonia nitrogen are monitored by both onsite laboratory and online monitoring system every day. Based on the internal monitoring data (in average of 2020) and the provided monitoring reports conducted by licensed third parties dated September 2020 (refer to **Table 3-2**), the results met the Class I Level A Discharge Standard of Pollutants for Municipal Wastewater Plant (2002). As there is no ADB or IFC standards for the wastewater discharge, the national regulatory standard is the applicable standard.

**Table 3-2: Wastewater Monitoring Results**

Monitoring Type	Pollutant	Unit	Monitoring Results of wastewater discharge point	Local Standard	Compliance Statue
Internal Monitoring (in average of 2020)	COD	mg/L	18.37	40	Meet the standards
	SS	mg/L	3.29	10	Meet the standards
	Total nitrogen	mg/L	6.45	15	Meet the standards
	Total phosphorus	mg/L	0.07	0.5	Meet the standards
	Ammonia nitrogen	mg/L	0.34	5	Meet the standards
Third Party Monitoring (dated May 2019)	pH	-	6.8	6-9	Meet the standards
	SS	mg/L	6	10	Meet the standards
	COD	mg/L	15	50	Meet the standards
	BOD <sub>5</sub>	mg/L	3.7	10	Meet the standards
	NH <sub>3</sub> -N	mg/L	0.233	5	Meet the standards
	Total Phosphorus	mg/L	0.13	0.5	Meet the standards
	Anionic surfactant	mg/L	0.161	0.5	Meet the standards
	Oil and grease	mg/L	ND	1	Meet the standards
	Petro	mg/L	ND	1	Meet the standards





## ASSET-LEVEL E&S AUDIT REPORT – HARBIN

### SITE ASSESSMENT

Monitoring Type	Pollutant	Unit	Monitoring Results of wastewater discharge point	Local Standard	Compliance Statue
	Chroma	-	5	30	Meet the standards
	Total coliform bacteria	MPN/L	150	$1 \times 10^3$	Meet the standards
	Total mercury	mg/L	$7.5 \times 10^{-5}$	0.001	Meet the standards
	Alkyl mercury	ng/L	ND	Not Allowed	Meet the standards
	Total cadmium	mg/L	ND	0.01	Meet the standards
	Total chromium	mg/L	ND	0.1	Meet the standards
	Hexavalent chromium	mg/L	ND	0.05	Meet the standards
	Total arsenic	mg/L	ND	0.1	Meet the standards
	Total lead	mg/L	0.02	0.1	Meet the standards

\*Note:

1. The monitoring were conducted by Heilongjiang Weizheng Testing Co., Ltd and Heilongjiang Lingxiao Environmental Monitoring Co., Ltd

2. Local Standard refers to Class I Level A Discharge Standard of Pollutants for Municipal Wastewater Plant (2002)

3. ND means Not Detected

In China, the annual pollutant mass loading quotas are allocated to WWTP projects during the EIA stage based on (1) designed wastewater treatment capacity; (2) pollutant removal efficiency and discharge limits; (3) local environmental capacity. The mass loading quotas for wastewater pollutants COD, ammonia nitrogen, total nitrogen and total phosphorus are 386.5 t/a, 50.159 t/a, 115.97 t/a and 3.866 t/a, respectively. Given the current actual wastewater treatment is below the designed wastewater treatment capacity (19,000t/d versus 40,000 t/d), and the treated wastewater meet the local standards, Harbin WWTP is well below the allocated pollutant mass loading quotas.

### Air Emission

The main sources of air emission in this Site is fugitive odour from the general wastewater treatment processes, stack odour from the wastewater treatment tanks, and a biomass boiler for heating purpose during heating season. Odour from the wastewater treatment tank is collected and treated by two sets of biological filter towers before being discharged to the air via two 15 m high stacks. Air emission from the 2 t/h biomass boiler is reportedly treated by a bag filter and a cyclone dust collector before being discharged to the air via a stack. Harbin WWTP engages a licensed third party to conduct fugitive and stack odour monitoring on a half year basis following the methodology by Analysis Methods for air and gas emission monitoring (2003). No air emission monitoring has been conducted at the boiler.

Based on the latest sampled monitoring report conducted by a licensed third party dated September 2020 provided for review (**Table 3-3**), the results met the Odour Pollutant Discharge Standards (1993). As there is no ADB or IFC standards for the fugitive air emission pollutants, the national regulatory standard is the applicable standard.



# ASSET-LEVEL E&S AUDIT REPORT – HARBIN

## SITE ASSESSMENT

**Table 3-3: Odour Monitoring Results**

### Fugitive

Monitoring date		Location	Pollutant	Unit	Monitoring Results	Local Standard	Compliance Statue
8 September 2020	The first time	Boundary	NH <sub>3</sub>	mg/m <sup>3</sup>	0.83	1.5	Meet the standards
			H <sub>2</sub> S	mg/m <sup>3</sup>	0.022	0.06	Meet the standards
			Odour	——	<10	20	Meet the standards
			CH <sub>4</sub>	mg/m <sup>3</sup>	0.98	1	Meet the standards
	The second time	Boundary	NH <sub>3</sub>	mg/m <sup>3</sup>	0.84	1.5	Meet the standards
			H <sub>2</sub> S	mg/m <sup>3</sup>	0.023	0.06	Meet the standards
			Odour	——	<10	20	Meet the standards
			CH <sub>4</sub>	mg/m <sup>3</sup>	0.98	1	Meet the standards
	The third time	Boundary	NH <sub>3</sub>	mg/m <sup>3</sup>	0.88	1.5	Meet the standards
			H <sub>2</sub> S	mg/m <sup>3</sup>	0.023	0.06	Meet the standards
			Odour	——	<10	20	Meet the standards
			CH <sub>4</sub>	mg/m <sup>3</sup>	0.97	1	Meet the standards
	The fourth time	Boundary	NH <sub>3</sub>	mg/m <sup>3</sup>	0.82	1.5	Meet the standards
			H <sub>2</sub> S	mg/m <sup>3</sup>	0.022	0.06	Meet the standards
			Odor	——	<10	20	Meet the standards
			CH <sub>4</sub>	mg/m <sup>3</sup>	0.98	1	Meet the standards

### Stack

Monitoring date		Location	Pollutant	Unit	Monitoring Results	Local Standard	IFC Standard	Compliance Statue
8 September 2020	The first time	Air emission discharge point	Air flow	m³/h	10022	——	/	Meet the standards
			Odour	kg/h	——	2000	/	Meet the standards
			NH <sub>3</sub>	kg/h	0.27	4.9	/	Meet the standards
			H <sub>2</sub> S	kg/h	0.001	0.33	/	Meet the standards
	The second time	Air emission discharge point	Air flow	m³/h	9886	——	/	Meet the standards
			Odour	kg/h	——	2000	/	Meet the standards



## ASSET-LEVEL E&S AUDIT REPORT – HARBIN

### SITE ASSESSMENT

Monitoring date	Location	Pollutant	Unit	Monitoring Results	Local Standard	IFC Standard	Compliance Statue
		NH <sub>3</sub>	kg/h	0.27	4.9	/	Meet the standards
		H <sub>2</sub> S	kg/h	0.001	0.33	/	Meet the standards
	The third time	Air flow	m <sup>3</sup> /h	10156	——	/	Meet the standards
		Odour	kg/h	——	2000	/	Meet the standards
		NH <sub>3</sub>	kg/h	0.29	4.9	/	Meet the standards
		H <sub>2</sub> S	kg/h	0.001	0.33	/	Meet the standards
	The fourth time	Air flow	m <sup>3</sup> /h	10023	——	/	Meet the standards
		Odour	kg/h	——	2000	/	Meet the standards
		NH <sub>3</sub>	kg/h	0.27	4.9	/	Meet the standards
		H <sub>2</sub> S	kg/h	0.001	0.33	/	Meet the standards

\*Note:

1. The monitoring is conducted by Heilongjiang Weizheng Testing Co., Ltd

2. Local Standard refers to Discharge Standard of Pollutants for Municipal Wastewater Plant (2002)

### **Noise Emission**

The Site boundary noise is subject to Class II of Emission standard for industrial enterprises noise at boundary (2008), which requires the maximum 60 dB(A) during the daytime (6:00 AM – 10:00 PM) and 50 dB(A) at night (10:00 PM – 6:00 AM). No boundary noise monitoring report was provided for review.

### **Chemical Management and Solid Wastes**

Chemicals consumed by the Site are summarised below:

- Polymeric ferric sulphate is used in secondary sedimentation tank to remove total phosphorus and guarantee the effluent total phosphorus is within the discharge limit. The polymeric ferric sulphate are stored in one aboveground storage tank.
- Polyacrylamide is used in sludge dewatering equipment to improve the sludge dewatering efficiency. The polymeric ferric sulphate are stored in 20kg bags in sludge treatment room.
- Sodium aceticum is used in biological system to optimize Carbon/Nitrogen ratio in the wastewater and improve total nitrogen removal efficiency. The sodium aceticum are stored in one aboveground storage tank (AST).
- Sodium hypochlorite and hydrogen chloride are used in disinfection tank for disinfection purpose. The hydrogen chloride and sodium hypochlorite are stored in aboveground storage tanks.
- Limited amount lubricant/machine oil that are used for maintenance purposed, are in 200 litre drums and only purchased upon demand.
- Limited amount of reagents such as hydrogen chloride that are used in the laboratory for routine internal water testing purpose, are in bottles stored in the onsite laboratory. The valid precursor chemicals registration record was provided for review.

All chemicals are stored in onsite aboveground storage tanks and one chemical storage room (with an area of about 100 m<sup>2</sup>) with SOP, MSDS and safety guidelines posted in the area.



## ASSET-LEVEL E&S AUDIT REPORT – HARBIN

### SITE ASSESSMENT

Hazardous wastes (HW) such as empty chemical containers, waste lubricant oil and waste liquid are stored in the designated HW warehouse (about 10 m<sup>2</sup>) with secondary containment, weather-proof and warning sign provisions. The HW are treated by licensed hazardous waste vendor. The corresponding HW contract and transfer manifests were provided for review.

#### **Domestic Solid Waste Management**

The solid wastes disposal methods are summarised below:

- Domestic wastes including domestic waste generated onsite and the solid waste from the coarse and fine screens, and waste packaging materials are collected and transported by the local sanitation station to local municipal domestic waste treatment facilities for landfill or incineration on a regular basis.
- Based on the EIA documents, municipal wastewater treatment sludge is not categorized as hazardous waste as per Chinese regulation. Sludge is dehydrated onsite to around 80% and is transferred by the sludge truck owned and operated by the subproject company to the sludge treatment vendor appointed by the local government. SOP and safety guidelines were posted in the area. Reportedly no treatment contract was signed and sludge transfer manifests were not provided for review.

#### **Emergency Preparedness and Training**

The Site has prepared both Sudden Environmental and Safety Production ERPs. The Current Safety Production and Sudden environment ERP covers fire-fighting, electric shock, machine injury, drowning, poisoning and asphyxiation, high temperature, vehicle accident, confine space, chemical spills, incidental discharge, natural disaster emergency response plans. Based on the management interview and document review, the training records covering fire safety, production safety were provided for review. However, no drill records were provided for review. In addition, the flooding ERP is not in place and no corresponding drills have been conducted.

Fire-fighting equipment installed in site include fire hydrants, fire distinguishers, fire water tank and pumps, emergency lights and evacuation signs. Reportedly regular inspection was conducted for all onsite fire-fighting equipment.

#### **Onsite Occupational Health and Safety**

Based on document review, key occupational disease hazards identified at the Site included chemical exposure and noise. Proper PPE (including helmets, gloves, safety shoes, and masks), was provided at the Site. The occupational health check-ups are provided to the employees who are exposed to occupational disease hazards and the records dated 2020 were provided for review.

Specially, the COVID-19 prevention methods and procedure were established according to CCW corporate and local authorities' requirements. The COVID-19 prevention equipment, including masks, clinic thermometer, hand washing liquid and disinfection agent are provided onsite. In addition, management measures such as travel restriction, quarantine requirements, access registration, body temperature measuring as per the local authorities are also implemented by the Site.

Site management reported that no incidents/accidents have taken place to the onsite staff. According to the Site representatives and document review, the operators involved in live-line work have obtained the Electrician Certificate for High-voltage electrical operation. Site management reported that there is a total of three sets of special equipment (three cranes) are installed. The valid special equipment registration certificates and special equipment operator certificates were provided for review.



## ASSET-LEVEL E&S AUDIT REPORT – HARBIN

### SITE ASSESSMENT

#### **Community Occupational Health and Safety**

Given no construction activities were conducted onsite, no population influx was caused at the time of the audit. The health and safety risks exposed to surrounding communities mainly includes noise and odour during operation period, emergency accidents, traffic congestion and accident, and surface or underground water contamination. Mitigation measures were adopted as follows:

- The odour hazards are monitored regularly to ensure the compliance status.
- The wastewater treatment and anti-seepage measures are strictly complied with national regulations.
- Vehicle speed is controlled, and the truck used for sludge transportation is equipped with cover to prevent leakage of the sludge along the transportation route.

#### **Electricity Supply**

Based on the electricity fee provided by the Site, the 2020 electricity consumption (from January to November, as the data for December 2020 was not ready at the time of preparation of this report) for Harbin WWTP is 5,048,915 kwh. There are no energy efficiency measures planned or in place.

#### **Restricted Substances**

No onsite sources of Asbestos Containing Materials (ACMs), Polychlorinated Biphenyls (PCB), Ozone Depleting Substances (ODSs) or radioactive materials were reported by Site management.

#### **Notices of Violation**

Based on desktop research, and interview with the Site management, no nuisance or complaints regarding the site's noise and vibration, dust or other environmental aspects were identified.

#### **Ecosystem**

Given the treated wastewater can meet the Class I Level A Discharge Standard of Pollutants for Municipal Wastewater Plant (2002), the treated wastewater discharge is not expected to impact the aquatic ecosystem of the Baicai Ditch and Ashi River.

During the ECAI monitoring in 2018, five groundwater monitoring wells were installed within and outside the Site to monitor the potential impact to the local groundwater caused by operation of the Site. Based on the ECAI report, the local groundwater can meet the Environmental Quality Standard for Ground Water (2017).

The site area was a modified habitat prior to the construction of the Site, hence, biodiversity impact of the Site is considered limited. No protected fauna and flora were identified in the local area. Given the type of operation of the Site, the potential impact is considered limited.

#### **Staff Capacity and Training**

The Site provides two-level training to its new employees, namely plant-level and position-level, covering the SOPs, general plant rules and EHS aspects such as chemical handling (if needed), PPE, etc. In addition, the EHS training records covering fire safety, production safety were provided for review.

**Key EHS related findings and issues (apart from which mentioned in Section 3.3.1 and 3.3.2) were summarized as follow:**



### SITE ASSESSMENT

- No air emission monitoring has been conducted at the boiler.
- No boundary noise monitoring report was provided for review.
- Sludge transfer manifests were not provided for review.
- No drill records as per Safety and Sudden environmental ERP were provided for review.
- The flooding ERP is not in place and no corresponding drills have been conducted.

## 3.4 SOCIAL ASSESSMENT

### 3.4.1 Land Acquisition and Resettlement

In February 2014, Jiangsu Jiaqing reached the Build-Operate-Transfer (BOT) agreement for Harbin WWTP with Harbin City Water Affair Bureau. In March 2014, Jiangsu Jiaqing established Harbin Jiaqing Water Technology Development Co., Ltd. (Harbin Jiaqing), which constructed the Site in May 2014 and finished construction in August 2015. As the local sewage pipe network has not been constructed, Harbin WWTP had not been put into operation until January 2018. The Site locates at the junction of Baicai Ditch and Huangjiawaizi Road, Tuanjie Town, Daowai District, Harbin City, occupying a total land area of about 34,256.7m<sup>2</sup> (51.44 mu<sup>2</sup>).

The Site management reported that the land acquisition was occurred in 2013 to 2014, and land acquisition impacted Baicai Ditch of Daowai District and mainly impacted farmland, as well as some standing crop and land attachments. There was no physical displacement in this process. Harbin Jiaqing has obtained the Construction Land-use Certificate of the site area on 22 July 2014 issued by Harbin People's Government. The land acquisition and resettlement conducted by the local government. There is no detailed impact data such as land acquisition impact rosters, compensation agreement, compensation payment voucher, etc. for review. The Site management also added that Harbin WWTP has not received any complaints related to land acquisition and resettlement so far.

#### **Key social related findings and issues were summarized as follows:**

- No documents (such as asset inventory, compensation agreement, etc.) regarding project land acquisition for the Site were held by Harbin WWTP. There is no in-place procedure to document land acquisition activities, as well as monitor and evaluate the payment status, which is a non-conformance against ADB SR2.

### 3.4.2 Indigenous People

The Site is located at the junction of Baicai Ditch and Huangjiawaizi Road, Tuanjie Town, Daowai District of Harbin City. The ethnic Han is predominant in PRC as well as in the local area and there are no ethnic minority residential areas were identified or affected. Therefore, ADB SR3 is not triggered for the Site.

### 3.4.3 Stakeholder Engagement and Consultation

It is identified no stakeholder analysis has been conducted for Harbin WWTP and no document records regarding stakeholder engagement were available for review.

According to interview with CCW's corporate, Stantec's onsite consultation, as well as similar project experience, three major stakeholder groups are identified for this type of project, including (a)

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<sup>2</sup> Mu is the Chinese land area unit, and one mu is approximately equal to 666 square meters.



### SITE ASSESSMENT

government authorities, such as Harbin EEB and Emergency Management Bureau, (b) local community (wastewater discharge unit / individual), including the logistic park located in east of the Site, (c) local residents affected by land acquisition, i.e. Baicai Ditch Village. Harbin WWTP is responsible for liaison with local government.

The Site is following PRC's laws and regulations. In China, consultation with the local communities is a regulatory requirement during the process of EIA as well as land acquisition and resettlement. A certain number of local residents were consulted through questionnaire survey while preparing the EIA Report. Among the interviewees, most expressed support to the Site, while small part of people expressed not concerned. No interviewees expressed objection.

#### **Key social related findings and issues were summarized as follow:**

- There is no formalized stakeholder engagement procedure established for Harbin WWTP to manage stakeholder identification, analysis, engagement especially for dealing with those concerns related with land acquisition and resettlement, and other community affairs.

### **3.4.4 Grievance Redress**

It was identified there are no grievance procedures or designated personal for managing the grievances of employees, local communities and other stakeholders. No records of grievances are available for review.

For the workers' grievances, the Site management reported that the workers (including two seasonal workers) usually may file a grievance to the HR directly, if the HR cannot address the grievance, it will be reported to the site general manager. Usually, employees' complaints can be properly resolved at the HR level, and according to the general manager, Mr. Li, there are no grievances reported to date.

For the community grievances, the management reported that they have not received any grievances directly so far, the grievances (if any) raised by the local communities would normally be received by the local government. The subproject company would be informed by the local government in case grievances received. The representative from the Environmental Inspection Team of local EEB also stated that no complaints from the local community has been received since the operation of Harbin WWTP. No grievance has been received to date reportedly.

#### **Key social related findings and issues were summarized as follow:**

- There is no system in place to record and track the complaints raised by the local community, employees and construction workers during construction and operation phases, which is a non-conformance against ADB safeguards.

### **3.4.5 Labour and Social Protection**

There were 23 employees directly hired by the Site, including one general manager, two technicians, nine operational staff, two maintenance staff, two laboratory staff, one sludge staff, one financial staff, one security staff, one chef, one cleaner and two seasonal workers. All the 21 out of 23 employees are formal contracted workers. According to Ms. Zhao from HR department of CCW, there were two seasonal staff during heating season and they are treated equally with formal contracted workers in payment. No temporary, dispatching, and outsourcing workers were identified at the Site. All the 23 employees are Han Chinese, 3 out of 23 are female and the rest 20 employees are male.

Reportedly, the workers except for the operating workers are typically working in one shift (8:00~12:00 and 13:30~17:30) between Monday and Friday. The nine operating workers were divided into three groups with two shifts (8:30~20:30 and 20:30~8:30 respectively). Each shift had one responsible staff. The Site adopted the comprehensive working hour system for operating workers, however, no approval



### SITE ASSESSMENT

from the Labour Bureau were provided for review. Wages are paid on the next 15th of each month. The Site provided the payroll records in July 2020 for all 23 employees for review. The payroll record includes working hours and overtime, normal wage, overtime wage and social insurance. The normal wages for workers were above the minimum wage requirement. In July 2020, there was one out of 12 workers (run in one shift) overtime working for 5 days (about 40 hours) in this month. No underage or juvenile workers were identified onsite. No sexual harassment or discrimination was identified during onsite interview.

#### **Key social related findings and issues were summarized as follow:**

- The WWTP adopts the comprehensive working hour system for operating workers, however, no approval from the labour bureau were provided for review. This is a non-compliance against PRC regulations.
- The monthly overtime hours of 1 out of 12 workers (run in one shift) is 40 hours, which exceeded the PRC regulatory requirement (no more than 36 hours per month) in July 2020.

### **3.4.6 Gender and Development**

Although there are no specific procedures regarding gender and development identified in any of the Site's existing policies and procedures, no indication of gender inequality or discrimination is identified from document review and interview.

To date, 3 out of the 23 workers at the Site companies are female, including one laboratory staff, one financial staff and one chef. The males are skilled workers primarily focusing on engineering, whilst most females on non-engineering positions such as administration and logistics. The consulted female employees are treated equally in payment, training and promotion. All the female employees at the Site are entitled to the same specific benefits (98 days of maternity leave, women's toilets, and small gifts on Women's Day) as other females in the Company. Stantec's interview with randomly selected operators did not identify any concern over gender composition of the positions.

No noncompliance regarding gender and development was identified against either the PRC regulations or ADB SPS for the Site. In addition, according to consultation with both site management and the randomly selected workers, no disproportionate impacts were caused by the Site on women.





## ASSET-LEVEL E&S AUDIT REPORT – HARBIN

### CORRECTIVE ACTION PLAN

## 4. CORRECTIVE ACTION PLAN

**Table 4-1** summarises the E&S issues identified at Harbin WWTP. As implementing the actions described below might signify economic costs to different degrees, estimations were not made.

**Table 4-1: Harbin WWTP - Findings and Recommended CAP**

No.	Applicable E&S Standards	Theme	Description of Issue(s)	Suggested Corrective Action(s)	Risk Level	Suggested Time Frame	Completion Indicator(s)
1	ADB SPS 1 and 2	E&S Management	At the time of the audit, a formal Environmental and Social Management System (ESMS) was not developed onsite.	Upon completion of development of the corporate ESMS, the Site should seek for assistance from the CCW corporate and developed its own subproject level ESMS covering EHS, HR and Social aspects. The subproject level ESMS should be implemented by qualified and trained onsite personnel.	High	1 month after adoption of corporate level ESMS  [6 months after ESMS adoption]	Development and adoption of Subsidiary level ESMS  ESMS implementation and training record  Updates in the annual E&S performance report to ADB on the effectiveness of ESMS implementation
2	ADB SPS 1	EHS Permit	The Work Safety Assessment and Occupational Disease Hazards Assessment should be conducted every three years. Site management reported that these assessments will be conducted in 2021.	The Site should engage qualified third parties to prepare the Work Safety Assessment and Occupational Disease Hazards Assessment.	Low	6 months after disbursement	Work Safety Assessment and Occupational Disease Hazards Assessment reports



## ASSET-LEVEL E&S AUDIT REPORT – HARBIN

### CORRECTIVE ACTION PLAN

No.	Applicable E&S Standards	Theme	Description of Issue(s)	Suggested Corrective Action(s)	Risk Level	Suggested Time Frame	Completion Indicator(s)
3	ADB SPS 1	Emergency Response	No Safety Production ERP registration records was provided for review. In addition, flooding ERP are not in place and no corresponding drill or drills for other scenarios have been conducted.	The Site should consult with the local Emergency Management Bureau in this regard and take action accordingly. As a minimum, supplementary ERP covering flooding should be prepared and corresponding drills should be conducted.	Medium	Prior to disbursement  [same time as ESMS]  6 months after disbursement	Communication records of consultation with the Emergency management Bureau on next steps  ERP and the Supplementary ERP included in the Subsidiary level ESMS  ERP registration record and drill records
4	ADB SPS 1	Pollution Prevention and Abatement	No air emission monitoring has been conducted at the boiler.	The Site should engage licensed third parties to conduct periodic air emission monitoring at the boiler and ensure the compliance status.	Medium	3 months after disbursement	Boiler air emission monitoring report
5	ADB SPS 1	Pollution Prevention and Abatement	No boundary noise monitoring was provided for review.	The Site should engage licensed third parties to conduct periodic boundary noise monitoring and ensure the compliance status as per the PDP.	Medium	3 months after disbursement	Boundary noise monitoring report
6	ADB SPS 1	Pollution Prevention and Abatement	Sludge transfer manifests were not provided for review.	The Site should ensure the sludge is treated by the vendor appointed by the local government and maintain the transfer manifests.	Low	3 months after disbursement	Sludge transfer manifests
7	ADB SPS 2	Involuntary Resettlement	No documents (such as asset inventory, compensation agreement, etc.) regarding project land acquisition for the Site were provided for review.	Upon development and implementation of the corporate ESMS, the Site should follow the corporate Resettlement Policy Framework to document the	Medium	9 months after disbursement	A Land Acquisition audit report prepared by qualified E&S consultant in line with requirement set in SPS 2 Land Use Pre-approval



## ASSET-LEVEL E&S AUDIT REPORT – HARBIN

### CORRECTIVE ACTION PLAN

No.	Applicable E&S Standards	Theme	Description of Issue(s)	Suggested Corrective Action(s)	Risk Level	Suggested Time Frame	Completion Indicator(s)
				compensation payment and evaluate its status.			
8	ADB SPS 2	Stakeholder Engagement	There is no system/ procedure in place to guide the Site to identify stakeholders, make analysis, and conduct engagement.	Upon development and implementation of the corporate ESMS, the Site should develop a procedure as part of E&S for the purpose of managing stakeholder engagement process.	Low	[same time as ESMS]	A stakeholder engagement plan (SEP)
9	ADB SPS 2	Grievance Redress	There is no system in place to record and track the complaints raised by the local community, employees and construction workers during construction and operation phases. Thus, no record of previous grievances was available for review.	Upon development and implementation of the corporate ESMS, the Site should develop a site-specific grievance redress procedure to collect and document any complaints and grievances raised by the employees and the broader local community.	Low	[same time as ESMS]	Site specific grievance mechanism (including the employees and the local community) and grievance records
10	Social Protection	Labour and Social Protection	The Site adopts the comprehensive working hour system for operating workers, however, no approval from the Labour Bureau were provided for review.	The Site should consult with the local Labour Bureau and apply for the approval of Comprehensive Working Hour as appropriate.	Low	6 months after disbursement	Communication records and/or approval of Comprehensive Working Hour
11	Social Protection	Labour and Social Protection	The monthly overtime hours of 1 out of 12 workers (run in one shift) is 40 hours, which exceeded the PRC regulatory requirement (no more than 36 hours per month) in July 2020.	The Site should reduce the overtime hours within 36 per month for the workers working in one shift.	Low	6 months after disbursement	Attendance records



## ASSET-LEVEL E&S AUDIT REPORT – HARBIN

Annex A: LIST OF DOCUMENT REVIEWED

### Annex A: LIST OF DOCUMENT REVIEWED

No.	Name
1	Site Selection Application approval approved by Harbin City Housing and Urban-Rural Development Bureau on 21 December 2010
2	FSR approval issued by Harbin City Development and Reform Committee on 23 October 2013
3	FSR approval for the Phase I development upgrade issued by Harbin Hi-tech District Economic Development Bureau on 19 July 2019.
4	EIA report and the approval for the initial design of Harbin WWTP, issued by Heilongjiang Provincial EEB on 14 December 2012
5	EIA report and the approval for the technical modification of Harbin WWTP, issued by Harbin City EEB on in 2013
6	EIA report and the approval for the second time of technical modification of Harbin WWTP, issued by Harbin City EEB on 18 May 2017
7	ECAI report and approval for noise abatement and solid waste treatment issued by the Harbin City EEB on 29 October 2018
8	PDP issued by Harbin EEB valid between 14 June 2019 and 13 December 2021
9	Sampled environmental monitoring reports (regarding treated wastewater and air) dated 2020
10	HW Disposal Contract
11	Sampled HW transfer manifest dated 2020
12	Sludge Disposal Contract signed with Qinjun Landscape Construction Co., Ltd., valid from 25 May 2020 to 24 May 2021.
13	Sampled precursor chemicals registration records dated 2020
14	FCAI Online Registration Record issued by Fire-fighting Brigade of Daowai District
15	Work Safety CAI report prepared by Heilongjiang Hehua Safety and Hygiene Technology Consulting Co., Ltd in August 2017
16	Occupational Disease Hazards Control Effectiveness Assessment prepared by Heilongjiang Puhua Environmental Testing Co., Ltd in February 2018
17	Sudden Environmental Emergency Response Plan (ERP) and its registration record issued by Daowai District EEB dated 25 September 2018
18	Safety Production ERP dated August 2018
19	Energy Saving Assessment and its approval issued by Heilongjiang Provincial Development and Reform Committee on 8 August 2013
20	The valid special equipment registration certificates, inspection reports and special equipment operator certificates were provided
21	Sampled on the job occupational health check-up report dated 2020
22	EHS management procedures and training records.
23	Approval of conversion of agricultural land to construction land issued by Harbin People's Government on 16 October 2011
24	Construction Land-use Certificate of area 34,256.7 m <sup>2</sup> (51 mu) issued by Harbin People's Government on 22 July 2014
25	Payroll records in July 2020



ASSET-LEVEL E&S AUDIT REPORT – HARBIN

Annex B: STAKEHOLDERS ENGAGED DURING THE E&S AUDIT

Annex B: STAKEHOLDERS ENGAGED DURING THE E&S Audit

Name	Category	Department	Title
Mr. Li Derong	Internal	Management Team of the Site	General Manager

## ASSET-LEVEL E&S AUDIT REPORT – HARBIN

### Annex C: PHOTO LOG

### Annex C: PHOTO LOG (Provided by the Site)

#### Photo Log – Harbin WWTP



Photo 1 Entrance of the Site



Photo 2 Primary sink and deodorizing room



Photo 3 Biological Tank



Photo 4 Flocculation reaction sedimentation tank

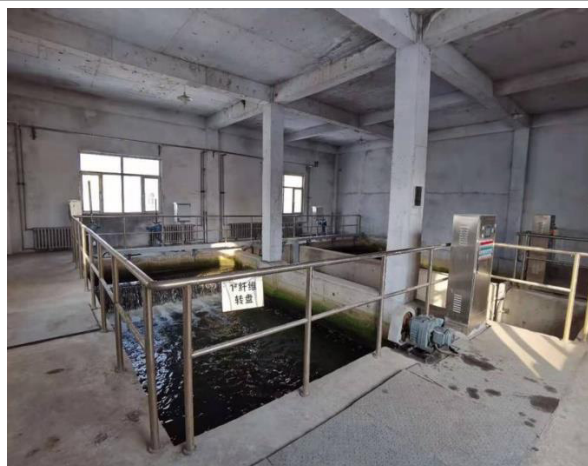


Photo 5 Fibre rotating filter



Photo 6 HW Warehouse



## ASSET-LEVEL E&S AUDIT REPORT – HARBIN

### Annex C: PHOTO LOG

#### Photo Log – Harbin WWTP



Photo 7 Laboratory



Photo 8 Online Treated Wastewater Monitoring Device



Photo 9 Biomass-fired boiler



Photo 10 Bag filter

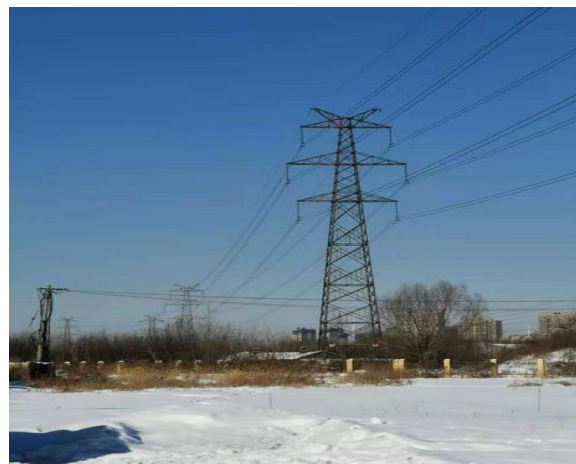


Photo 11 A logistic park is located to the east of the Site



Photo 12 West side of factory boundary: forest

## ASSET-LEVEL E&S AUDIT REPORT – HARBIN

### Annex C: PHOTO LOG

#### Photo Log – Harbin WWTP



Photo 13 Vacant land is located to the north of the Site



Photo 14 Tuanjie Road is located to the south of the Site