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SUSTAINABLE CITIES PROJECT-II
Additional Financing

Derebucak Wastewater Treatment Plant Project

Environmental and Social Management Plan

TUMAS - ENCON JOINT VENTURE

OCTOBER 2023

SÜRDÜRÜLEBİLİR ŞEHİRLER
TÜRKİYE CUMHURİYETİ ÇEVRE, ŞEHİRCİLİK VE İKLİM DEĞİŞİKLİĞİ BAKANLIĞI
İLBANK TÜRKİYE'NİN YAPICI GÜCÜ
THE WORLD BANK IBRD • IDA | WORLD BANK GROUP

REVISION HISTORY

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10	October 2023	SCM documents incorporated	ILBANK	KOSKI	TUMAS & ENCON Joint Venture

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ABPRS	Address Based Population Registration System
AISI	American Iron and Steel Institute
AFAD	Disaster and Emergency Management Presidency
AoI	Area of Influence
AZE	Alliance for Zero Extinction
BOD	Biochemical Oxygen Demand
BP	Bank Procedures
CCD	UN Convention to Combat Desertification
CCTV	Closed-circuit television
CEKUL	Foundation for the Protection and Promotion of the Environment and Cultural Heritage
CIMER	Presidency's Communication Center
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLRTAP	Convention on Long Range Transboundary Air Pollution
COD	Chemical Oxygen Demand
COVID-19	Coronavirus Disease of 2019
dBA	Decibels adjusted
DLP	Defects Liability Period
E&S	Environmental and Social
EHS	Environmental Health and Safety
EIA	Environmental Impact Assessment
EMEP	European Monitoring and EvaluationProgramme
ENCON	ENCON Cevre Danısmanlık Ltd. Sti.
ESF	Environmental and Social Framework
ESHS	Environmental, Social Health, and Safety
ESIA	Environmental and Social Impact Assessment
ESMAP	Energy Sector Management Assistance Program
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESMR	Environmental and Social Monitoring Report
ESMS	Environmental and Social Management System
ETL	Energy Transmission Line
EU	European Union
FI	Financial Intermediary
FUND	The International Convention on the Established of an International Fund for Compensation for Oil Pollution Damage
GBV	Gender Based Violence
GHG	Green House Gas
GIS	Geographical Information System
GRM	Grievance Redress Mechanism

GP	Good Practices
IAPCR	Industrial Air Pollution Control Regulation
IBA	Important Bird Area
IFC	International Finance Corporation
ILBANK	ILBANK A.S.
ILO	International Labor Organization
IPA	Important Plant Area
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Areas
KGM	General Directorate of Highways
KMM	Konya Metropolitan Municipality
KOSKI	Konya Water and Sewerage Administration
KSBS	Contaminated Field Information System
LC	Least Concern
MSDS	Material Safety Data Sheet
MoEUCC	Ministry of Environment, Urbanization and Climate Change
MoLSS	Ministry of Labor and Social Security
NGOs	Non-Governmental Organizations
NTS	Non-Technical Summary
NUTS	Nomenclature of Territorial Units for Statistics
OHS	Occupational Health and Safety
OP	Operational Policies
PCM	Public Consultation Meeting
PID	Project Identification Document
PIU	Project Implementation Unit
PM_{10}	Particulate matters with aerodynamic diameter smaller than 10µm
PMU	Project Management Unit
POP	Persistent Organic Pollutant
PPE	Personal Protective Equipment
PIF	Project Introduction File
Project	Derebucak Wastewater Treatment Plant Project
PS	Performance Standard
RAMAQ	Regulation on the Assessment and Management of Air Quality
RAMSAR	Convention on Wetlands of International Importance, Especially as Waterfowl Habitat
RAS	Return Activated Sludge
RCA	Root Cause Analysis
RENC	Regulation on Environmental Noise Control
SCM	Stakeholder Consultation Meeting
SCP-II	Second Sustainable Cities Project
SCP-II-AF	Second Sustainable Cities Project Additional Financing

SEA/SH	Sexual Exploitation and Abuse and Sexual Harassment
SEGE	Socio-Economic Development Ranking Survey of Provinces and Regions
SEP	Stakeholder Engagement Plan
TAP	Union of Transportable Battery Manufacturers
TAYCED	Waste and Environmental Management Association
TEMA	Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats
TMMOB	Union of Chambers of Turkish Engineers and Architects
TMP	Traffic Management Plan
ToR	Terms of Reference
TUBIVES	Türkiye Plant Data Service
TUMAS	Turk Muhendislik Musavirlik ve Muteahhitlik A.S
TurkStat	Turkish Statistical Institute
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	UN Framework Convention on Climate Change
USEPA	United States Environmental Protection Agency
WB	World Bank
WBG	World Bank Group
WHO	World Health Organization
WWTP	Wastewater Treatment Plant
YIMER	Foreigners Communication Center

EXECUTIVE SUMMARY

Derebucak Wastewater Treatment Plant Project ("the Project") is one of the sub-projects covered under the Sustainable Cities Project-II - Additional Financing (SCP-II-AF) to support sustainable development in Turkish cities. The emergence of the SCP-II-AF is a response to ongoing technical assistance for sustainable urban development and capital investment planning being provided under Component A of SCP-I. This exceptional demand includes identification of investments to improve public transport, water and sanitation, solid waste management, energy, environment, disaster risk management and climate resilience, and social infrastructure. The Project aims to solve environmental pollution caused by the lack of wastewater treatment and to improve public health in the Derebucak District. The Project will be financed by the World Bank (WB). ILBANK A.S. (ILBANK) is the Borrower of the loan, serving as a Financial Intermediary (FI) to Konya Water and Sewerage Administration (KOSKI). KOSKI will be responsible for the implementation of the Project at the local level (the Project Owner).

The Project is classified as Category B according to the WB Operational Policy for Environmental Assessment (WB OP 4.01). Therefore, one of the tasks under the scope of the Project is the preparation of an Environmental and Social Management Plan (ESMP) in accordance with the WB Safeguard Policies, and the national legislation in force in Türkiye. This ESMP is therefore prepared to identify anticipated adverse environmental and social (E&S) risks and impact, establish E&S baseline conditions, set out site specific mitigation, monitoring and institutional measures to be taken during land preparation, construction and operation phases of the above-mentioned Wastewater Treatment Plant (WWTP) Project to eliminate adverse environmental and social impacts/risks, and offset or reduce them to acceptable levels. This report has been prepared by ENCON Cevre Danismanlik Ltd. Sti. (ENCON) and TUMAS Joint Venture in the scope of the environmental and social impact and risk assessment studies conducted for Derebucak Wastewater Treatment Plant Project. Moreover, Stakeholder Engagement Plan (SEP) has also been prepared by TUMAS & ENCON Joint Venture for KOSKI. The SEP encompasses the identification of stakeholders, planned stakeholder consultation activities and the process of stakeholder engagement.

The Project will be performed in Derebucak District of Konya Province located in Central Anatolia region of Türkiye. In the current situation, the untreated wastewater discharge into the Kocadere River puts considerable pressure on the environment and public health. Within this regard, the Project aims to remove this pressure through construction of a wastewater treatment plant (WWTP) with a capacity of 400 m^3/day with a target year of 2055 and the expected population to be served is 2,570. The size of land allocated for the proposed Derebucak WWTP is approximately 2400 m^2 and located in parcel 159/25 of Sarayönü Neighborhood of Derebucak District. In addition, the discharge line length is about 718 meters between Derebucak WWTP and Kocadere River. The units included in the WWTP will consist of the following:

- Inlet structure,
- Basket screen,
- Inlet pumping station,
- Packed grit chamber and fine screen unit,
- Biological phosphorus removal tanks,
- Aeration tanks,
- Final sedimentation tanks,
- Disinfection unit,
- Effluent flow measurement structure,
- Sludge dewatering unit.

The expected results from the Project are listed below:

- The Project will enable KOSKI to provide proper wastewater treatment in Derebucak District and thereby reduce risk to public health, environment, and natural sources;
- The Project will provide contribution for Türkiye to comply with national and international quality standards in the wastewater sector; and
- The health standards of the public will be improved through the implementation.

The Project's anticipated environmental and social impacts/risks will be in terms of air quality, geology, soils, water resources, noise, biological environment, landscape, resources and waste, climate change, socioeconomic environment and occupational health and safety, cultural heritage, and community health, safety and security.

The project will be in compliance with the good international practice, including WB Safeguard Policies, guides, standards and best practices documents alongside the national legislation. Specific standards related to the project are as follows:

- WB Operational Policy (OP) 4.01 – Environmental Assessment
- WB OP 4.04 – Natural Habitats
- WB OP 4.11 – Physical Cultural Resources
- World Bank Group (WBG) General Environmental, Health and Safety (EHS) Guidelines
- WBG Industry Sector Guidelines for Infrastructure Water and Sanitation
- Bank Policy (BP) 17.50 Bank Disclosure Policy

According to the repealed Turkish Environmental Impact Assessment (EIA) Regulation (Official Gazette dated November 25, 2014, and numbered 29186), waste water treatment plants with a capacity of 50,000-150,000 equivalent persons and/or 10,000-30,000 m^3/day are in Annex-II and waste water treatment plants with a capacity of 150,000 equivalent persons and/or over 30,000 m^3/day are in Annex-I list. Wastewater treatment plants that have capacity below the this values out of the scope of the repealed EIA Regulation. Accordingly, Derebucak Wastewater Treatment Plant (400 m^3/day) Projectwas evaluated as out of scope since it is less than the threshold value in the Annex lists of the EIA Regulation. Therefore, an EIA study was not required for this project. "EIA Exemption" certificate was issued by Provincial Directorate of Environment, Urbanization and Climate Change (see Annex-3). According to the new EIA regulation, if the capacity of the treatment plant is over 30,000 m^3/day, it is included in the Annex-II, if it is over 50,000 m^3/day, it is included in the Annex-I list. This "EIA Exemption" certificate should still be valid according to the latest EIA Regulation (Official Gazette dated 29.07.2022 and numbered 31907) as the capacity of WWTP is still under the threshold values in Annex-I and Annex-II of latest EIA Regulation. EIA Exemption Certificate obtained for the Derebucak Wastewater Treatment Plant also covers the energy transmission lines that will be constructed during the construction phase of the Project.

Considering the location of the project and the nature of its potential environmental and social impacts/risks, the Project is categorized as Category B Project for which an ESMP is required under WB screening criteria and OP 4.01.

The construction of WWTP does not require expropriation of any private land since the area currently belongs to KOSKI and transfer of land was completed. The land transfer was allocated to KOSKI from its owners in 2017 via expropriation process. The Settlement/Agreement Minute and the landownership status document is presented in Annex-2. The WWTP site was previously used for strawberry cultivation, however, the area is currently in idle status and there is no land use for any purpose. Moreover, there are no informal land users and squatters on site.

The Ø400, Ø300 and Ø200 mm sewerage network lines were renewed in 2017 in order to eliminate the faults in the sewerage network in the Derebucak District Center. The construction of the renewal was completed in 2018. Total length of the existing sewerage network is 14,373 m. Within the scope of the Project, the current part of the sewerage network will be used as the discharge line. The treated wastewater will be discharged through a manhole shaft within the WWTP site and will be discharged to Kocadere River. According to Project Identification Document (PID) report target project discharge limits for composite sample 24 hours are 45 mg/L for BOD, 110 mg/L for COD, 30 mg/L for SS and 6-9 for pH. These values are in line with the Water Pollution Control Regulation.

In terms of auxiliary facilities the construction site will be established at the WWTP site, which currently belongs to KOSKI. There will be a camp site for up to twenty (20) people within the project area. In addition to that, as there is currently an access road to the site, construction of an access road will not be required. Auxiliary facilities do not require land acquisition as they are already within the WWTP area. Therefore, the Project does not trigger OP 4.12 – Involuntary Resettlement, or cause any land acquisition, involuntary resettlement, not economic displacement by any of its components.

Permission related to Energy Transmission Line (ETL) has been obtained from Meram Electricity Distribution Inc. (MEDAS). Tension type insulator will be used from the 1000213496 (number 14) pole. 3 X SWL cross-section ETL will be established by building a sectioner post at the beginning of the line at a distance of minimum 10 m and maximum 20 m. Finally, a pole will be built at the point where the switchyard of the consumption facilities ends. The total line length is 70 meters and no expropriation will be required.

The planned WWTP area has previously been cultivated. Therefore, the area has been exposed to anthropogenic effects, and its natural biodiversity has changed widely, adapting to these impacts.

According to requirements specified in the Regulation on the Control Soil Pollution and Sites Contaminated by the Point Source, in terms of a possible soil contamination in the area, including the river bed to which untreated wastewater has been discharged, KOSKI is obliged to notify the MoEUCC on possible soil pollution in the project area according to the procedure defined in the regulation. Based on the inspections that will be carried out by the MoEUCC, if the site will be defined as a contaminated site that needs to be cleaned up, the site will be cleaned up by firms authorized by the MoEUCC and KOSKI will be the responsible entity to ensure clean-up.

Although the exact total number of workers to be employed during the construction and operation phases is currently unknown, it is estimated as 100 and 10 for the construction and operation phases, respectively. In the employment process, priority will be given to the local community. The construction of the Project is planned to be completed in twelve (12) months.

ESMP Content and Key Mitigation Measures

The ESMP has described legal framework and WB Operational Policies applicable to the project, as well as E&S baseline conditions. In addition, it has identified mitigation measures and monitoring activities to reduce and avoid environmental and social impacts/risks associated with the project. This ESMP defines:

- Description of the environmental and social baseline conditions;
- Description of the potential environmental and social impacts/risks;
- Detailed mitigation measures and roles and responsibilities for mitigation implementation;
- Monitoring activities and roles and responsibilities for implementation of the monitoring activities;

- Institutional structure for oversight and management of the Project;
- Capacity building requirements; and
- Consultations with affected groups and non-governmental organizations.

Summary of the mitigation measures addressed in ESMP is provided in Table 1.

Table 1 Summary of Mitigation Measures

Areas of Potential Environmental and Social (E&S) Impacts	Mitigation Measures
Air Quality	Dust and exhaust emissions management Air quality monitoring Odorous gas emission control
Geology, Soils and Contaminated Land	Topsoil preservation and restoration Prevention of soil contamination Erosion control measures
Water Resources	Proper storage of chemicals Prevention of surface runoff Effluent discharge consistent with applicable national requirements or internationally accepted standards
Noise and Vibration	Regular maintenance of the construction machinery, equipment and vehicles Establishment of a robust grievance redress mechanism
Biological Environment	Re-vegetation, where possible Measures to further avoid and minimize the construction footprint
Landscape and Visual	Planting trees at the borders of the WWTP Painting the visible buildings in colors that suits the background
Resources and Waste	Waste management in accordance with the waste management hierarchy Selection of most appropriate raw materials by evaluating clean production options
Climate Change	Optimal utilization of the available construction equipment and materials Regular maintenance of construction vehicles and equipment
Employment and Procurement Opportunities	Providing transparent, non-discriminatory, equal recruitment opportunities with respect to ethnicity, religion, language, gender and sexuality
Infrastructure and Services	Prompt compensation of any damage to infrastructure
Labor Force	A grievance redress mechanism Preparation of information materials Managing and monitoring the performance of contractors in relation to the prohibition of child labor, unregistered employment and forced labor Proper adaptation of human rights policy and labor rights
Community Health, Safety and Security	Preparation of Traffic Management Plan Usage of appropriate traffic signage
Occupational Health and Safety	Awareness raising training for workers Code of Conduct
Archaeological and Cultural Heritage	Chance Find Procedure Informing related Conservation Board or Museum Directorate

As a part of the mitigation measures, it is recommended by ESMP that an Environmental and Social Management System (ESMS) covering all phases of the Project and consisting of management plans on different subjects will be developed by KOSKI's Project Implementation Unit (PIU). ESMS will be established in KOSKI and KOSKI will ensure that the contractor will prepare management plans. Table presenting the recommended management plans for both phases of the Project is given in Table 2.

Table 2 Recommended Management Plans for Construction and Operation Phases of the Project

Management Plans	Phase to be Prepared	Responsible Party	Approving Party
Construction Phase			
A Soil Management Plan that is in line with the WB OP 4.01 and WBG EHS Guidelines (both general and sector specific)	Prior to construction	Construction Contractor	ILBANK
An Oil and Chemical Spill Contingency Management Plan that is in line with the WB OP 4.01 and WBG EHS Guidelines (both general and sector specific)	Prior to construction	Construction Contractor	ILBANK
A Dust Management Plan that is in line with the WB OP 4.01 and WBG EHS Guidelines (both general and sector specific)	Prior to construction	Construction Contractor	ILBANK
A Water Resources Management Plan that is in line with the WB OP 4.01 and WBG EHS Guidelines (both general and sector specific)	Prior to construction	Construction Contractor	ILBANK
A Pollution Prevention Plan that is in line with WB OP 4.01 and WBG EHS Guidelines (both general and sector specific)	Prior to construction	Construction Contractor	ILBANK
A Noise Management Plan that is in line with the WB OP 4.01 and WBG EHS Guidelines (both general and sector specific)	Prior to construction	Construction Contractor	ILBANK
A Waste Management Plan that is in line with the WB OP 4.01 and WBG EHS Guidelines (both general and sector specific)	Prior to construction	Construction Contractor	ILBANK
A Traffic Management Plan that is in line with the WB OP 4.01 and WBG EHS Guidelines (both general and sector specific)	Prior to construction	Construction Contractor	ILBANK
A Community Health, Safety, and Security Management Plan that is in line with WB OP 4.01 and WBG EHS Guidelines (both general and sector specific)	Prior to construction	Construction Contractor	ILBANK
An Occupational Health and Safety Management Plan that is in line with WB OP 4.01 and WBG EHS Guidelines (both general and sector specific)	Prior to construction	Construction Contractor	ILBANK
A Workforce Management Plan that is in line with WB OP 4.01 and WBG EHS Guidelines (both general and sector specific)	Prior to construction	Construction Contractor	ILBANK

Management Plans	Phase to be Prepared	Responsible Party	Approving Party
An Emergency Preparedness and Response Plan that is in line with WB OP 4.01 and WBG EHS Guidelines (both general and sector specific)	Prior to construction	Construction Contractor	ILBANK
A Security Management Plan that is in line with the WB OP 4.01 and WBG EHS Guidelines (both general and sector specific)	Prior to construction	KOSKI or Security Services Provider	ILBANK
A Contractor Management Plan that is in line with the WB OP 4.01 and WBG EHS Guidelines (both general and sector specific)	Prior to construction	KOSKI or Third Party E&S Consultant	ILBANK
Operation Phase			
An Odor Management Plan that is in line with the WB OP 4.01 and WBG EHS Guidelines (both general and sector specific)	Prior to operation	KOSKI or Third Party E&S Consultant	ILBANK
A Water Resources and Effluent Management Plan that is in line with WB OP 4.01 and WBG EHS Guidelines (both general and sector specific)	Prior to operation	KOSKI or Third Party E&S Consultant	ILBANK
A Waste Management Plan that is in line with the WB OP 4.01 and WBG EHS Guidelines (both general and sector specific)	Prior to operation	KOSKI or Third Party E&S Consultant	ILBANK
A Sludge Management Plan in line with WB OP 4.01 and WBG EHS Guidelines (both general and sector specific)	Prior to operation	KOSKI or Third Party E&S Consultant	ILBANK
A Traffic Management Plan that is in line with the WB OP 4.01 and WBG EHS Guidelines (both general and sector specific)	Prior to operation	KOSKI or Third Party E&S Consultant	ILBANK
A Security Management Plan that is in line with the WB OP 4.01 and WBG EHS Guidelines (both general and sector specific)	Prior to operation	KOSKI or Security Services Provider	ILBANK
An Emergency Preparedness and Response Plan that is in line with the WB OP 4.01 and WBG EHS Guidelines (both general and sector specific)	Prior to operation	KOSKI or Security Services Provider	ILBANK

I. INTRODUCTION

I.1. Project Background and Rationale

Derebucak Wastewater Treatment Plant Project ("the Project") is one of the sub-projects covered under the Sustainable Cities Project-II - Additional Financing (SCP-II-AF) to support sustainable development in Turkish cities. The emergence of the SCP-II-AF is a response to ongoing technical assistance for sustainable urban development and capital investment planning being provided under Component A (Municipal Investments) of SCP-I. This exceptional demand includes identification of investments to improve public transport, water and sanitation, solid waste management, energy, environment, disaster risk management and climate resilience, and social infrastructure. The Project aims to solve environmental pollution caused by the lack of wastewater treatment and to improve public health in the Derebucak District.

The Project will be financed by the World Bank (WB). ILBANK A.S. (ILBANK) is the Borrower of the loan and the project implementing agency, serving as a Financial Intermediary (FI) to Konya Water and Sewerage Administration (KOSKI). KOSKI will be responsible for the implementation of the Project at the local level.

The Project will be implemented in Derebucak District of Konya Province located in Central Anatolia region of Türkiye. Currently, the untreated wastewater discharge into the Kocadere River puts considerable pressure on the environment and public health. In order to solve this problem, the Project was included in the sub-projects of the SCP-II-AF. The Project aims to remove this pressure through construction of an advanced WWTP with an additional final disinfection that has a capacity of 400 m^3/day with a target year of 2055 and the expected population to be served is 2,570.

The expected results of the Project are listed below:

- The Project will enable KOSKI to provide proper wastewater treatment in Derebucak District and thereby reduce risk to public health, environment, and natural resources;
- The Project will provide contribution for Türkiye to comply with national and international quality standards in the wastewater sector; and
- The health standards of the public will be improved through the implementation of the Project.

I.2. Purpose and Scope of ESMP

One of the tasks under the scope of the Project is the preparation of an ESMP in accordance with the WB Safeguard Policies including its OPs, WBG General EHG Guidelines and Industrial Sector Guidelines, the national legislation in force in Türkiye and also ILBANK's Environmental and Social Management Framework (ESMF) for the SCP-II AF. Accordingly, this ESMP has been prepared by TUMAS Turk Muhendislik Musavirlik ve Muteahhitlik A.S. (TUMAS) & ENCON Cevre Danismanlik Ltd. Sti. (ENCON) Joint Venture to assess and identify the potential environmental and social impacts and risks arising from the development of the Project and recommend mitigation measures for significant adverse environmental and social impacts/risks and describes the monitoring and institutional requirements necessary to implement this Plan.

The primary purpose of this ESMP is to ensure that the environmental and social requirements and commitments associated with the Project are carried forward into construction and operation phases of the Project and are effectively managed. The specific objectives of this ESMP are as follows:

1. Conduct all project activities in accordance with the applicable national legislation and in compliance with the WB's Environmental and Social Safeguard Policies and procedures (OP/BP);
2. Identify anticipated adverse environmental and social risks and impacts;
3. Identify mitigation measures by adopting the mitigation hierarchy, to anticipate and avoid, minimize, and, where residual impacts remain, compensate or offset risks and impacts;
4. Prevent or compensate any loss of the affected person;
5. Prevent environmental degradation as a result of either individual sub-projects or their cumulative effects;
6. Enhance positive environmental and social outcomes;
7. Ensure maximizing efficiency and minimizing costs in complying with environmental and social legislation and standards;
8. Act as an Action Plan in order to ensure that the project impact mitigation measures are properly implemented and monitored; and
9. Ensure that all stakeholders' concerns are addressed.

This ESMP assesses the environmental and social risks and impacts of the proposed project based on the available information; the type of the project, here is a WWTP Project; the specific context in which the proposed project will be developed and implemented; and the capacity and commitment of the Beneficiary (KOSKI) together with the findings of the Feasibility Report and the design reports. The Feasibility Report applications coordinated by Alter International Engineering and Consulting Services, approved by KOSKİ and started on 25.10.2020 are a basis for financing. The purpose of this report is to check and justify the feasibility and applicability of the proposed wastewater treatment plant with real technical and financial data of the Municipality in accordance with ILBANK specifications and national legislation. In addition, PID and design reports are also informative reports containing the objectives and calculations of the Project.

The assessment of the risks and impacts was carried out in accordance with the WB Safeguard Policies, including its Operational Policies (OPs), World Bank Group (WBG) General Environmental, Health and Safety (EHS) Guidelines and Industry Sector Guidelines, ILBANK's Environmental and Social Management Framework (ESMF) for the SCP-II AF and best practices documents alongside the national legislation. Identification of risks, mitigation and monitoring activities are considered for the two main phases of the Project, which are "Land Preparation and Construction" and "Operation". In order to achieve environmental and social outcomes consistent with the WB Safeguard Policies, potential adverse environmental and social impacts/risks anticipated in each phase of the project components have been identified; requirements for effective and timely interventions have been defined; and means for meeting these requirements have been described in the context of this ESMP.

According to the repealed Turkish Environmental Impact Assessment (EIA) Regulation (Official Gazette dated November 25, 2014, and numbered 29186), wastewater treatment plants that have capacity below the 150,000 equivalent population and/or 30,000 m^3/day were out of the scope of the EIA Regulation. Accordingly, Derebucak WWTP Projectwas evaluated as out of scope since it is less than the threshold value in the Annex lists of the EIA regulation. Therefore, an EIA study was not conducted for this project. "EIA Exemption" certificate was issued by Provincial Directorate of Environment, Urbanization and Climate Change (see Annex-3).This "EIA Exemption" certificate should still be valid according to the latest EIA Regulation (Official Gazette dated 29.07.2022 and numbered 31907) as the capacity of WWTP is still under the threshold value (50,000 m^3/day) in Annex-I of latest EIA Regulation.

Considering the location of the Project and the nature of its potential environmental and social impacts/risks, the Project is categorized as Category B Project for which an ESMP is required under WB screening criteria and OP 4.01.

This ESMP is a framework document that summarizes sub-project specific environmental and social measures and translates them into specific management actions. It will be continuously reviewed and updated as the project progresses through detailed design and construction, by taking into account the following:

- Changes in national legislation and international standards;
- Changes to the project design parameters during the detailed design and tender document preparation phases (if any);
- Monitoring results; and
- Test and trial results performed during Project's operation phase.

The ESMP was developed based on the following source documents and information:

- Information provided by the KOSKI;
- Findings of the site visit performed by Encon Environmental Consulting Ltd. Co. (Encon) on October 13, 2021;
- The requirements specified in the Terms of Reference (ToR) for the preparation of the ESMP;
- PID prepared by Arbiotek Environmental Solutions Ltd. Co on October 2017;
- Feasibility report prepared by Alter International Engineering and Consulting Services on December 2020;
- EIA Exemption Decision given by Konya Governorship Provincial Directorate of Environment, Urbanization and Climate Change on August 2016. Since the project is "Out of Scope of the EIA" and the capacity of the project has not been changed (there will be no change that will affect the decision in question), there is no need to request a decision letter again.;
- Title deed of the WWTP site obtained by KOSKI on August 2017; and
- Environmental and social policies: WB Safeguard Policies and the national legislation.

The content of this document is as follows:

- Chapter I: Introduction
  This chapter introduces the project background and rationale and also the purpose and scope of the ESMP.
- Chapter II: Legal Framework
  This chapter explains national and international legal requirements, and also environmental agreements that are relevant to the project.
- Chapter III: Description of the Proposed Project
  This chapter is a description of the project including its location, components, technical specifications, and a proposed schedule for implementation.
- Chapter IV: Baseline Conditions
  This chapter describes the baseline conditions in and around the proposed project area, including physical, biological and socio-economic conditions.
- Chapter V: Environmental and Social Impacts of the Project
  This chapter assesses the potential positive and negative impacts of the project.
- Chapter VI: Mitigation Management and Monitoring Plans
  This chapter describes potential environmental and social impacts and risks associated with the Project activities. This chapter also describes proposed detailed management plans to address these impacts and risks; and a monitoring plan.
- Chapter VII: Institutional Arrangements and Capacity Building
  This chapter describes the Project institutional arrangements for implementation of the ESMP and capacity building measures.

- Chapter VIII: Consultations with Affected Groups and Non-Governmental Organizations

This chapter gives detailed information about the stakeholder consultation activities.

II. LEGAL FRAMEWORK

This chapter is constructed to elucidate the main aspects of the legal and administrative framework followed in the design of this ESMP. Various national legislation and international standards explained in the following sections are also to be complied with during different phases of the Project, including land preparation, construction and operation.

Administrative structure in Türkiye is governed by central and local administrations. The central administration is organized so that the land mass of the country is divided into provinces and the provinces into further smaller divisions (i.e. ,districts, municipalities, villages/neighborhoods) according to geographic and economic conditions, and the need for public services. For the purpose of meeting collective local needs, the populations of provinces, municipalities, and villages/neighborhoods are administered by units of local government established by law (*Toksoz, F., 2006*).

Ministries are the units of central administration. Local branches of ministries are composed of provincial organizations attached to governors and district organizations attached to the district governors (*Hacettepe University, 2015*). At the local level, municipality mayors and the headmen of the villages/neighborhoods (mukhtar) are the representatives of the administrative structure.

KOSKI is the key central administration in the scope of the Project under the Konya Metropolitan Municipality, which is the authority responsible for the implementation of the Project at the local level.

II.1. Turkish Legislation

The key national laws and regulations presented in this section include the legal requirements to reduce the potential environmental impacts that may arise from the construction and operational activities of the Project. Turkish Legislation related to the Project is presented in the following sections under relevant subtopics.

II.1.1. Turkish Environmental, Health and Safety Legislation

Environmental Law No.2872, which is ratified in August 1983 (Official Gazette dated 11.08.1983 and numbered 18132), is one of the principal legislations related to the Project. Several by-laws and decrees are enforced under the Environmental Law.

The Environmental Impact Assessment (EIA) Regulation (Official Gazette dated July 29, 2022, and numbered 31907) defines the administrative and technical procedures and principles to be followed throughout the EIA process and is largely in line with the EU Directive on EIA. When an activity (a Project) is planned, the Project developer is responsible for preparing an EIA Report along with many other permits required to realize the Project. However, facilities are subject to preparation of an EIA Report depending on the type of facility, its capacity, or the location of the activity. The activities that are subject to the provisions of the EIA Regulation are listed in Annex I and Annex II of the Regulation. For Annex I activities a full EIA Report is required and those projects go through the full EIA process. For Annex II activities, a Project Introduction File (PIF) is prepared in accordance with the outline given in the EIA Regulation and the relevant process has to be conducted. As a result of the submission of PIF, if “EIA is required” decision is given, a full EIA Report is prepared.

The EIA process starts with submitting a brief report (EIA Application File), summarizing the characteristics of the Project and the impact area, and the potential environmental impacts and mitigation measures, prepared according to the format provided in Annex III of the EIA Regulation to the Ministry of Environment, Urbanization and Climate Change (MoEUCC). Then the MoEUCC, General Directorate of EIA, Permit and Inspection forms a committee from related governmental and non-governmental agencies, which also includes the Project Owner and the consultant that would prepare the EIA report. With the formation of this committee the scoping phase starts.

This committee aims to define the scope of the EIA report to be prepared for the Project. The EIA scope is defined based on findings of the committee and the comments and suggestions received from a public information and participation meeting to be held at the Project site. The purpose of the meeting is to give information regarding the project and take the opinion of the public and answer their questions regarding the Project.

The project owner organizes a “public information and participation meeting” under the chairmanship of the Provincial Director of Environment, Urbanization and Climate Change in a place easily accessible to the relevant local groups. An invitation to the meeting is announced in a local and a national newspaper at least 10 days before the meeting. Several notification channels such as brochures, project presentation and municipalities’ website are used to inform the related public authorities (including provincial governorates, district governorates, municipality mayors, etc.), mukhtars and local people, national and local media agencies and wider public including Non-Governmental Organizations (NGOs). Public information and participation meeting is held at a meeting location chosen by the relevant municipality. Minutes of the meeting are kept and submitted to the Ministry of Environment, Urbanization and Climate Change and the Governor's Office. The Governor's Office should inform the public about the timeframe for submission of public comments and recommendations. These opinions and suggestions are presented to the EIA commission.

In addition, the MoEUCC shall announce that the EIA process regarding the Project has been initiated and information regarding the EIA process may be obtained also via the internet. The scoping phase is completed with a meeting of this committee during which the EIA scope is agreed on. Based on the agreed scope, the EIA studies are conducted, and the report is prepared. After the submission of the EIA Report to the General Directorate of EIA, Permit and Inspection, it is checked with regard to the contents to decide whether the report is suitable for starting the review process. If the content of the report is found to be appropriate, the review period starts and ends with either a positive or a negative decision.

MoEUCC and the governorships are responsible for informing the public that the review period of the EIA Report is started via announcements using local and national media, boards, internet etc. Thus, public will be able to access the EIA Report from the web site of the MoEUCC or the relevant Provincial Directorate and comment on the report. Those comments are reviewed in the Review Commission meeting and the results are reflected in the EIA Report.

The process regarding the projects in the Selection and Screening List (Annex II) begins with the submission of the Project Introduction File (PIF) prepared in accordance with Annex-IV to the Governor’s Office by the Project Owner, stating that the information and documents in the Project Introduction File and its annexes are correct. PIF is the file prepared for the purpose of investigating whether the Environmental Impact Assessment is necessary or not.

The Governorship examines the PIF prepared for the project within five working days within the framework of the criteria in Annex-IV. If there are deficiencies in the information and documents within the scope of the file, they are requested from the institutions and organizations authorized by the Ministry.

After examining the environmental and social impacts/risks of the projects, the decision that the EIA is not required is made by the governorship, stating that there is no significant environmental impact and there is no need to prepare an EIA Report.

Wastewater treatment plants that have capacity below the 50,000equivalent population are out of the scope of the EIA Regulation. Although, "EIA Exemption" decision was given for the Derebucak Wastewater Treatment Plant Project as per the repealed EIA Regulation (see Annex-3), since the planned capacity of WWTP is under the threshold value indicated in the recent EIA Regulation, it is still exempt from the EIA procedure and the "EIA Exemption" letter is still valid.

The rest of the Turkish EHS Legislation that the Project will comply with is presented Table II.1.

Table II.1 Turkish EHS Legislation Related to the Project

Legislation*	Official Gazette Date	Official Gazette Number	Implications for the Project Phases
Waste Management			
Waste Management Regulation	April 2, 2015	29314	• Management of waste generated by construction staff during the construction phase and by operation staff during the operation phase • Hazardous wastesgenerated at construction and operation phases
Regulation on Landfill of Waste	March 26, 2010	27533	• Final sludge generated during operation phase.
Regulation on the Management of Waste Oil	December,21,2019	30985	• Waste oils generated at construction and operations phases.
Regulation on the Control of Waste Vegetable Oil	June 6, 2015	29378	• Waste vegetable oils generated at construction and operation phases.
Regulation on the Control of Packaging Waste	June 26, 2021	31523	• Packaging waste generated at construction and operation phases.
Regulation on the Control of Medical Waste	January 25, 2017	29959	• Medical waste generated at construction and operation phases.
Regulation on the Control of End-of-Life Tires	November 25, 2006	26357	• End-of-Life tires generated at construction and operation phases.
Regulation on the Control of Waste Batteries and Accumulators	August 31, 2004	25569	• Waste batteries and accumulators generated at construction and operation phases.
Regulation on Control of Waste Electric and Electronic Goods	May 22, 2012	28300	• Electric and electronic waste generated at construction and operation phases
Regulation on the Control of Excavation Materials, Construction and Demolition Wastes	March 18, 2004	25406	• Excavation materials, construction and demolition waste generated during construction phase.
Regulation on the Control of End-of-Life Vehicles	December 30, 2009	27448	• Management of end-of-Life vehicles currently stored in the project area.
Regulation on the Use of Domestic and Urban Sewage Sludge on Soil	August 3, 2010	27661	• Management of final sludge generated during operation phase.

Legislation*	Official Gazette Date	Official Gazette Number	Implications for the Project Phases
Regulation on the Incineration of Waste	October 6, 2010	27721	• Management of final sludge generated during operation phase.
Regulation on Zero Waste	July 12, 2019	30829	• Determining the general principles of the zero waste management system, which aims to protect the environment and human health and all resources in the waste management processes of raw materials and natural resources.
Water Quality Control and Management			
Water Pollution Control Regulation	December 31, 2004	25687	• Discharge of treated effluent during operation phase. • Wastewater generated by the site staff at construction phase.
Regulation on the Water Intended for Human Consumption	February 17, 2005	25730	• Drinking water supplied during construction and operation phases.
Regulation on the Control of Pollution Caused by Hazardous Substances in and around Water Environment	November 26, 2005	26005	• Management of hazardous substances at construction and operation phases.
Regulation on the Protection of Groundwater against Pollution and Deterioration	April 7, 2012	28257	• Protection of groundwater sources against pollution during construction and operation phases.
Surface Water Quality Regulation	November 30, 2012	28483	• Discharge of treated effluent during operation phase. • Monitoring of water quality at receiving body during operation phase.
Regulation on the Monitoring of Surface Waters and Groundwater	February 11, 2014	28910	• Monitoring of water quality at receiving body during construction and operation phases.
Urban Wastewater Treatment Regulation	January 8, 2006	26047	• Effluent quality and treatment efficiencies to be met during the operation phase of Derebucak WWTP
Communiqué on Technical Procedures in Wastewater Treatment Plants	March 20, 2010	27527	• It regulates the basic technical procedures and practices to be used for the selection of technology, design criteria, disinfection and reuse of treated wastewater, and the disposal of sludge generated during deep sea discharge and treatment activities of wastewater treatment plants.
Communiqué on Technical Personnel Working in Wastewater Treatment Plants	May 23,2019	30782	• It regulates the procedures and principles regarding the qualifications, certification, duties, authorities and responsibilities of the technical personnel to be employed in order to ensure that the wastewater treatment plants are operated effectively, efficiently and in accordance with the legislation.
Air Quality Control and Management			
Regulation on the Control of Air Pollution from Heating	January 13, 2005	25699	• Heating of the operational buildings during operation phase.
Regulation on the Assessment and Management of Air Quality	June 6, 2008	26898	• Emissions during construction and operation phases.

Legislation*	Official Gazette Date	Official Gazette Number	Implications for the Project Phases
Industrial Air Pollution Control Regulation	July 3, 2009	27277	• Dust emissions due to the construction activities performed at construction phase. • Emissions during operation phase.
Regulation on the Control of Odor Causing Emissions	July 19, 2013	28712	• Odorous emissions generated during operation phase.
Regulation on the Monitoring of Greenhouse Gas Emissions	May 17, 2014	29003	• Greenhouse gas emissions during construction and operation phases.
Regulation on Exhaust Gas Emission Control	March 11, 2017	30004	• Operation of Project vehicles, machinery and equipment at all phases of the Project
Noise Control and Management			
Regulation on the Environmental Noise Emissions Caused by Equipment Used Outdoors	December 30, 2006	26392	• Noise levels caused by noise sources within the Project site at the construction and operation phases.
Regulation on Environmental Noise Control	November 30, 2022	32029	• Noise emissions at construction and operation phases.
Soil Quality Control and Management			
Regulation on the Control of Soil Pollution and Lands Contaminated by Point Sources	June 8, 2010	27605	• Risks of soil contamination at construction and operation phases.
Environmental Management, Permitting and Planning			
Environmental Impact Assessment Regulation	July 29, 2022	31907	• Impacts during construction and operation phases.
Environmental Auditing Regulation	June 12, 2021	31509	• Environmental audits performed by either Project Owner or governmental authorities during construction and operation phases.
Environmental Permits and Licensing Regulation	September 10, 2014	29115	• Required environmental permits and licenses at all phases of the Project.
Regulation on Wastewater Collection and Disposal Systems	January 6, 2017	29940	• At all phases of the Project.
Regulation on the Methods and Principles to be Followed in Determining the Tariff for Wastewater Infrastructure and Domestic Solid Waste Disposal Facilities	October 27, 2010	27742	• To ensure the sustainability of environmental infrastructure services through the establishment, maintenance, repair, operation, closure and monitoring of wastewater infrastructure facilities and domestic solid waste disposal facilities, determination, adjustment and implementation of full cost-based tariffs that can meet all services provided in relation to these facilities.
Occupational and Community Health, Safety and Security			
General Sanitation Law No: 1593	May 6, 1930	1489	• Health and sanitation measures to be taken during construction and operation phases
Occupational Health and Safety Law No. 6331	June 30, 2012	28339	• Health and safety measures to be taken during construction and operation phases.
Regulation on Occupational Health and Safety	December 9, 2003	25311	• Health and safety measures to be taken during construction and operation phases

Legislation*	Official Gazette Date	Official Gazette Number	Implications for the Project Phases
Regulation on Risk Assessment for Occupational Health and Safety	December 29, 2012	28512	• Management of occupational health and safety risk assessment during construction and operation phases
Regulation on Health and Safety Conditions Regarding Use of Work Equipment	April 25, 2013	28628	• Work equipment to be used during construction and operation phases
Manual Handling Operations Regulation	July 24, 2013	28717	• Health and safety measures to be taken during manual handling activities at construction and operation phases.
Preparation, Completion and Cleaning Works Regulation	April 28, 2004	25446	• Health and safety measures to be taken during preparation, completion and cleaning works at construction and operation phases.
Personal Protection Equipment Regulation	May 1, 2019	30761	• Personal protection equipment to be used during construction and operation phases.
Regulation on the Use of Personal Protection Equipment at Workplaces	July 2, 2013	28695	• Personal protection equipment to be used during construction and operation phases.
First Aid Regulation	July 29, 2015	29429	• In case of a first aid requirement during construction and operation phases.
National Occupational Health and Safety Council Regulation	February 5, 2013	28550	• Health and safety measures to be taken during construction and operation phases.
Regulation on the Protection of Workers Against the Dangers of Explosive Environments	April 30, 2013	28633	• Health and safety measures to be taken during construction and operation phases.
Regulation on Emergency Situations in Workplaces	June 18, 2013	28681	• Measures to be taken during emergencies in workplaces in all phases of the project.
Regulation on Health and Safety Precautions Regarding Working with Chemicals	August 12, 2013	28733	• Chemical handling and necessary precautions to be taken during construction and operation phases.
Regulation on the Methods and Essentials of Occupational Health and Safety Trainings for Workers	May 15, 2013	28648	• Health and safety trainings to be performed during construction and operation phases
Regulation on the Protection of Workers from Noise Related Risks	July 28, 2013	28721	• Health and safety measures to be taken against the noise impacts during construction and operation phases.
Regulation on the Protection of Workers from Vibration Related Risks	August 22, 2013	28743	• Health and safety measures to be taken against the vibration impacts during construction and operation phases.
Regulation on Management of Dust	November 5, 2013	28812	• Management of to be generated dust during construction phase.
Regulation on Machinery Safety	March 3, 2009	27158	• Maintaining machinery safety during construction, operation, and repair and maintenance phases.
Health and Safety Signs Regulation	September 11, 2013	28762	• Health and safety signs to be placed during construction and operation phases.

Legislation*	Official Gazette Date	Official Gazette Number	Implications for the Project Phases
Regulation on the Occupational Health and Safety for Temporary or Fixed Term Jobs	August 23, 2013	28744	• Health and safety measures to be taken for temporary workers during construction and operation phases.
Regulation on the Occupational Health and Safety in Construction	October 5, 2013	28786	• Constructional health and safety measures to be taken during construction phase.
Communiqué on Occupational Health and Safety Hazard Classes List	December 26, 2012	28509	• Determination of hazard classes during construction and operation phases.
Regulation on Highway Traffic	July 18, 1997	23053	• Ensuring traffic order on the highways during the construction and operation phases.
Regulations on Traffic Signs	June 19, 1985	18789	• Traffic signs to be applied on highways for the purpose of ensuring traffic order and safety during construction and operation phases.
Management of Chemicals and Other Dangerous Substances			
Water Pollution Control Regulation	December 31, 2004	25687	• Chemicals and hazardous goods to be used during construction and operation phases.
Regulation on the Classification, Labelling and Packaging of Materials and Mixtures	December 11, 2013	28848	• Chemicals and mixtures to be used during construction and operation phases.
Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals	June 23, 2017	30105	• To ensure a high level of protection of human health and the environment during the construction and operation phases, to evaluate the damages of the substances used, to have information on the registration, evaluation, permission and restriction of those chemicals.
Regulation on Material Safety Data Sheets on Hazardous Materials and Mixtures	December 13, 2014	29204	• Preparation and distribution of safety data sheets in order to ensure effective control and surveillance against the negative human health and the environment effects of hazardous substances and mixtures that may be used during construction and operation phases.
Regulation on the Road Transportation of Hazardous Goods	June 18, 2022	31870	• Hazardous goods to be transported during operation phase.
Land Use			
Regulation on the Protection, Usage and Planning of Agricultural Lands	December 9, 2017	30265	• Management of change in the land use during the planning phase of the Project.
General			
Regulation on the Implementation of the Law Concerning Private Security Services	October 7, 2004	25606	• Private security services to be used during construction and operation services
Use of the Right to Petition Law No: 3071	November 10, 1984	18571	• Management of proposal/grievance for all phases of the project.
Law on Right to Information (No. 4982)	October 24, 2003	25269	• Applies to activities of the public institutions and the professional organizations which qualify as public institutions

Legislation*	Official Gazette Date	Official Gazette Number	Implications for the Project Phases
Regulation on the Principles and Procedures for The Enforcement of the Law on the Right to Information	April 27, 2004	25445	• People's usage of right to information in accordance with democratic and transparent management during all phases of the project.
Law on the Protection of Personal Data	April 7, 2016	29677	• Protection of fundamental rights and freedoms of individuals, especially the privacy of private life, in the processing of personal data during all phases of the project.
Criminal Law	October 12, 2004	25611	• Protection of public order and safety, public health and the environment during construction and operation services.
Regulation on Subcontractors	September 27, 2008	27010	• Management of the conditions for the establishment of the principal employer-subcontractor relationship, the notification and registration of the workplace belonging to the subcontractor, the issues that should be included in the subcontractor agreement.
Building Earthquake Regulation	March 18, 2018	30364	• Construction works within the scope of the Project.
Regulation on Structures to be built in Natural Disaster Areas	July 14, 2007	26582	• Construction works within the scope of the Project.
Regulation on the Protection of Buildings from Fire	December 19, 2007	26735	• Measures to be taken for fire protection during construction and operation phases.
Regulation Concerning the Ozone Depleting Substances	April 07, 2017	30031	• Substances to be used during construction and operation phases.
Regulation Concerning the Increase in the Efficiencies of Energy Consumption and Energy Resources	October 27, 2011	28097	• Energy consumption during construction and operation phases.
Regulation on the Procedures and Principles of Employment of Children and Young Workers	April 06, 2004	25425	• To determine the basis of the way children and young workers work without endangering their health and safety, physical, mental, moral and social development or education, and to prevent their economic exploitation.

*Relevant amendments of the listed legislation will be applicable.

KOSKI shall comply with the requirements of the current national legislation and codes of practice and fulfill all other legal requirements. Therefore, during each phase of the planned Project and implementation of related management plans, all activities will be carried in accordance with certain standards and limits set by the above-mentioned laws and regulations and any license and/or permit required for the upcoming phases of the Project will be acquired accordingly.

II.1.2. Turkish Legislation on the Conservation of Nature and Wildlife

Project-related Turkish legislation on conservation of nature and wildlife is presented in Table II.2.

Table II.2 Project related Turkish Legislation on the Conservation of Nature and Wildlife

Legislation	Official Gazette Date	Official Gazette Number	Implications for the Project Phases
Regulation on the Management of Natural Assets, Natural Protected Areas, and State-Owned Lands Located on Environmental Conservation Lands	May 2, 2013	28635	• Measures to be taken during chance finds at the construction phase.
Regulation on Protection of Wildlife and Wildlife Development Area	November 8,2004	25637	• Measures to be taken during the construction and operation phases.
Regulation on the Protection of Wetlands	April 4, 2014	28962	• Measures to be taken during the construction and operation phases.
Law on Conservation of Cultural and Natural Assets No. 2863	July 23, 1983	18113	• Measures to be taken during chance finds at the construction phase.
Land Hunting Law No. 4915	July 11, 2003	25165	• Monitoring requirements regarding hunting and wildlife.
Law on Fisheries No. 1380	April 4, 1971	13799	• Measures to be taken during the construction and operation phases.
Regulation on Fisheries	March 10, 1995	22223	• Measures to be taken during the construction and operation phases.

II.1.3. Labor Law

The Turkish Labor Law (Law No: 4857) was enacted on 22.05.2003 and published in the Official Gazette dated 10.06.2003 and numbered 25134. The purpose of this law is to regulate the working conditions and work-related rights and obligations of employers and employees working under an employment contract. This Law applies to all establishments and to their employers, employer's representatives and employees, irrespective of the subject matter of their activities with the exception of the activities and employment relationships listed in Article 4 of this law; some examples to these exceptions are; sea and air transport activities, any construction work related to agriculture which falls within the scope of family economy, domestic services, sportsmen, etc. This law regulates the labor related subjects such as; the principle of equal treatment which aims to avert discrimination based on language, race, gender, political opinion, philosophical belief, religion or similar reasons; the transfer of the establishment or one of its sections which defines the process of the transfer paying attention to not to victimize anyone; temporary employment relationships in order to protect the rights of both parties. Also, labor law regulates the employment contracts, types and terminations, wages, organization of work, employment service, supervision and inspection of working conditions, administrative penal provisions and supplementary, transitional and concluding provisions of labor related subjects.

Turkish Labor Law does not cover forced labor issues. However, the Constitution of the Republic of Türkiye, Article 18 prohibits forced labor. "No one shall be forced to work. Forced labor is prohibited. Work required of an individual while serving a sentence or under detention provided that the form and conditions of such labor are prescribed by law; services required from citizens during a state of emergency; and physical or intellectual work necessitated by the needs of the country as a civic obligation shall not be considered as forced labor." Article 80 of the Penal Code penalizes human trafficking and Article 117 penalizes violation of the freedom to work and labor. Türkiye has ratified the International Labor Organization (ILO) Convention No. 29 on Forced Labor and ILO Convention No. 105 on the Abolition of Forced Labor.

Turkish Labor Law sets the minimum age at which a child can be employed as well as the conditions under which children can work (Article 71, Chapter 4). The minimum employment age is 15, but in certain cases of vocational training, mild work may be allowed for 14-year-olds. According to Turkish Labor Law, Article 73, boys under the age of 18 and women irrespective of their age must not

be employed on underground or underwater work like in mines, cable-laying and the construction of sewers and tunnels.

The Regulation on the Procedures and Principles of Employment of Children and Young Workers, which entered into force by publishing in the Official Gazette dated 06.04.2004 and numbered 25425, aims to determine the principles of working and to prevent economic exploitation of children and young workers without jeopardizing their health and safety, physical, moral and social development or education. This Regulation has been prepared on the basis of Article 71 of the Labor Law No. 4857, published in the Official Gazette dated 10.6.2003 and numbered 25134.

National Programme on the Elimination of Child Labor (2017-2023) by the Ministry of Labor and Social Security (MoLSS) was put into effect in 2017 and implemented in cooperation with relevant institutions/organizations, social partners and Non-Governmental Organizations (NGOs). In the program, the priority target groups have been identified as “Working on the Streets”, “Working in Heavy and Hazardous Works in Small and Medium-Sized Enterprises” and “Working in Mobile and Temporary Agricultural Labor Except for Family Business”; children under 18 years of age are particularly prohibited from working in these areas.

Article 32 of Labor Law defines the wages as; “in general terms, wages are the amount paid to someone by the employer or third parties in exchange for a job and paid in money. As a rule, wages, premiums, and bonuses are paid, in Turkish Lira, to a bank account opened at the workplace or privately. If the wage has been decided in terms of a foreign currency, it may be paid in Turkish money according to the currency rate on the date of payment. Wage payment must not be made in bonds, coupons or another paper claimed to represent the national currency valid in the country or by any other means whatsoever.

Wage may be paid on a monthly basis at the latest. The time of remuneration may be reduced down to one week by employment contract or by collective agreement. Statutory limitation on wage claims is five years.” The minimum wage limit is regulated by the Turkish Labor Law, Article-39.

II.1.4. Law on the Right to Information

The Turkish Law on the Right to Information (Law No: 4982) was adopted in 09.10.2003 and published in the Official Gazette dated 24.10.2003 and numbered 25269. The main objective of this law is to regulate the procedure and provide the basis of the right to information according to the principles of equality, impartiality and openness that are the necessities of a democratic and transparent government. This law applies to the activities of public institutions and professional organizations, which qualify as public institutions. The Law, which is divided into five parts in total, explains the legal rights and obligations about information disclosure processes. The first part of the law defines the objective, scope and definitions of terms that are used in law. The second part of the Law makes statements about the subjects of the Right to Information and the Obligation to Provide Information. According to Articles 4 and 5 of this Law found in this part, everyone has the right to information and the responsible parties are obligated to provide information. The application process for accessing information is explained in the third part of the law. In the fourth part of the Law, the information that is restricted is described and some examples are: information and documents pertaining to the state secrets, information and documents pertaining to the economic interests of the state, etc. Finally, the last part of the Law describes the miscellaneous aspects of this law such as entry into force and execution.

II.1.5. Permits

The Project-related permits to be taken are as follows;

- Wastewater Treatment Plant Project Approval from Provincial Directorate of Environment, Urbanization and Climate Change
- Construction license from Konya Metropolitan Municipality
- Building license from Konya Metropolitan Municipality
- Operation license from Provincial Directorate of Environment, Urbanization and Climate Change
- Temporary certificate of operation from Provincial Directorate of Environment, Urbanization and Climate Change
- Environmental Permit and License from Provincial Directorate of Environment, Urbanization and Climate Change
- Wastewater Treatment Plant Identity Card from MoEUCC
- Hazardous Waste Liability Insurance by insurance companies
- Three year Industrail Waste Management Plan from Provincial Directorate of Environment, Urbanization and Climate Change
- KSBS Notification to Provincial Directorate of Environment, Urbanization and Climate Change
- Requirements of Communiqué on Technical Personnel Working in Wastewater Treatment Plants

II.2. International Agreements and Standards

International financial institutions follow certain policies and procedures regarding assessment and management of environmental and social impacts/risks of the projects to be financed. As requirements of international support for the Project, environmental and social impact assessment studies shall be undertaken to guarantee that the Project's design, construction and operation will be satisfactory for international environmental standards alongside national legislation.

II.2.1. International Environmental Conventions that Türkiye is a Contracting Party

Turkish national policy on protection of cultural heritage and conservation of biological resources has been constituted on the base of relevant international agreements that Türkiye has ratified or acceded by laws or relevant legislation. In addition to these, there are various laws and regulations on protection and conservation of natural habitats, wildlife and cultural heritage.

The international agreements and conventions on biological, cultural heritage, environmental and wildlife conservation that Türkiye had ratified are:

- Paris Convention on the Protection of the World Cultural and Natural Heritage (1975)
- Barcelona Convention on the Protection of the Mediterranean Sea Against Pollution (1976)
- Bern Convention on Protection of Europe's Wild Life and Living Environment (1982),
- The Convention for the Protection of Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) (1981)
- Convention on Long Range Transboundary Air Pollution (CLRTAP) (1983)
- Convention on Long-Range Transboundary Air Pollution and the Cooperative Programme for Monitoring and Evaluation of the Long-Range Transmissions of Air Pollutants in Europe (EMEP) (1983)
- Vienna Convention for the Protection of the Ozone Layer (1988)

- Montreal Protocol on Substances Depleting the Ozone Layer (1990)
- Convention on Biological Diversity (Rio Convention) (1992)
- The International Convention on the Established of an International Fund for Compensation for Oil Pollution Damage (FUND 1992)
- International Convention on Civil Liability for Oil Pollution Damage (1992)
- UN Framework Convention on Climate Change (UNFCCC) (2004)
- Convention on Wetlands of International Importance, Especially as Waterfowl Habitat (RAMSAR) (1994)
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (1994)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (1996)
- Kyoto Protocol (1997)
- UN Convention to Combat Desertification (CCD) (1998)
- European Landscape Convention (2001)
- United Nations Europe Economic Commission Convention on Transboundary Effects of Industrial Accidents (2000)
- Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention) (2001)
- Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam Convention) (2004)
- Stockholm Convention on Persistent Organic Pollutant (POPs)
- Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) (1972)
- Mediterranean Sea Protocol Concerning Specially Protected Areas and Biodiversity (1988), including related protocols,
- Convention for the Protection of the Black Sea Against Pollution (Bucharest) (1994) and its protocols including the Protocol for the Protection of Biological and Landscape Diversity in the Black Sea (2004)
- ILO Conventions;
    - ILO Convention on Forced Labor (1930),
    - ILO Convention on Freedom of Association and Protection of the Right to Organize (1948),
    - ILO Convention on Right to Organize and Collective Bargaining (1949),
    - ILO Convention on Equal Remuneration (1951),
    - ILO Convention on Abolition of Forced Labor (1957),
    - ILO Convention on Discrimination (Employment and Occupation) (1958),
    - ILO Convention on Minimum Age (1973),
    - ILO Convention on Worst Forms of Child Labor (1999).

Aside from the listed ILO Conventions which are categorized as fundamental conventions; Türkiye also ratified three out of four governance conventions, 48 out of 177 technical conventions, out of 59 Conventions ratified by Türkiye, of which 55 are in force, three Conventions have been denounced, which are C 34 Fee-Charging Employment Agencies Convention, C 58 Minimum Age (Sea) Convention (Revised) and C 59 Minimum Age (Industry) Convention (Revised); one instrument abrogated which is C 15 Minimum Age (Trimmers and Stokers) Convention; none have been ratified in the past twelve (12) months.

II.2.2. EU Directives

II.2.2.1 Water Framework Directive (2000/60/EC)

The EU Water Framework Directive 2000/60/EC provides sustainable guidelines for the role of water in human health and environmental protection. The Directive aims to provide a framework for the preservation, protection of all subterranean and surface water sources, in prudent utilization of natural sources, and the sustainability and development of the water environment of the EU. All legislation related to water is in support of the Framework Directive (European Commission, 2000).

II.2.2.2 Drinking Water Framework (98/83/EC)

This directive concerns the quality of water intended for human consumption to ensure that all water intended for human consumption is clean and safe, aiming to protect public health from the adverse effects of possible contamination of water sources (European Commission, 1998).

II.2.2.3 Surface Water Abstraction Directive

This Directive belongs to the 'first wave' of EU water legislation adopted in the 1970s and 1980s. The Directive aims to protect public health by ensuring that surface water abstracted for use as drinking water reaches certain quality standards before it is supplied to the public. The Directive lays down nonbinding ‘guide’ values and binding ‘imperative’ values and requires Member States to monitor the quality of surface waters from which drinking water is abstracted and to take measures to ensure that it complies with the minimum quality standards.

This directive is integrated into the Water Framework Directive and is repealed and replaced by the relevant provisions hereof with effect from 22 December 2007. As such, it is no longer directly relevant to the project. However, the main principal obligations mentioned below are still relevant.

Member states are required (among other things) to:

- Establish water quality standards applicable to surface water used for the abstraction of drinking water, for the parameters specified in the Directive;
- Carry out sampling and analysis of surface waters used for the abstraction of drinking water, and assess the extent to which surface waters used for the abstraction of drinking water comply with the quality standards;
- Take measures to ensure that surface waters used for the abstraction of drinking water comply with the minimum quality standards; and do not allow waters that do not meet these standards to be used for the abstraction of drinking water, other than in exceptional circumstances; and
- Ensures the progressive reduction of pollution of surface water and prevents its further pollution.

The directive specifies which parameters to control and other directives specify methodologies for measurement.

II.2.2.4 Urban Wastewater Treatment Directive (91/271/EEC)

The Council Directive 91/271/EEC concerning urban wastewater treatment was adopted on 21 May 1991. Its objective is to protect the environment from the adverse effects of urban wastewater discharges and discharges from certain industrial sectors and covers the collection, treatment and discharge of:

- Domestic wastewater
- Mixture of wastewater
- Wastewater from certain industrial sectors

Four main principles are laid down in the Directive:

- Planning
- Regulation
- Monitoring
- Information and reporting

Specifically, the Directive requires:

- The collection and treatment of wastewater in all agglomerations of >2,000 population equivalents;
- Secondary treatment of all discharges from agglomerations of > 2000 population equivalents and more advanced treatment for agglomerations >10,000 population equivalents in designated sensitive areas and their catchments;
- A requirement for pre-authorization of all discharges of urban wastewater, of discharges from the food-processing industry and of industrial discharges into urban wastewater collection systems;
- Monitoring of the performance of treatment plants and receiving water; and
- Controls of sewage sludge disposal and re-use, and re-use of treated wastewater whenever it is appropriate.

II.2.2.5 Habitats Directive (92/43/EEC)

Adopted in 1992, the Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora aims to promote the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements. It forms the cornerstone of Europe's nature conservation policy with the Birds Directive and establishes the EU wide Natura 2000 ecological network of protected areas, safeguarded against potentially damaging developments.

II.2.3. World Bank Policies and Standards

Since the main finance source of the Project is WB; the Project must be in compliance with the good international practice, including WB Safeguard Policies, guides, performance standards and best practices documents alongside the national legislation.

WB governs projects and activities by the Safeguard Policies in order to ensure that they are conducted in an environmentally, financially and socially sound manner. Safeguard Policies include Environmental Assessments and other policies that define environmental and social adverse effects of

the projects as well as their reduction and prevention. These policies are enlarged upon in "The World Bank Operations Manual", which also provides guidance on compilation with the Operational Policies (OP), Bank Procedures (BP) and Good Practices (GP). OPs are defined as statements of policy objectives and operational principles including the roles and obligations of both the Borrower and the Bank, while BPs are compulsory procedures to be followed by both the Borrower and the Bank and GP are non-compulsory advisory material. Specific policies related to the Project are listed below:

- Environmental and Social OPs
  - OP/BP 4.01 Environmental Assessment
  - OP/BP 4.04 Natural Habitats
  - OP/BP 4.11 Physical Cultural Resources
  - OP 7.50 International Waterways
  - OP/BP 4.12 Involuntary Resettlement

- BP 17.50 Bank Disclosure Policy

The main objectives and tasks of the Project-related WB Safeguard Policies are explained below:

OP/BP 4.01 Environmental Assessment

- To ensure the proposed projects' environmental and social sustainability and soundness
- To inform decision-makers about the environmental and social risks
- To increase transparency by providing stakeholder engagement in the decision-making process

OP/BP 4.04 Natural Habitats

- To conserve natural habitats and biodiversity
- To avoid significant conversion/degradation of critical natural habitats
- To ensure the sustainability of services and product provided to human society by natural habitats

OP/BP 4.11 Physical Cultural Resources

- To minimize and mitigate impacts on physical cultural resources
- To ensure that measures are in compliance with the framework of national and international agreements

OP 7.50 International Waterways

- There is no international waterway within the scope of the Project, hence this OP is not triggered.

OP/BP 4.12 Involuntary Resettlement

- The Project does not trigger WB OP 4.12 any land acquisition or involuntary resettlement, and economic displacement with all of its components.

BP 17.50 Bank Disclosure Policy

- To support the decision-making process by allowing public access to information on environmental and social aspects of the project.

Under the WB's OP for Environmental Assessment (OP 4.01), projects are classified as Category A, B and C, based on the level of their likely environmental and social impacts/risks. Brief definition of these categories is given as follows:

- Category A: A proposed project is classified as Category A if it is likely to have significant adverse environmental impacts (based on type, location, sensitivity, and scale of the project and the nature and magnitude of its potential impacts). These impacts are generally large-scale, irreversible, sensitive, diverse, cumulative or precedent setting and may affect an area broader than the sites or facilities financed by the project. For a Category A project, the borrower is required to prepare an Environmental and Social Impact Assessment (ESIA) Report which examines the project's potential negative and positive environmental impacts/risks as well as its social impacts/risks, compares them with those feasible alternatives (including the "without project" situation), and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental and social performance. ESIA also includes an ESMP which details the measures to be taken during the implementation and operation of a project to eliminate, reduce or offset adverse environmental and social impacts/risks, the actions needed to implement these measures as well as monitoring indicators and actions and responsibilities.

- Category B: A proposed project is classified as Category B if the potential impacts on the environment are typically site-specific, reversible in nature, less adverse than those of Category A projects and for which mitigatory measures can be designed more readily. The scope of Environmental Assessment for a Category B projects may vary from project to project, but is narrower than that of Category A. Like Category A ESIA, it examines the project's potential negative and positive environmental and social impacts/risks and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance. If the project is recognized as Category B, this information may be contained in an ESMP only unless there are site-specific issues, which necessitate a site-specific assessment in addition to the ESMP.

- Category C: A proposed project is classified as Category C if it is likely to have minimal or no adverse environmental impacts/risks. Beyond screening, no further Environmental Assessment action is required for a Category C project.

The Project has been categorized as Category B Project according to the above given classifications. In addition, the project classified as Moderate Risk according to World Bank's E&S Policy which states that for moderate risk projects the potential risks and impacts and issues are likely to have the following characteristics: (i) predictable and expected to be temporary and/or reversible, (ii) low in magnitude, (iii) site-specific, without likelihood of impacts beyond the actual footprint of the project and (iv) low probability of serious adverse effects to human health and/or the environment (e.g., do not involve use or disposal of toxic materials, routine safety precautions are expected to be

sufficient to prevent accidents, etc.). Reason regarding to the risk characterization of the Project is given below:

- The planned WWTP has a capacity of 400 m^3/day and according to Turkish EIA regulation, the Project is exempt from the EIA process.
- The construction of WWTP does not require expropriation of any private land since the area currently belongs to KOSKI and transfer of land was completed.
- There is no national protected area and internationally protected and recognized area within the project area.
- With the realization of the Project, the wastewater will be treated and discharge of untreated wastewater into the environment will be prevented. Therefore, the Project will have positive impact on both the environment and public health.

It should be noted that Turkish laws, notably Law No. 2863 dated 21.07.1983 on the Protection of Cultural and Natural Assets (revised through the amendment issued in the Official Gazette dated 27.07.2004 and numbered 25535) and practices meet the WB requirements for physical cultural resources (OP 4.11). The Regulation on Research, Drillings and Excavations in Relation to the Cultural and Natural Assets, which was published in the Official Gazette dated 10.08.1994 and numbered 18485, define the procedures and obligations concerning the cultural and natural assets found out during construction.

The World Bank Group (WBG) EHS Guidelines constitutes technical reference resources that include general and sector specific examples of international good sector practices. It includes the information on applicable environmental, health and safety issues for all industrial sectors. WBG uses the EHS Guidelines as a technical source of information during project appraisal. EHS Guidelines include performance levels and measurements that can be achieved at newly installed facilities using WBG's available technologies at reasonable cost.

WBG General Health and Safety Guidelines include the following main items;

- Environmental
  - Air Emissions and Ambient Air Quality
  - Energy Conservation
  - Wastewater and Ambient Water Quality
  - Water Conservation
  - Hazardous Materials Management
  - Waste Management
  - Noise
  - Contaminated Land
- Occupational Health and Safety
  - General Facility Design and Operation
  - Communication and Training
  - Physical Hazards
  - Chemical Hazards
  - Biological Hazards
  - Radiological Hazards
  - Personal Protective Equipment
  - Special Hazard Environments
  - Monitoring
- Community Health and Safety
  - Water Quality and Availability
  - Structural Safety of Project Infrastructure
  - Life and Fire Safety

  - Traffic Safety
  - Transport of Hazardous Materials
  - Disease Prevention
  - Emergency Preparedness and Response
- Construction and Decommissioning
  - Environment
  - Occupational Health and Safety
  - Community Health and Safety

In addition to the WBG General EHS Guidelines, WBG Industry Sector Guidelines for Infrastructure - Water and Sanitation is also applicable. Moreover, WB Good Practice Note on Addressing Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH), and WB 2010 Access to Information Policy are other specific guides.

II.2.4. Comparison of Turkish EIA Regulation and WB OP 4.01

There are differences between the Turkish EIA Regulation and WB's OP 4.01 Policy regarding the project classification, environmental assessment policy, and public consultation and disclosure requirements. For subprojects that require an EIA, the "pre-scoping" Public Information and Participation Meeting is required by the Turkish EIA Regulation. The Stakeholder Participation Plan (SEP), which has become obligatory within the scope of the recent EIA Regulation, explains the requirements for the Public Information and Participation Meeting and how it will be done. The only formal requirement for stakeholder engagement is this meeting. It is largely equivalent to the first consultation meeting required by WB for Category A projects. However, WB requires consultation on the draft environmental assessment document for both Category A and Category B subprojects. There is no equivalent provision in the EIA Regulation in Türkiye. Although the EIA Regulation in Türkiye does not require a public consultation for projects that are not subject to an EIA, WB policy does require at least one public consultation. Since this report is out of scope in Turkish legislation, World Bank OP requirements will be relevant. Although the EIA Regulation has changed, the differences between Turkish legislation and WB OPs have remained the same.

The EIA Regulation in Türkiye only requires announcing the evaluation results together with their justifications. On the other hand, WB has different consultation requirements for Category A and Category B projects. According to WB policies, two (2) separate public consultations are required for Category A projects: one at the scoping phase (where the public has an opportunity to comment on the definition according to the ESIA) and the other at the draft Environmental Assessment (EA) phase. For Category B projects, as per WB OP 4.01, the draft EA document has to be made available to local NGOs and project-affected groups. The final ESMP for Category B subprojects should be published on WB website. For Category A subprojects, WB requires that the final ESMP be published locally as well as on the WB external website and submitted to WB Board.

The gap analysis between the WB OPs triggered by the Project and Turkish legislation is presented in Table II.3 and detailed differences between WB 4.01 and EIA Regulation are given in Table II.4.

Table II.3 Gap Analysis between Turkish Legislation and World Bank Ops

WB OPs	Turkish Legislation	Gap Analysis	Requirements to be applied to this Project
WB OP 4.01 Environmental Assessment: According to World Bank OP 4.01 projects are classified as A, B and C. While a comprehensive ESIA is prepared for Category A projects, a partial ESIA is required if the project is designated Category B+. For all Category A and B subprojects proposed for World Bank financing, during the Environmental Assessment process, the borrower consults and takes into account the views of subproject-affected groups and non-governmental organizations regarding the environmental aspects of the subproject. These requirements are not apply to Category B subprojects. The responsibility to ensure that OP 4.01 requirements are met rests with the FI.	***Environmental Impact Assessment Regulation No. 31907:*** The EIA Regulation classifies projects into two categories, *Annex I* projects are that have significant potential impacts and require an EIA. *Annex II* projects are projects that may or may not have significant effects on the environment. While comprehensive EIA is prepared for Annex-I projects, PIF is prepared for Annex-II projects. A public consultation meeting is held for projects subject to EIA. The project proponent presents a project dossier (PIF for Annex II projects or using the PIF outline for Annex I projects) to a commission, which comprises representatives of MoEUCC and relevant organizations as identified by MoEUCC. In this process, the commission takes into account the views expressed at the public information and participation meetings. While the EIA identifies a project's environmental impacts and mitigation measures, it does not specify costs and institutional responsibilities associated with these mitigation measures. The EIA does not require a monitoring plan. The final EIA report is then submitted to the MoEUCC for final review.	• The main differences are related to project classification, EA content (ESMP, ESIA, partially ESIA) and public consultation. • In the EIA Regulation in Türkiye, there is no provision limiting the suitability of experts to prevent conflict of interest. • The content of the environmental and social assessment document required by the World Bank depends on the special conditions of the project. In any case, an ESMP is required, but this requirement is only partially introduced in the EIA Regulation in Türkiye. • The "pre-scoping" consultation, which is required by Turkish EIA Regulation for subprojects requiring an EIA, is largely equivalent to the first consultation required by WB for Category A subprojects. However, WB requires a consultation on draft environmental assessment document for both Category A and Category B subprojects; there is no equivalent provision in the Turkish EIA Regulation.	• Within the scope of the project, WB OP 4.01 was taken into consideration, the project category was determined and ESMP was prepared accordingly. WB OP 4.01 requirements will also be implemented in the future (e.g. public / stakeholder consultation meeting, monitoring)

WB OPs	Turkish Legislation	Gap Analysis	Requirements to be applied to this Project
WB OP 4.04 Natural Habitats: WB Policies require all projects to be evaluated together with the associated facilities especially in terms of natural habitats. WB Policies require identification and definitions of the project area of influence (including the associated facilities as well) during scoping of the report.	***Environmental Impact Assessment Regulation No. 31907:*** EIA regulation requires the coverage of all issues regarding biological diversity and terrestrial and aquatic flora and fauna in the EIA reports. Turkish EIA regulation allows consideration of all projects in an integrated fashion, but does not necessarily require it. The area of influence is rather implicit in many EIA studies in Türkiye, in many cases, without a specific or clear definition in the report. In Türkiye, there is no specific habitat compensation requirement. There is only a policy regarding forest areas, which aims to reforest at least as much as the forest area lost due to development activities, fires, etc.	• The process for identification of important natural habitats and lack of consultation with relevant stakeholders in this process. • Requirements to work in important natural habitats • Identification of the projects that would be allowed in such areas. • Determination of work requirements for projects to be realized in important/critical natural habitats	• WB OP 4.04 has been taken into account, as the purpose of this report is an integrated assessment.
WB OP 4.11 Physical Cultural Resources This policy addresses the issue of physical cultural resources, defined as movable or immovable objects, areas, structures, groups of buildings and natural features and landscapes of archaeological, paleontological, historical, architectural, religious, aesthetic or other cultural significance.	***Law No. 2863 dated 21/07/1983 on the Protection of Cultural and Natural Assets*** The purpose of this Law is to define the definitions of cultural and natural assets that need to be protected, and to regulate the actions and activities to be organized. This law is an important guide for excavation work. Article 4 includes the responsibility to inform. It is obligatory to inform the Museum Directorate, Mukhtar or local administrative chiefs within 3 days following the discovery of movable and immovable cultural and natural properties.	• The main idea here is two-dimensional: (i) identification of chance finds during construction and (ii) potential impact of the project on known cultural assets. In case of chance finds in both WB procedures and national legislation, the works will be stopped and the Museum Directorate will be informed. There is no gap between the national legislation and the OP.	• In both implementation, the Chance Find Procedure will be applied, and if cultural heritage is found, the work will be stopped and the relevant units will be notified.

Table II.4 Comparison of WB OP 4.01 and National EIA Regulation

Steps	EIA Regulation	WB OP 4.01
Screening	The EIA Regulation classifies the proposed projects into two categories: 1. Annex-I Projects: Projects with considerable potential impacts, which require an EIA process and EIA Report. 2. Annex-II Projects: Projects with or without considerable potential impacts on the environment.	Within the scope of WB OP 4.01, the proposed projects are classified into three categories: 1. Category A: A proposed project is classified as Category A, if it is likely to have significant adverse environmental and social impacts (depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental impacts). In general, these impacts are major, irreversible, sensitive, variable, cumulative, precedent, and potentially influential over an area broader than the sites and facilities financed under the project. 2. Category B: A proposed project is classified as Category B if its environmental and social impacts are typically site-specific and structurally irreversible and if its impacts are less adverse than those of Category A subprojects and if mitigatory measures can be designed more readily than for Category A subprojects. The projects classified as Category B sometimes vary from the same type of Category A projects only in terms of their scale. 3. Category C: A proposed project is classified as Category C, if it is likely to have minimal or no adverse environmental impacts. If a project financed by the WB includes a series of sub-projects that are selected by a Financial Intermediary (FI) and financed by the WB loan, the project is classified as Category FI.
Public Information and Participation Meeting	For the projects included in the list of Annex-I, which therefore require the preparation of an EIA Report, the public information and participation meeting, whose place and date is decided by the Provincial Directorate, is held not later than 10 days prior to the meeting by disclosing it publicly in local and national newspapers. No public information and participation meeting is held for the projects included in the list of Annex-II.	For all Category A and B subprojects proposed for WB funding, the borrower will consult and consider the views of the project-affected groups and non-governmental organizations regarding the environmental impacts of the subproject during the EA process.
Scope of Environmental Assessment	For the projects in the list of Annex-I, an EIA Application File (EAF) will be prepared in line with the format given in Annex-III to the EIA Regulation. Cumulative environmental impact assessment, stakeholder engagement plan (SEP), environmental and social action plan, environmental monitoring plan, sustainability plan, zero waste plan, traffic management plan, greenhouse gas reduction plan and environmental and social management plan shall be attached to the relevant sections of the EIA Application File. According to the information given in the EAF, a special EIA report format will be prepared based on the views of committee members to be formed by the Ministry, and the EIA report will be written in line with this format, and then submitted to the Ministry. For the projects in the list of Annex-II, a Project Introduction File (PIF) will be prepared based on the format given in Annex-IV to the EIA Regulation. The prepared report will be submitted to the Provincial Directorate of Environment.	For Category A subprojects, the borrower is responsible for preparing an ESIA report that examines the project's potential negative and positive environmental and social impacts, compares them with those of feasible alternatives, and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental and social performance. The scope of the environmental and social assessment document for a Category B subproject may vary from subproject to subproject, but it is narrower than that of Category A ESIA. As with the ESIA required for Category A, the borrower will investigate the potential negative and positive environmental and social impacts of the subproject, and will recommend measures required to prevent, minimize, mitigate or compensate for adverse impacts and enhance environmental and social performance. When the project category is identified as B; this information could be included in ESMP, if there are no site-specific problems that require a site-specific assessment process in addition to ESMP.

Steps	EIA Regulation	WB OP 4.01
EA Review and Approval	The Committee will review the draft version of EIA report for the projects in the list of Annex-I. Then, the final EIA Report containing the committee's assessments will be submitted to MoEUCC for final review. MoEUCC will determine whether EIA is positive; an "EIA Positive" decision is rendered, the project will not be continued further. The PIF prepared for the projects in the list of Annex-II will be reviewed by the Provincial Directorate of Environment, Urbanization and Climate Change and the "EIA Required" or "EIA Not Required" decision will be taken accordingly. For the projects for which the "EIA is Required" decision is rendered, the procedure governing the projects in the list of Annex-I will apply.	For projects involving Financial Intermediaries (FI), the financial intermediary is responsible for meeting the requirements in OP 4.01. Normally, the EA process should be completed by the Financial Intermediary before the subproject is approved for funding of WB loan.
Disclosure	The EIA Report for the projects in the list of Annex-I will be made available to the public opinion at the headquarters of MoEUCC or provincial directorates. Following MoEUCC's final assessment of the EIA report, the Governor's Office will disclose its reasoned decision publicly. For the projects in the list of Annex-II, the final PIF will be disclosed publicly at the Provincial Directorates.	In addition to the points given in the Public Participation section, the Financial Intermediary will make the draft ESIA report prepared in local language for Category A subprojects available at a public place accessible to project-affected groups and local Non-governmental organizations (NGOs). Upon finalization of a Category A subproject ESIA report, the Financial Intermediary will submit an English copy of the final report to the WB together with the English Executive Summary. The Bank will distribute the executive summary to its executive directors, and discloses it publicly on an external website. For Category B subprojects, the Financial Intermediary will submit an English copy of the final version of the Category B EA report to the WB and the WB will disclose it publicly on an external website.
Implementation, Monitoring and Inspection	Pursuant to the EIA Regulation, MoEUCC will monitor and inspect the projects that are regarded as "EIA Not Required" or "EIA Positive", respectively, according to the provisions provided in PIF or EIA Report. In addition, the project owner should submit monitoring reports to MoEUCC, and MoEUCC needs to submit these reports to the Governor's Office for announcement to the public.	During subproject implementation, the Financial Intermediary will report to the World Bank on (a) compliance with measures agreed with the Bank on the basis of the findings and results of the EA and additional social assessments, if any, including implementation of ESIA, and (b) the findings of monitoring programs. The Bank will base supervision of the project's environmental aspects on the findings and recommendations of the Environmental Assessment, including the measures outlined in legal agreements, ESMP, and other project documents.

Source: ILBANK "Sustainable Cities Project - II Additional Financing Environmental and Social Management Framework", April 2019

III. DESCRIPTION OF THE PROPOSED PROJECT

III.1. Project Location

The project area is located in the Derebucak District of the Konya Province. The area of the district is 498.2 km². Derebucak District is located between 37°24' North latitude and 31°30' East longitude and it is located 140 km away from the Konya City Center. The district is surrounded by Beyşehir District in the north, Ibradi, Akseki and Manavgat Districts of Antalya Province in the south, Sütçüler District of Isparta Province in the west and Seydişehir District in the east. The size of land allocated for the Derebucak WWTP is approximately 2400 m^2. In addition, the discharge line length is about 718 meters between Derebucak WWTP and Kocadere River. The map showing Derebucak WWTP area is given in Figure III.1.

The construction of WWTP does not require expropriation of any private land since the area currently belongs to KOSKI and transfer of land was completed. The land was expropriated by KOSKI from the owners on 21.08.2017. The names and title deed information of the landowners are included in Annex-2. The WWTP site was previously used for strawberry cultivation, however, the area is currently in idle status and there is no land use for any purpose. Strawberry cultivation was last done by the tenant in 2017, but the tenant left the land before the land was acquired.

The potential area of influence for the Project includes the neighborhoods that are located in the Project area and their close vicinity. The settlement areas located within the potential area of influence is shown in Figure V.2. The size of AoI is 332.13 ha and the size of social AoI is the same. The identified sensitive receptors are shown on a map presented in Figure V.3.

As indicated Chapter IV.1.12, there are 1,037 protected sites in Konya province including archaeological and urban sites. However, there is no cultural property, natural property, protected site, or protected area in the Project Area. Tavsancil Rock-Cut Tomb Cultural Asset Protected area is 10.7 km north of the Project Area.

Information on sludge generated after treatment process, its treatment and disposal is given in Chapter III.5. In addition, the technical design details of sludge dewatering unit is presented in Chapter III.6.10.

This project is co-funded by the European Union, the Republic of Turkey and the World Bank
Bu Proje Avrupa Birliği, Türkiye Cumhuriyeti ve Dünya Bankası tarafından ortaklaşa finanse edilmektedir

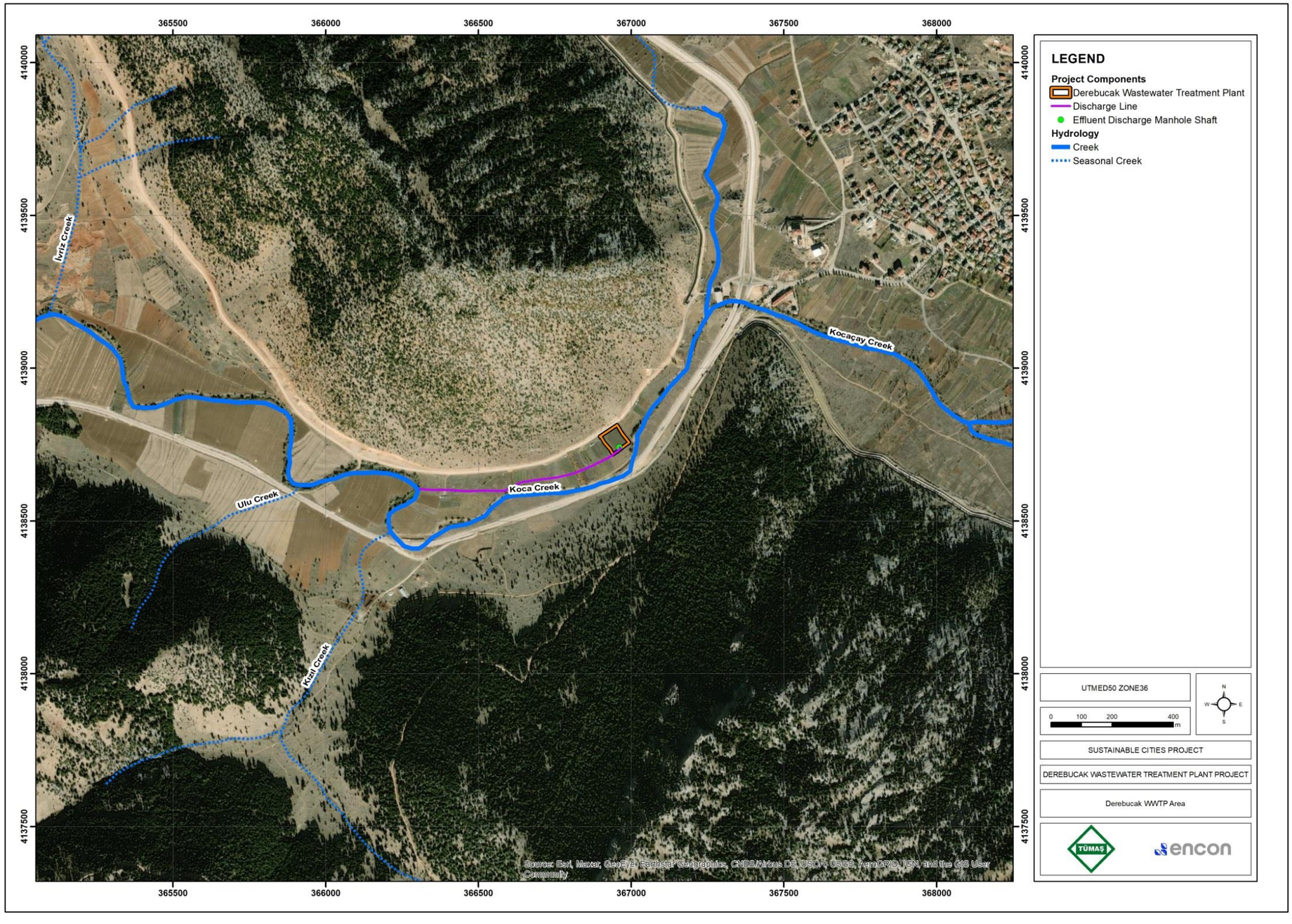

Figure III.1 Derebucak WWTP Area

III.2. Lifetime of the Project

According to technical specifications of ILBANK, the design lifetime of the Project has been accepted as 2055.

III.3. Population Projection

Population projection for Derebucak District was carried out using the census results performed by TurkStat between 1970 and 2000 with traditional census method (by physical counting of individuals at the localities where they are physically present on census day) and the census results between 2007 and 2019 with Address Based Population Registration System (ABPRS) within the scope of the Feasibility Study. The TurkStat census results used in this study are given in Table III.1.

Table III.1 Official TurkStat Census Results of Derebucak District

TurkStat –Traditional Census Results							
Year	**1965**	**1970**	**1975**	**1980**	**1985**	**1990**	**2000**
Capita	2,730	3,477	4,007	4,034	3,637	5,115	5,072
TurkStat – Address Based Population Registration System Results							
Year	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Capita	3,017	3,072	3,028	3,023	2,930	2,388	2,295	2,222
Year	**2015**	**2016**	**2017**	**2018**	**2019**			
Capita	2,066	1,958	1,901	1,930	1,796			

The population projection was carried out by the use of traditional methods, namely ILBANK, arithmetic Increase and logistic curve methods. The results obtained from the different methods are compared and the result obtained by the use of ILBANK method was selected for design of the Project. Accordingly, the design year population is accepted as 2,570. According to this method, the following formulae are used; the first one is used to calculate population growth coefficient (P) and the second one is used to calculate future population (N_t):

$$P = \left({}^{N_s}/_{N_n} \right)^{1/(T_s - T_n)} - 1 \Big) x100$$

$$N_t = N_s x \left(1 + \frac{P}{100}\right)^{T_t - T_s}$$

Where:

- P : Population growth coefficient
- N_t : Projection year population
- N_s : Latest census result
- N_n : Previous census result
- T_s : Latest census year
- T_n : Previous census year

In this method, in order to avoid unrealistically high and/or low population projections, upper and lower limit values are defined for P. Therefore;

- If P<1, then P is taken as 1;
- If 1<P<3, then P is taken as found; and
- If P>3, then P is taken as 3.

Population values were calculated with the formulas above for projection years. Corresponding population values are given in Table III.2.

Table III.2 Population Estimation of Derebucak District According to ILBANK Fixed and Gradual Increase Coefficient

Year	Based on Fixed Increase Coefficient		Based on Gradual Increase Coefficient	
	P_{chosen}	Population Projection	P_{kd}	Population Projection
2019	1.00	1,796	0.00	1,796
2020		1,814	0.13	1,798
2025		1,906	0.25	1,821
2030		2,004	0.38	1,855
2035		2,106	0.50	1,902
2040		2,213	0.63	1,962
2045		2,326	0.75	2,037
2050		2,445	0.88	2,128
2055		2,570	1.00	2,236

Source: Derebucak Wastewater Treatment Plant, Feasibility Report

III.4. Wastewater Projection

Wastewater projections of the Project are determined in accordance with the domestic wastewater generation rates which are based on Communiqué on Technical Procedures in WWTPs (Official Gazette dated 20.03.2010 and numbered 27527) and Regulation on the Preparation of ILBANK City and Town Drinking Water Projects (Official Gazette dated 22.04.1983 and numbered 18733) and the amount of infiltration flow from the groundwater to the wastewater collection system. Within this regard, design flowrates of the Project are provided in Table III.3.

Table III.3 Flow Rates Calculated According to Peak Factors

Year	Dry Weather Average Flowrate (m^3/day)	Minimum Flowrate (m^3/h)	Dry Weather Average Flowrate (m^3/h)	Dry Weather Maximum Flowrate (m^3/h)	Rainy Weather Peak Flowrate (m^3/h)
2040	400	12.03	16.7	30.16	67

Source: Derebucak Wastewater Treatment Plant, Feasibility Report

Within this context, if the WWTP receives more flow than anticipated in rainy weather, the extra flow will by-pass.

III.4.1. Wastewater Characterization

Within the scope of the Project, wastewater analyses were carried out from 2-hour composite samples taken from the discharge point of Derebucak sewerage network between November 18, 2015 and December 5, 2015 by KOSKI WWTP Laboratory and Envirolab Measurement and Analysis Laboratory. The analyses results of Envirolab, which is an accredited laboratory, are given in Table III.4, while the analyses made by the KOSKİ WWTP laboratory are given in Table III.5.

Table III.4 Derebucak Sewage Discharge Wastewater Analysis Results (Envirolab)

Date of Wastewater Sampling (2-hour composite samples)	pH	COD (mg/l)	BOD_5 (mg/l)	SS (mg/l)	TN (mg/l)	TP (mg/l)
18.11.2015	7.56	1,168	150	115	64.65	5.97
23.11.2015	7.56	304	170	200	47.63	7.43
05.12.2015	7.62	268.8	150	182	44.8	6.343
Wastewater standards for the discharge of wastewater to wastewater infrastructure plants	6-10	1000	-	500	100*	10*

Source: Derebucak Wastewater Treatment Plant, Feasibility Report
**These parameters are only checked if the wastewater treatment plant of the relevant municipality is subject to Annex IV Table 2 of the Urban Wastewater Treatment Regulation.*

Table III.5 Derebucak Sewage Discharge Wastewater Analysis Results (KOSKI WWTP Laboratory)

Date of Wastewater Sampling (2-hour composite samples)	pH	COD (mg/l)	BOD_5 (mg/l)	SS (mg/l)	TN (mg/l)	TP (mg/l)
18.11.2015	7.58	273	120	156	47.4	4.8
23.11.2015	7.64	352	175	166	64.8	7.14
05.12.2015	7.87	326	150	130	61.8	6.68
Wastewater standards for the discharge of wastewater to wastewater infrastructure plants	6-10	1000	-	500	100*	10*

Source: Derebucak Wastewater Treatment Plant, Feasibility Report
**These parameters are only checked if the wastewater treatment plant of the relevant municipality is subject to Annex IV Table 2 of the Urban Wastewater Treatment Regulation.*

Since these measurements are made in a very short period of time and the samples are composite samples of two (2) hours, the direct use of the measurement results in determining the design parameters is not considered.

Pollution Load Calculations

In the calculation of pollution loads, according to the Wastewater Treatment Plants Technical Procedures Communiqué, per capita organic load values depending on the population are given in Table III.6.

Table III.6 Unit Pollution Loads Given in the Wastewater Treatment Plants Technical Procedures Communiqué

Population	Wastewater Parameters (g/capita.day)				
	SS	COD	BOD	TN	TP
2,000-10,000	35	55	40	5	0,9
10,000-50,000	45	75	45	6	1,0
50,000-100,000	50	90	50	7	1,1

Source: Derebucak Wastewater Treatment Plant, Feasibility Report

According to Table III.6, pollution loads and concentrations have been calculated for the year 2040. The results of the calculations are given in Table III.7.

Table III.7 Pollution Concentrations Calculated with Unit Pollution Loads

Description	Wastewater Parameters				
	SS	COD	BOD	TN	TP
Projected Unit Pollution Loads (g/capita.day)	35	55	40	5	0,9
Pollution Loads Calculated for 2040 (kg/day)	101	158	115	14,4	2,6
Calculated Pollution Concentrations (mg/l)	252	395	306	288	6,5

Source: Derebucak Wastewater Treatment Plant, Feasibility Report

In the project meetings held with KOSKI, the pollution values given in the ATV-131 and Wastewater Treatment Plants Technical Procedures Communiqué were discussed, but the concentrations determined by KOSKI were also evaluated in the light of the region characteristics, water consumption, wastewater generation tendency and analyzes of the Administration. The concentrations determined by KOSKI and the concentration values calculated using the Wastewater Treatment Plants Technical Procedures Communiqué are close values; as a result of literature research, wastewater analysis results and project meetings with KOSKI, the concentrations that will be the basis for Derebucak WWTP project are given in Table III.8.

Table III.8 Derebucak Wastewater Treatment Plant Design Inlet Wastewater Pollution Values

Wastewater Parameters (mg/l)				
SS	COD	BOD	TN	TP
300	600	300	60	10

Source: Derebucak Wastewater Treatment Plant, Feasibility Report

III.4.2. Effluent Characterization

The wastewater treated in the Derebucak WWTP will be discharged to Kocadere River. The discharge criteria of the Derebucak WWTP have been decided on the basis of the Water Pollution Control Regulation, Urban Wastewater Treatment Regulation, EU directives and WBG EHS guidelines. Kocadere River is determined non-sensitive according to the Regulation on Determination of Sensitive Water Bodies and the Areas Affecting these Bodies and Improvement of Water Quality. Thus, the discharge criteria for the Derebucak WWTP, as it discharges into a non-sensitive area, are designed to be in accordance with the discharge criteria given in the Water Pollution Control

Regulation. The discharge criteria of the mentioned regulation are given in Table III.9 and the World Bank Standards limit values are given in Table III.10.

Table III.9 Derebucak WWTP Discharge Standards

Parameter	Composite Sample 2 Hours	Composite Sample 24 Hours
BOD_5 (mg/l)	50	45
COD (mg/l)	160	110
SS (mg/l)	60	30
pH (mg/l)	6-9	6-9

Source: Derebucak Wastewater Treatment Plant, Feasibility Report

Table III.10 Indicative Values for Treated Sanitary Sewage Discharges

Pollutants	Unit	Guideline Value
pH	pH	6-9
BOD	mg/l	30 mg/l
COD	mg/l	125 mg/l
Total suspended solids	mg/l	50 mg/l

Source: IFC International Corporation, General EHS Guidelines: Environmental Wastewater and Ambient Water Quality

III.5. Sludge Treatment and Disposal

Since the sludge must be removed stably in accordance with the Urban Wastewater Treatment Regulation No. 26047 dated 08.01.2006 either a stabilization process must be carried out within the system or a separate stabilization process must be applied after the sludge is removed from the system. The stabilization process of the sludge in the system requires long aeration of the process, which is possible with larger aeration pool volume and more energy. Under appropriate conditions, the sewage sludge from urban wastewater treatment plants can be reused. It is essential that the use and/or disposal of the treatment sludge in the soil is carried out in accordance with the standards and methods determined in the Soil Pollution Control Regulation. The final sludge will be disposed of in accordance with these standards.

On the other hand, after the stabilization process is completed, the sludge must be dewatered and brought to a certain solid content for disposal. The solid matter content of sludge, which is mechanically dewatered by classical methods, only reaches the level of 18-25%, which is not considered sufficient for both legal regulations and practical transportation/storage/use in the final disposal of sludge. Therefore, it is necessary to bring the sludge to the desired solids ratio with additional processes. Many of these processes (lime addition, composting, drying, incineration) also stabilize the sludge.

Since the drying system is not economical due to the size of the facility, the sludge stabilized by the long aeration system will be passed through mechanical dewaterers to obtain sludge cake with a solids content of ≥ 22%.

A sludge dewatering system will be provided. Centrifugal-decanters are suitable for dewatering activated sludge after conditioning with a cationic polyelectrolyte. For sludge conditioning,

the polyelectrolyte solution is fed together with the sludge to be dewatered from the inlet side of centrifugal decanter type dewaterers. The sludge flow rate applied to the dewatering equipment is measured on the line. The polyelectrolyte is prepared as a 0.1% solution by automatic units consisting of a dry polyelectrolyte tank, auger conveyor, wetting device and preparation and digestion tanks with agitators. The polyelectrolyte solution is fed to the sludge dewaterers via dosing pumps. The dewatered sludge cake is transferred to sludge containers to be removed from the plant by a screw conveyor. The permeate water formed in centrifugal decanter type dewaterers is transferred to the in-plant pumping station with gravity. It is necessary to use additional metal salts such as $FeCl_3$ (100% solution) or $FeSO_4$, since the phosphorus value given at the entrance cannot be reduced to 2 mg/l by biological treatment. For this purpose, a chemical tank and 2 dosing pumps are used.

The treatment sludge, which is classified as non-hazardous in Annex-4 of the Waste Management Regulation, must meet all the other parameters given in Annex-2. For treatment sludge in accordance with the regulation, a maximum of 250,000 mg/kg is taken until 1/1/2025 without any additional limit value increase. The final product will be disposed of in a way that suffice the requirements of Turkish legislation. The sludge coming out of the facility is disposed of by the General Directorate of KOSKI and sent to Konya Solid Waste Landfill Facility in accordance with Regulation on Landfilling of Waste and Urban Wastewater Treatment Regulation. The treatment sludge is disposed of in the Incineration Facility located in the Konya Solid Waste Storage Facility.

III.6. Derebucak Wastewater Treatment Plant Components

Derebucak WWTP is designed as an advanced biological wastewater treatment system with an additional final disinfection. As mentioned before, the WWTP will have a daily capacity of 400 m3 with a target year of 2055 and it is expected to serve population of 2,570. Also, the discharge line used after WWTP will be connected to Kocadere River and will be approximately 718 m long. The area, where the WWTP will be constructed, is given in Figure III.1. The layout of the WWTP is given in Figure III.2. The units included in the WWTP will consist of the following:

- Inlet structure,
- Basket screen,
- Inlet pumping station,
- Packed grit chamber and fine screen unit,
- Biological phosphorus removal tanks,
- Aeration tanks,
- Final sedimentation tanks,
- Disinfection unit,
- Effluent flowrate measurement structure,
- Sludge dewatering unit.

The flow chart of the units is presented in Figure III.3. Detailed technical information about the units is provided in the following sub-sections.

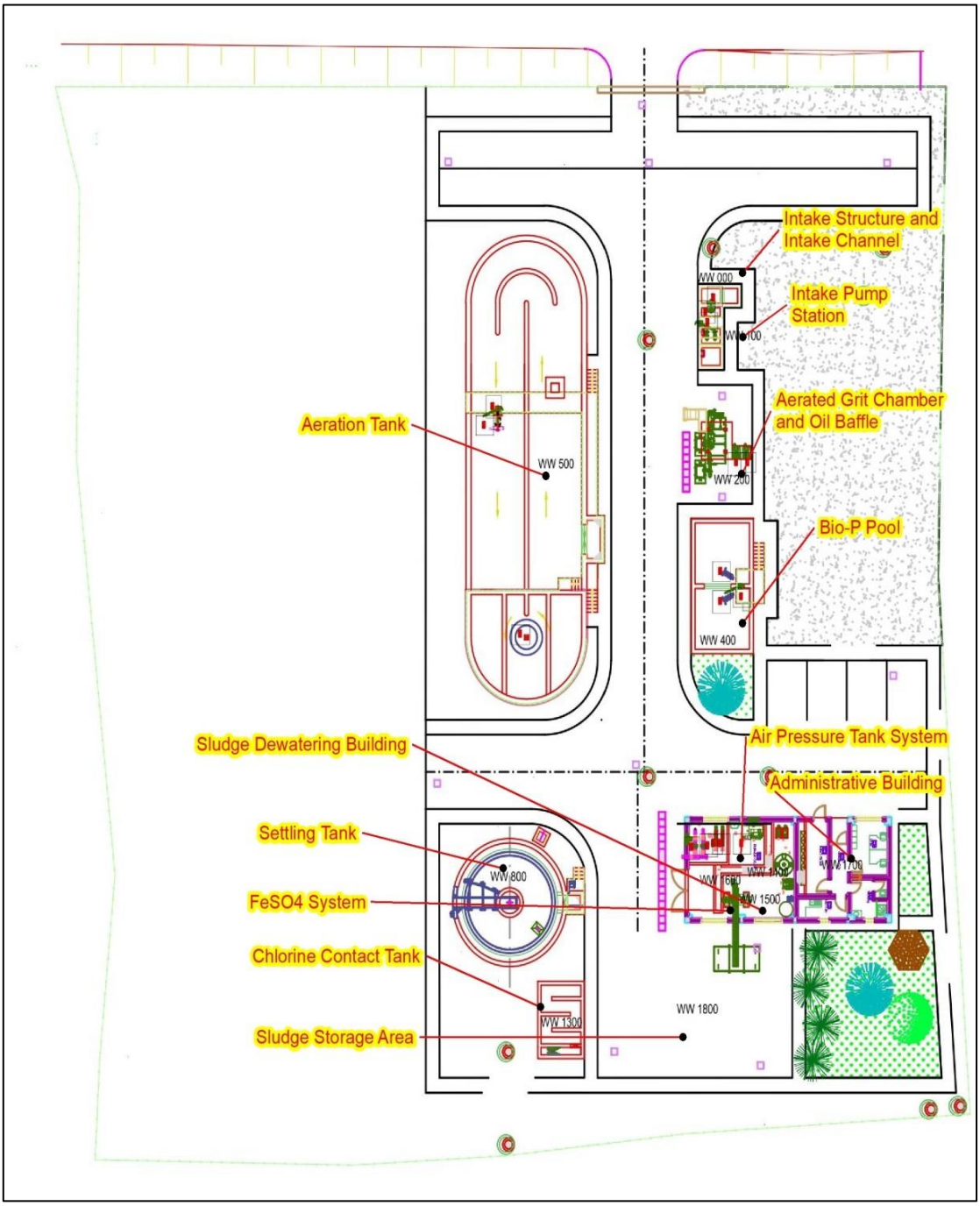

Figure III.2 Layout of Derebucak WWTP

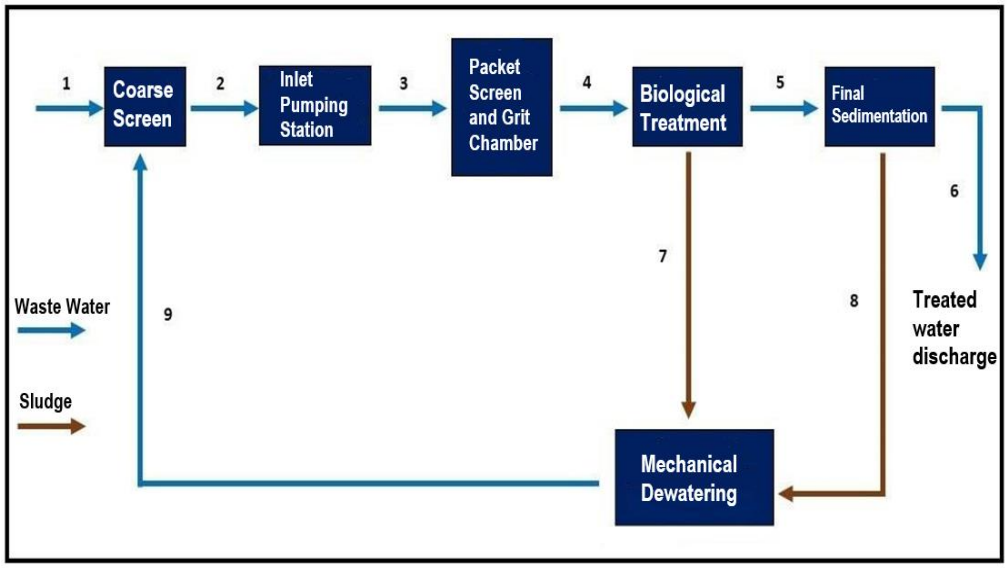

Figure III.3 Derebucak WWTP Flow Chart

III.6.1. Inlet Structure

The inlet structure is an underground reinforced concrete structure containing the inlet pumping station, including the emergency flood structure. The structure allows wastewater to enter the WWTP or bypasses wastewater overflow caused by rainy weather, directly to the receiving water body. The inlet structure will have a capacity of 30.16 m^3/h.

III.6.2. Basket Screen

Coarse screens are used for separating unwanted materials such as paper, plastic etc. coming with the wastewater from going through biological treatment. One basket grid type coarse screen equipment with 20 mm grid spacing will be used in the WWTP. The basket will be removed and unloaded via a jib crane to be provided for the pumping station. Screen waste will be disposed of in containers that will be placed near the grids. The screen and the pumping station will be insulated with a cover on the upstream side. Details of the basket screen are provided in Table III.11.

Table III.11 Design Details of the Basket Screen

Screen Type	Basket Screen
Amount	1
Screen Capacity	31 m^3/h
Grid Spacing	20 mm
Dimensions of Basket Screen	60 x 60 cm
Material	SS 316 L
Number of Grid Waste and Sand Containers	2
Container Capacity	1.0 m^3

III.6.3. Inlet Pumping Station

After the coarse screen, the wastewater reaches the inlet pumping station. Inlet pumps transfer the wastewater to the packed grit chamber unit. Details of the inlet pumping station are provided in Table III.12.

Table III.12 Design Details of the Inlet Pumping Station

Wastewater Inlet Pump Types	Wet Type, Submersible
Amount	(1 + 1)
Pressure	12 mss
Capacity	40 m^3/h (each)
Protection	Explosion-proof (Zone-2)

III.6.4. Packed Grit Chamber and Fine Screen Unit

The pumped wastewater is then transferred to the packed grit chamber and fine screening unit. The purpose of using these units is the removal of sand, oil and grease in order to prevent material accumulation in pipes and ducts and to protect mechanical equipment against corrosion. In addition, it provides the separation of some unwanted materials such as paper, plastic, etc., which pass without being held in the coarse screen, from the wastewater before going through biological treatment processes. Details of the packed grit chamber and fine screen unit are provided in Table III.13.

Table III.13 Design Details of the Packed Grit Chamber and Fine Screen Unit

Grit Chamber	
Type	Packed
Amount	1
Total Capacity	36 m3/h
Tank	
Length	4200 mm
Width	730 mm
Max Tank Height	3100 mm
Screen	
Diameter	260 mm
Press Screw Diameter	219 mm
Setting Angle	35°
Grid Spacing	6 mm
Engine Power	0.75 kW
Grit Chamber Blower Amount	(1+1)
Capacity	25 m^3/h, 0.5 bar (each)
Grit Disposal	
Screw Amount	2
Diameters of Screw -1 and 2	180 mm and 168 mm
Setting Angles	0° and 30°

Power	0.25 kW (each)
Oil Disposal	
Engine Power	0.37 kW
Container	
Number of Screen Wastes and Grit Containers	2
Capacity	1.0 m^3
Material	Dip Galvanized

Materials of all the components of grit chamber, tank, screen, grit and oil disposal units are AISI 304 L. The material of the container is dip galvanized.

Packed type grit chamber unit includes mechanical fine screen and screen press, sand collection screw conveyor, grit separator and oil separator systems. Screen waste and separated grit are constantly filled into containers. The oily water held in the oil retaining section is transferred to the oil collection chamber.

III.6.5. Biological Phosphorus Removal Tanks

The biological treatment design has been made in accordance with the ATV-A131[1] standard and the Wastewater Treatment Plants Technical Procedures Communiqué. The biological treatment units are designed for carbon and nutrient removal in this project. The return loads (3%) from the sludge permeate were also taken into account for the design. Bio-P and RAS-DN tanks are used for the removal of biological phosphorus.

The main function of this unit is the biodegradation of phosphorus. There is one tank to be provided for the WWTP that is made of reinforced concrete and has a raceway (aquaculture) type. Details of biological phosphorus removal tanks provided in Table III.14.

Table III.14 Design Details of Phosphorus (P) Removal Tank

Maximum total P at the biological treatment inlet C_P, IAT)	10 mg/L
P binds for the growth of bacteria (X_P, BioP)	4.5 mg/L
P bind with biological phosphorus removal (X_P, BM)	3 mg/L
Biodegradable maximum total P (TP)	7.5 mg/L
TP outlet concentration	2 mg/L
Maximum TP to be chemically degraded (XP, Prec)	0.5 mg/L
Excess sludge from biodegradation of P (SPd, P)	6 kg SM/d

For the chemical degradation of non-biodegradable phosphorus, $FeCl_3$ or $FeSO_4$ can be used. Return activated sludge (RAS) tanks are required for this type of process. In case $FeCl_3$ is used, design details are given in Table III.15.

[1] *ATV-A131: A German Standard published by German Association for Water, Wastewater and Waste; Standard Name: Dimensioning of Single-Stage Sewage Treatment Plants with Activated Sludge.*

Table III.15 Design Details of Phosphorus (P) Removal Tank and RAS tank in case of using FeCl3

Required FeCl3 solution	0.5 kg/d
Number of FeCl3 dosing pumps	(1+1)
Dosing pump capacity	2 L/h (each)
Maximum chemical excess sludge, (from FeCl3) (SP d, Prec)	1 kg/d
Total flowrate including sludge permeate flowrate (Q)	32 m^3/h
Return activated sludge rate	75%
Return activated sludge flowrate (QRS)	23.25 m^3/h
Total flowrate including return activated sludge flowrate (Qt)	55.25 m^3/h
Anaerobic tank retention time	0.7 h
Anaerobic tank volume	46 m^3

Bio-P (Biological Phosphorus) Tank

The wastewater coming from the packed grit chamber and fine screen goes to the Bio-P anaerobic tanks. There are two phases to biological phosphorus removal. These phases are the storage of phosphorus release in anaerobic environments and the storage of excess phosphorus released in anoxic/oxic environments. To facilitate the phosphorus release, the cell must store readily degradable dissolved organic carbon in the inlet water. When an electron acceptor is present in the environment, the microorganism will use the stored carbon to keep going and store excess phosphorus for ATP regeneration.

In order to monitor the formation of the anaerobic zone, an oxidation reduction potential (ORP) meter will be placed inside the Bio-P tank.

RAS-DN (Return Activated Sludge Denitrification) Tank

The Johannesburg process was used to increase biological phosphorus removal and reduce chemical consumption. For this, a RAS-Denitrification tank was used in which the return activated sludge was kept and the oxygen and nitrate remaining in the activated sludge were reduced. Thus, it aims to prevent the decomposable dissolved organic carbon from the raw wastewater from being consumed with nitrate in the return sludge and to ensure that all of it can be used in biological phosphorus removal, thus preventing the process in the anaerobic tank and thus the biological phosphorus removal from being adversely affected. With the two valves to be left on the sludge return line, the return sludge can also be taken into the anaerobic Bio-P tank when required.

Bio-P Anaerobic Tanks and RAS-DN tanks will be equipped with submersible mixers to prevent sludge precipitation.

Chemical Dosing

As can be seen in the process calculations, it is necessary to use additional metal salts such as FeCl3 (100% solution) or FeSO4, since the phosphorus value given at the entrance cannot be reduced to 2 mg/lt by biological treatment. For this purpose, a chemical tank and 2 dosing pumps were used.

III.6.6. Aeration Tanks

In the anoxic and oxic sections of the aeration tanks, biological treatment continues with nitrification and denitrification processes. The amount of air required for nitrification is supplied and the ammonium nitrogen at the inlet is converted into nitrate nitrogen. The generated nitrate nitrogen then is used as an electron acceptor for the removal of biochemical oxygen demand. Then the wastewater is transferred to aeration tanks for its further treatment in Bio-P tanks. Aeration tanks are designed as pre-denitrification systems. The purpose of this unit is to provide the biological removal of organic carbon in the wastewater from which phosphorus removal is made, and the removal of nutrients through nitrification and denitrification.

For this process, two reinforced concrete raceway type aeration tanks will be provided. In order to avoid sedimentation as well as the volume losses caused by the dead zones resulting from the sedimentation and enable the flow characteristics required, submersible mixers will be installed to the bottom of the tank to provide a velocity of 0.3 m/h.

Wastewater temperatures accepted for the design calculations and inlet characteristics of the aeration tanks are given in Table III.16. According to the inlet characteristics, design details of the aeration tanks are given in Table III.17.

Table III.16 Design Wastewater Temperatures and Inlet Wastewater Characteristics

Design Wastewater Temperatures	
Maximum (summer)	25 °C
Minimum (winter)	12 °C
Average	16 °C
Inlet Characteristics	
TS/BOD5 rate at the inlet of the aeration tanks	1
Maximum inlet flowrate (including RAS from the sludge treatment)	412 m^3/d

Table III.17 Design Details of the Aeration Tanks

Number of operation tanks	2
Unit volume of the operating tank	350 m^3(each)
Mixed Liquor Suspended Solids (MLSS)	4.20 kg/m3
Maximum F/M ratio	0.04 kg BOD5/ kg MLSS
Total daily sludge production	116 kg/d
Number of submersible mixers	2 (each)
Average mixer velocity	0.30 m/s
Selected aerator power	18.5 kW
Maximum flowrate coming through the diffusers	4 m^3/h
Diffuser type	9-inch fine bubble membrane diffusers

III.6.7. Final Sedimentation Tanks

After the biological treatment and aeration processes, the treated wastewater goes to the final sedimentation tanks to separate the treated wastewater from the activated sludge. Circular concrete tanks with central sludge hopper and sludge and foam scraper mechanisms are used to carry out this process. Design Details of the final sedimentation tanks are given in Table III.18.

Table III.18 Design Details of the Final Sedimentation Tanks

Number of Final Sedimentation Tank	1
Design SVI value	90
RAS concentration	9.80 kg/m^3
Return rate for maximum flowrate	0.75
Maximum total return activated sludge flowrate (QRS)	23.25 m^3/h
Number of return activated sludge pumps	1+1
Capacity of the return activated sludge pump	25 m^3/h (each)
Selected tank diameter	8 m
Maximum surface hydraulic loading rate	2.0 m/h
Existing surface hydraulic loading rate	0.62 m/h
Maximum surface sludge loading rate	650 L/m^2h
Existing surface sludge loading rate	250 L/m^2h
Water depth at a distance of 2/3 r	3.58 m
Detention time at maximum flowrate	2.5 h
Weir	
Weir type	Type – A (acc. To DIN 19558)
Maximum weir load	3.1 m^3/m/h
Maximum excess sludge amount	116 kgDS/d
Excess sludge SM concentration	9.80 kg/m^3
Maximum excess sludge flowrate	12 m^3/d
Number of excess sludge pumps	1+1
Capacity of the unit excess sludge pump	2 m^3/h

The activated sludge/water mixture that came from the aeration tanks are transferred to the final sedimentation tanks by gravity force. The sludge that has settled and scraped as a result of final sedimentation will be returned to the anaerobic Bio-P tank, which is the entrance of biological treatment, with the return of sludge cones and Excess Sludge Pumps in order to maintain the activated sludge concentration in the biological treatment units. Recirculation (return) pump capacities will be suitable for 75% recirculation.

Excess sludge, on the other hand, will be separated from the recirculation line with a valve and transferred to the sludge balancing tank under the control of the operator with a flow meter. Since the pumps will be velocity-adjustable, their return flow rates will be adjustable by the operator. Foam and floating materials likely to form on the surface of the tanks will be collected with the foam collection chamber in the tanks, and will be transferred to the Final Settlement Foam Manholes. After the floating materials kept in the sieve at the entrance of the manhole are separated, the filtered water will be returned to the inlet pumping chamber. Materials held on the sieves will be cleaned by the operator from time to time.

III.6.8. Disinfection Unit

In this unit, treated wastewater will be disinfected. Disinfection will be held with the chlorination method. Design details of the disinfection unit are given in Table III.19.

Table III.19 Design Details of the Disinfection Unit

Type of the disinfection unit	Disinfection with liquid chlorine dosing and chlorine contact tank
Capacity of the tank	30.16 m^3/h
Chlorine dosing amount	3 mg/L with 10% hypochlorite solution
Hourly required dosing amount	0.9 L/h
Dosing pump capacity	1 L/h
Chlorine storage volume	1 m^3
Material of the chlorine storage	PE
Residual chlorine amount at the outlet of the unit	0.5 mg/L

There will be an instrument measuring the residual chlorine at the chlorine contact tank outlet, and the dosing pump will automatically adjust the dosing amount so that the residual chlorine is 0.5 mg/L.

A sampling device will continuously and automatically take samples from the treated water in order to control the parameters of the effluent water in the laboratory in the disinfection unit outlet chamber, which will be added in the next step according to the need. This sampling device is currently out of the project scope.

III.6.9. Effluent Flowrate Measurement Structure

The calculations of the effluent flowrate measurement structure are made by taking parshall flume throat width (w) as 3''. This structure allows the plant to measure the flowrate at the outlet to monitor if it is suitable for the discharge point.

III.6.10. Sludge Dewatering Unit

The purpose of this unit is to dewater the biological sludge that is generated during the treatment processes to make it suitable for disposal. The sludge will be transported by competent and licensed firms on behalf of the General Directorate of KOSKI and sent to Konya Solid Waste Landfill Facility to be stored in accordance with Regulation on Landfilling of Waste and Urban Wastewater Treatment Regulation. One centrifugal decanter will be used as the sludge dewatering system for this treatment. These decanters are suitable for dewatering activated sludge after conditioning with a cationic polyelectrolyte. The design details of the sludge dewatering system are given in Table III.20.

Table III.20 Design Details of the Sludge Dewatering Unit

Total amount of sludge	2,910 kg/d
Excess sludge flow	11,88 m^3/d
Daily operation time	8 h (6 days/week)

Sludge cake concentration.	1 kg/ dm³
Daily discharged sludge	116 kg/d
Maximum consumption of polyelectrolyte	0.85 kg/day
Number of polyelectrolyte solution preparation units	1
Polyelectrolyte solution preparation unit capacity	500 L/h
Number of polyelectrolyte dosing pumps	1+1
Polyelectrolyte dosing pumps capacity	0.5 m³/h

III.7. Project Schedule

The tendering and contracting period of the Project is expected to take place in the third quarter of 2023, and after the tendering period, the construction works on the WWTP will start and last for 12 months.The defect liability period (DLP) starts just after that and lasts for 12 months. Based on the verbal information received from KOSKI, the estimated project schedule is presented in Table III.21.

Table III.21 Project Schedule

Year	**2022 Quarters**	**2023 Quarters**				**2024 Quarters**				**2025 Quarters**		
Item	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**
Tender docs, tendering												
Construction												
DLP												

IV. BASELINE CONDITIONS

IV.1. Physical Environment

This chapter includes information regarding geological, hydrogeological and hydrological characteristics, seismicity and natural hazard conditions, soil, erosion and land use characteristics, climate, environmental air quality and noise levels, landscape characteristics, biological environment and protected areas located in the Project area and its vicinity.

Descriptions and information provided in this chapter, regarding current conditions of the Project area and its vicinity, are based on data acquired from and reports prepared by related public and private institutions (the Ministry of Agriculture and Forestry, the General Directorate of Meteorology, the Eastern Mediterranean Development Agency, Turkish Statistical Institute, etc.), field studies conducted for identification of physical and biological environment, Geographical Information Systems (GIS) studies and satellite imagery.

IV.1.1. Geographical Location

The project area is located in the Derebucak District of the Konya Province. The area of the district is 498.2 km². Derebucak District is located between 37°24' North latitude and 31°30' East longitude and it is located 140 km away from the Konya Province Center. The district is surrounded by Beyşehir District in the north, Ibradi, Akseki and Manavgat Districts of Antalya Province in the south, Sütçüler District of Isparta Province in the west and Seydişehir District in the east. The site location map of the Project is given in Figure IV.1.

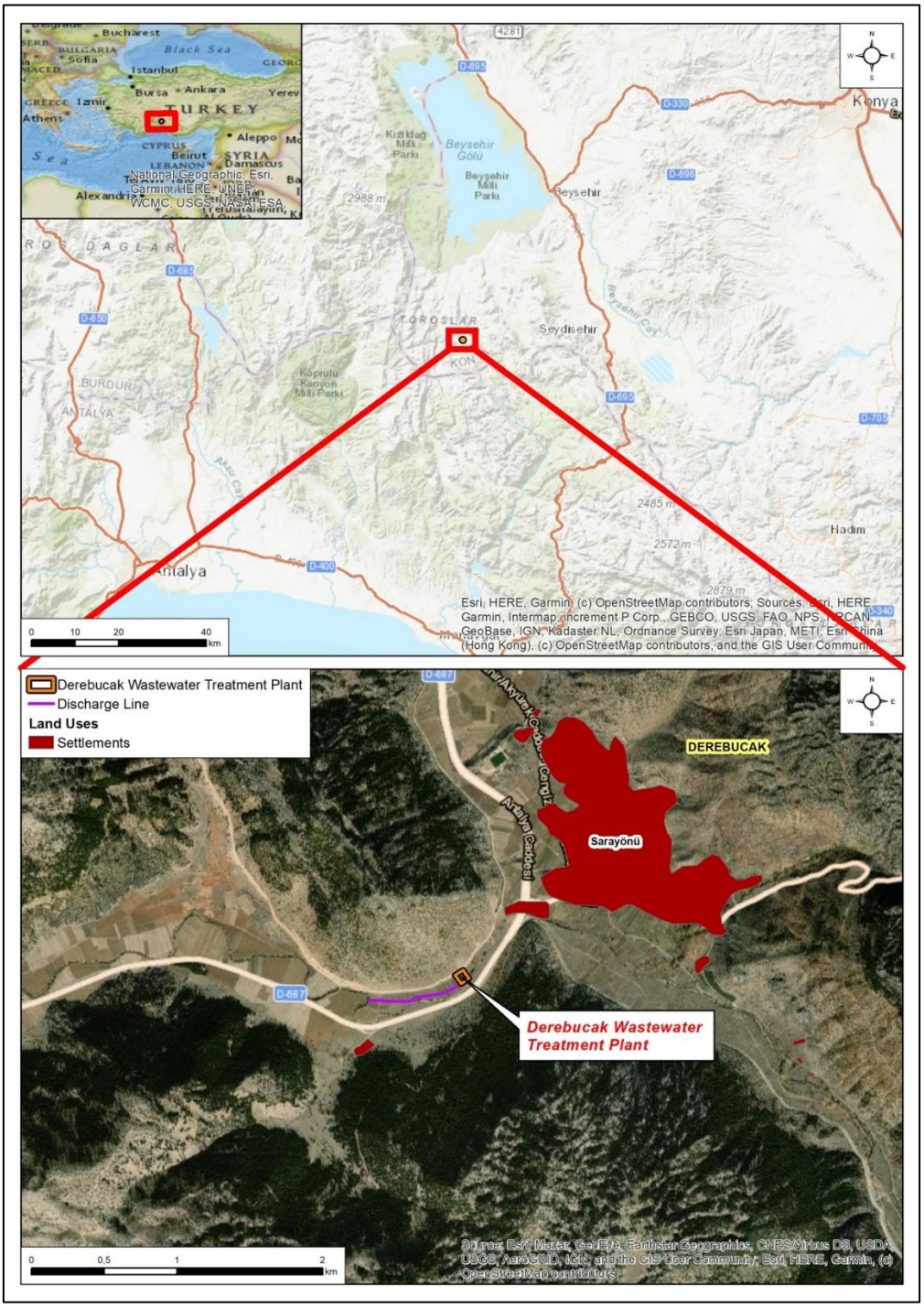

Figure IV.1 Site Location Map of the Project

IV.1.2. Land Use and Property

The construction of the WWTP will take place on parcel 159/25 of Sarayönü Neighborhood of Derebucak District. The parcel, which has an area of 4,594.77 m^2 and previously owned by private users, currently belongs to KOSKI and this land was acquired in anticipation of the Project. The expropriation process of the WWTP site was completed in August 21, 2017. The Ex-Post Social Audit Report will be formulated in order to assess the scale of impact on the Project Affected Person (PAP) and to check if due and fair compensations have been issued to them according to the provisions, objectives and principles of both national legislation and WB requirements. The Ex-Post Social Audit Report will be prepared and compliance with OP 4.12 will be checked. The official document regarding the land ownership status of the WWTP site is provided in the Annex-2 of this report.

According to Provincial Land Use Database, the land use of the planned WWTP site is irrigated garden area and the site was previously used for strawberry cultivation, however, the area is currently in idle status and there is no land use for any purpose. Photographs taken from the WWTP site during the site visit conducted by ENCON on October 13, 2021 are provided in Figure IV.2. Land Use Map according to Provincial Land Use Database is also given in Figure IV.3.

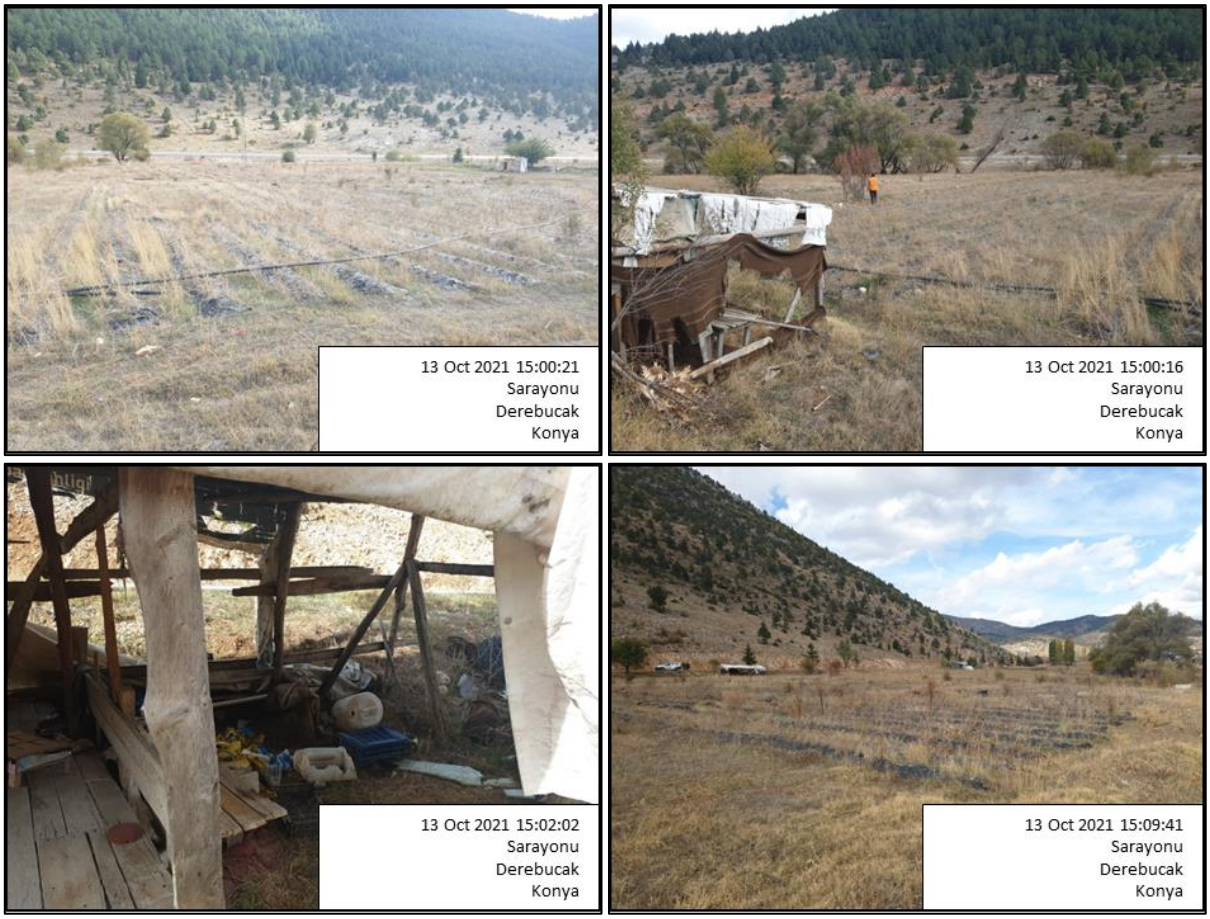

Figure IV.2 Photographs Taken from the WWTP Site

This project is co-funded by the European Union, the Republic of Turkey and the World Bank
Bu Proje Avrupa Birliği, Türkiye Cumhuriyeti ve Dünya Bankası tarafından ortaklaşa finanse edilmektedir

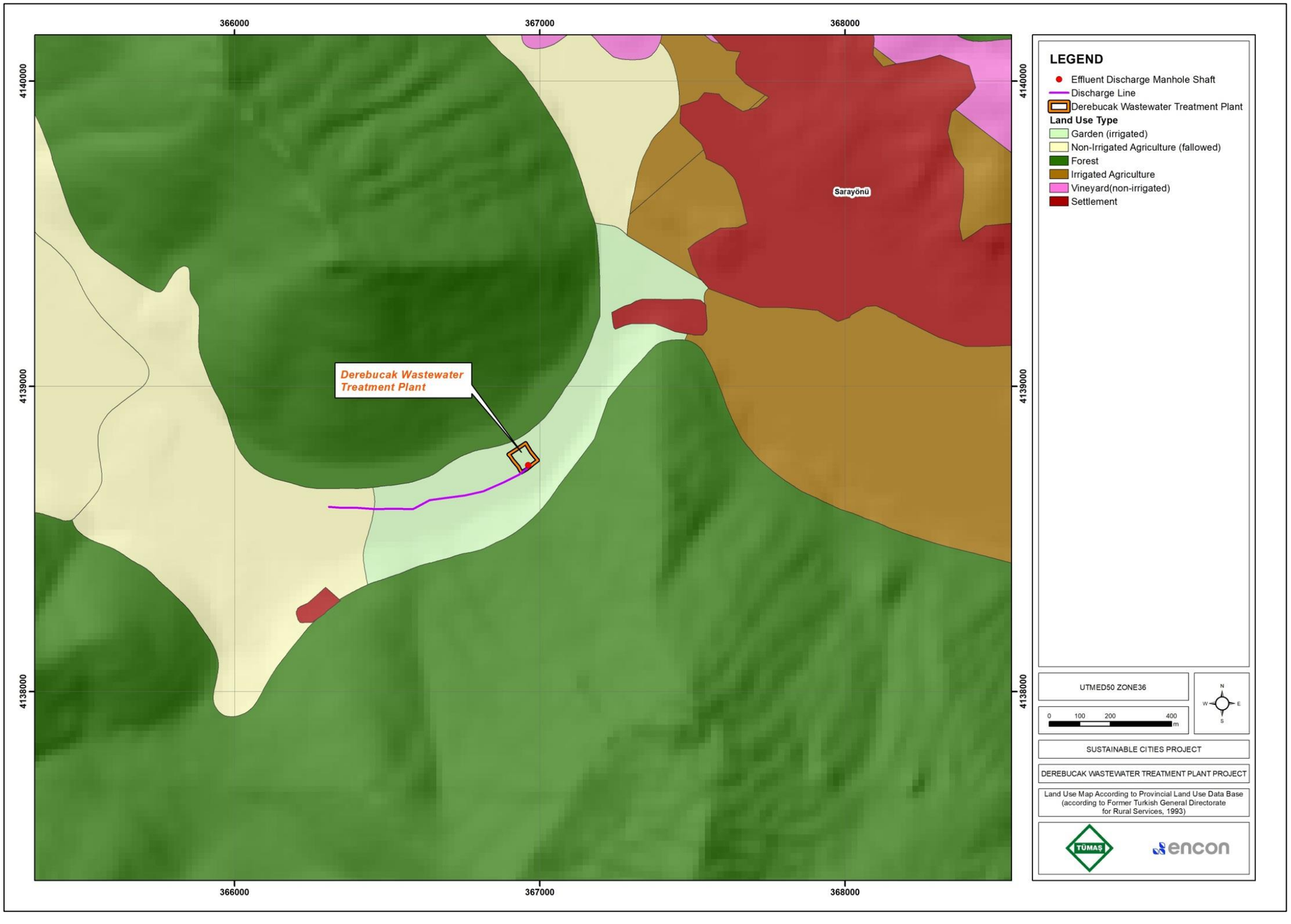

Figure IV.3 Land Use Map according to Provincial Land Use Database

Within the scope of the Project, the existing part of the sewerage network will be used as the discharge line. The treated wastewater will be discharged through manhole shaft within the WWTP site and will be discharged to Kocadere River.

In terms of auxiliary facilities, the construction site will be established at the WWTP site, which currently belongs to KOSKI. For the energy transmission, the electric pole located next to the WWTP site will be used. A photograph of the electric pole, which will be used for energy transmission taken during the site visit, is provided in Figure IV.4.

Figure IV.4 Photograph of Electric Pole Taken During the Site Visit

Moreover, as the WWTP site is accessible through the existing road network, construction of any access/service road is not required.

The Project does not trigger WB OP 4.12 - Involuntary Resettlement, any land acquisition or involuntary resettlement, and economic displacement with all of its components. The Ex-Post Social Audit Report will be prepared by ENCON.

IV.1.3. Climate Conditions and Meteorology

Konya Province has a continental climate. In general, summers are hot and dry, winters are cold and rainy, and precipitation is mostly in the form of snow.

Derebucak District is located in the transition area between Mediterranean climate and continental climate. The altitude of the district is 1,240 meters above sea level. Due to the fact that it is higher than sea level, the Mediterranean climate does not dominate. Therefore, summers are hot and dry, and winters are cold and snowy.

The records taken from the Turkish State Meteorological Service show that the annual average temperature is 11.7°C. The highest temperature is recorded as 40.6ºC in July and the lowest

temperature is recorded as –28.2ºC in January. The tabular representation of the average, maximum, minimum temperature records are given in Table IV.1.

The amount of precipitation is low in summer months and average annual precipitation is measured as 329.2 mm.

Table IV.1. Long Term Meteorological Data of Konya Province (1929-2020)

Parameter	January	February	March	April	May	June	July	August	September	October	November	December	Annual
	Measurement Period (1929-2020)												
Avg. Temperature (°C)	-0.2	1.4	5.5	11.1	15.9	20.1	23.5	23.3	18.8	12.8	6.5	1.7	11.7
Highest Avg. Temperature (°C)	4.6	7.0	11.7	17.5	22.4	26.7	30.2	30.2	26.0	20.1	13.0	6.6	18.0
Lowest Avg. Temperature (°C)	-4.2	-3.3	-0.2	4.3	8.6	12.6	15.9	15.6	11.0	5.9	0.8	-2.3	5.4
Average Number of Rainy Days	11.1	10.0	10.9	11.7	13.0	8.4	3.2	2.6	4.4	7.9	8.2	11.4	102.8
Average Monthly Amount of Rain (mm)	37.8	28.5	29.1	32.1	43.4	25.7	7.0	6.3	13.4	29.8	32.5	43.6	329.2
Highest Temperature (°C)	17.6	23.8	28.9	30.9	34.4	36.7	40.6	39.0	38.8	31.6	25.4	21.8	40.6
Lowest Temperature (°C)	-28.2	-26.5	-16.4	-8.6	-1.2	1.8	6.0	5.3	-3.0	-8.4	-20.0	-26.0	-28.2

Source: Turkish State Meteorological Service

IV.1.4. Geology

The age of Derebucak District goes down to the end of Paleozoic. The district, which is a mountainous area, was shaped by orogenic movements. Especially Reze in the east and Akdag in the middle form important elevations. The main landforms of the district are mountainous, plateau and plain areas.

Derebucak District is located within the Touride Main Tectonic Unit; it includes the Geyik Mountain, Aladağ and Bozkır Units.

Techno stratigraphically, the Upper Triassic aged Ortaova Formation, which is the sub-unit of the Aladağ Unit with tectonic contact, overlies the relatively autochthonous Upper Cretaceous aged Seyrandag limestones that form the basement.

The Upper Triassic-Lower Jurassic Derebucak Formation with a small angular unconformity overlies the Ortaova Formation and the Çamlık limestone, which is the uppermost unit of the Aladağ Unit, conformably over this formation. On Çamlık, there are Taskent ophiolites, the lowest unit of the Bozkır Unit, and Upper Triassic Gencek limestones on it.

Within the Aladağ Unit, the Derebucak Formation was distinguished stratigraphically by three separate formations. These are Kızılalan, Duden and Araplar formations.

The Kızılalan Formation is a succession of brown-red colored conglomerate containing clayey limestones, mudstone, sandstone lens and intermediate layers, which is widely observed in the east of Derebucak District and in the south of the region and forms the lower levels of the Derebucak Group.

The measured stratigraphic section of the Kızılalan formation was made on the Kızılalan ridge in the east of Derebucak District and a thickness of 276 m was calculated.

The Duden Formation is a succession of mudstones containing gray-yellow colored dolomitic limestones and interlayers of clayey limestone and sandstone, in the eastern part of Derebucak District, in Imecan Hill and its surroundings. It was measured on the slopes of Dudensay Hill in the southeast of Derebucak District and it was determined to have a thickness of 178 m.

The Araplar Formation starts from Comlek Mountain and extends to the southeast by a line formed by Araplar Mountain, Toptas Hill, Ardicova Hill, Ermilit Hill and Balattası Hill, and spreads a fairly wide area around Kara Hill, Ala Hill, Orta Hill, Imecan Hill and Karadag in the southeast of the region. There is a crystallized thick carbonate sequence containing dolomitized levels in places. The carbonates forming the formation have a highly fractured and fractured structure. There are many caves, karst formations such as doline and lapia.

Paleozoic formations are not generally encountered in the project area and its immediate surroundings. Only dark blue microcrystalline limestones of Upper Permian age and characteristic fossils representing the Upper Permian were found on the Gerdeme ridges in the Reze Mountains and west of Gencek.

Mesozoic ophiolitic series from Mesozoic formations in the area are mostly seen around Dedecik Hill, east of Derebucak and northwest of Çamlık.

Triassic limestones appear on the Akdag mass extending from southeast of Gencek to the east of Çamlık.

Jurassic formations are seen within the borders of Derebucak, especially around Pinarbasi and Mahmutlar, west of Derebucak. The bedded limestones at the base of the thick Cretaceous limestones are included in the Jurassic formation.

Radiolaritic limestones thought to have formed in the Middle Jurassic are located at the base of Cretaceous limestones inclined to southeast in Karabaki Harmanları Locality, 1 km northwest of Gencek. These limestones, which are rich in fossils, slope 80 degrees to the northwest.

Moreover, old fluvial beds form poljes extending linearly along fault lines and syncline axes. The most typical example of this is the Genbos polje, which is 12.5 km long and 1.2-2 km wide, in the south of Beyşehir Lake. Anamas-Akseki autochthon, İbradı group, Beyşehir-Hoyran-Hadim nappes crop out in Derebucak and its vicinity. There are also Neoautochthonous rock units deposited in the Miocene-Quaternary interval in the region.

Derebucak District was established on a flat field that looks like alluvium in general. The ground is composed of Neogene aged marly, clayey visual limestone. coal-bearing clay layers are encountered in this unit. Hamidiye Neighborhood is on an embankment. There are radiolarite schists and alluvial and Jurassic limestone surfaces to the west of Karali Village. Miocene limestone unconformably overlies the limestone in the east. A large area towards the lake is covered with alluvium.

The ground in Kurucuova Village consists of Mesozoic aged limestones. While the old quarters were on the ridge, the new quarter was built on alluvium.

Uzumlu Village and its surroundings are composed of Paleozoic aged schists and Cretaceous-Paleocene aged semi-crystalline limestones.

The floor of the inhabited area in the Yenidogan Village and the ridges on the west side are composed of Neogene aged limestone and marls. The ground of the eastern part consists of gravel, sand, silt and clay.

IV.1.5. Topography

Derebucak District is mountainous and forested in terms of topography. The Kartos, Dumanli and Dedegol mountains of the District, which has a rough terrain, are the important elevations in the vicinity.

The rivers of the district are identified as intermittent rivers. Starting from Seydişehir Kupe Mountain, there are three rivers, one of which reaches its highest level in spring with the melting of heavy snowfall in winter in high mountains and valleys. During the periods when the three rivers are most active, there are even spates, floods and road closures in the district. The stream stretching along the Akseki road ends when two doline (Genbos dolines) in Genbos transfer the water to Manavgat River. Couple of Derebucak water canal and dam projects are still ongoing in order to benefit from the water power of the rivers in winter and spring that dry up in the summer months.

IV.1.6. Soil and Soil Quality

Turkish General Directorate for Rural Services database defines the land use capabilities in eight (8) different classes as summarized in Table IV.2. These classes represent the agricultural potential of the soils. In this classification system, soils are categorized between Class I, which represent the arable lands on which agricultural activities can be conducted in the most efficient, economic and simplest way without causing erosion, and Class VIII, which represent the lands that are not arable, cannot even be used as grassland or forest areas but support only wildlife development or can be used as resting area or national park by human. Characteristics of each class are summarized in Table IV.2 (*Former Ministry of Agricultural and Rural Services, July 2008*).

Table IV.2 Agricultural Potentials Represented by Different Land Use Capability Classes and Their Characteristics

Class	Agricultural Potential	Definition of Land Use Capability
Class I	Agricultural lands suitable for agricultural soil cultivation	Class I lands are; flat or near flat, deep, fertile and easily cultivated so that the conventional agricultural methods can be applied; potential for water and soil erosion are minimal; have good drainage; are not prone to flood damage exposure; suitable for hoe plants and other intensively grown crops; Class I irrigated lands with low precipitation rates have slope values less than 1% slope, loamy structure, good water holding capacity and medium level permeability.
Class II		Class II lands are decent lands that can only be processed after taking some special precautions. Their difference from Class I lands are one or more of the limiting factors such as slight slope, moderate exposure to erosion, moderately thick soil, exposure to occasional moderate floods and a moderate level of moisture that can easily be isolated.
Class III		Class III lands are moderately good lands for hoe plants which can generate solid income provided they are utilized with a good cropping system and proper agricultural methods. Moderate slope, increased erosion sensitivity, excessive moisture, exposed soil, presence of stones, having a lot of sand and/or gravel, low water holding capacity and low yield are properties of this type of land.
Class IV		Class IV lands can be constantly utilized as meadows. Field crops can also be occasionally grown. High levels of slope, bad soil characteristics, erosion and climate are the factors limiting agricultural activities on these lands. Soils with low slopes and poor drainage are also classified as Class IV lands. These soils are not subject to erosion, but they are unsuitable for growing many agricultural products as they have a low yield and a tendency to suddenly dry up in the spring. In semi-arid regions, cropping systems incorporating legumes are generally not possible due to climate.

Class	Agricultural Potential	Definition of Land Use Capability
Class V	Agricultural lands not suitable for soil cultivation	Class V lands are reserved for long-life plantations such as meadows and forests as they generally are unsuitable for cultivated plants. A few factors such as stony structure and sogginess hinder cultivation here. The land is flat or near-flat. It is not subject to an excessive amount of wind and water erosion. Grazing and tree logging activities can be carried out on condition that a good soil cover is constantly maintained.
Class VI		Class VI lands require moderate precautions even when they are used as forest or meadow since they have quite a bit of slope and are subject to severe erosion. Exposed, soggy or very dry conditions make this type of land unsuitable for cultivation.
Class VII		Class VII lands have high slope, are stony and have been subject to violent erosion. Exposed soils, dry and/or some unfavorable conditions and swamps can be classified as Class VII soil. These can be used as forest or meadow without showing due care. If the vegetation on these soils diminishes, erosion can get quite violent.
Class VIII	Non-arable lands	Class VIII lands exhibit features that prevent them from being used as forest, meadow or cultivated land. This type of land is habitat to wild life and can also be used for recreational purposes or as catchment basins for streams. These include lands containing marshes, swamps, deserts as well as areas of high mountainous regions, rocky lands or lands with very deep craters.

Source: Former Ministry of Agricultural and Rural Services, July 2008

Map of great soil groups and land use capability classes for the project area is represented in Figure IV.5. According to the former Turkish General Directorate for Rural Services database analysis (1993), the great soil groups of the project area include colluvial soils.

A soil quality analysis was carried out on the samples taken from project area on December 12, 2021. The samples were taken from two (2) different locations. To compare the results of the sampling studies if there is any soil pollution on the site or not, the measurements are evaluated according to the Generic Pollutant Limit Values List in Annex-1 of the Regulation on Soil Pollution Control and Point Source Contaminated Fields. The analysis results belong to sampling location 1 and sampling location 2 are presented in Table IV.3. In addition, the sampling locations are presented in Figure IV.6.

Table IV.3 Soil Sampling Measurement and Analysis Results

Parameter	Unit	Soil Sampling Location-1 (X:366972, Y:4138752)	Soil Sampling Location-2 (X:366959, Y:4138699)	Generic Pollutant Limit Values mg/kg
Antimony (mg/kg)	mg/kg	6.604	6.802	31
Arsenic (mg/kg)	mg/kg	<0.5	<0.5	0,4
Boron (mg/kg)	mg/kg	45.04	46.0	-
Cadmium (mg/kg)	mg/kg	<0.5	<0.5	70
Chromium (mg/kg)	mg/kg	115.9	128.9	235
Copper (mg/kg)	mg/kg	46.31	28.32	3129
Lead (mg/kg)	mg/kg	10.5	8.77	46929
Mercury (mg/kg)	mg/kg	<0.1	<0.1	23
Nickel (mg/kg)	mg/kg	491.4	458.4	1564

Parameter	Unit	Soil Sampling Location-1 (X:366972, Y:4138752)	Soil Sampling Location-2 (X:366959, Y:4138699)	Generic Pollutant Limit Values mg/kg
Selenium (mg/kg)	mg/kg	<0.5	<0.5	391
Silver (mg/kg)	mg/kg	<0.5	2.13	391
Zinc (mg/kg)	mg/kg	104.15	69.8	23464
Tin	mg/kg	<4.0	<4.0	46929
Total Petroleum Hydrocarbons (TPH) (mg/kg)	mg/kg	28.1	<25.0	-
Total Organic Halogens (TOX)	mg/kg	101.31	50.63	-

In evaluating the analysis results (of soil quality), the absorption limit values of the soil through ingestion and skin contact were taken as basis. Only the value of antimony is determined as above the limit value. Considering it is the baseline value of the Project area before the construction activities, it can be evaluated that the baseline soil condition of the Project area is polluted in terms of antimony. The possible source of the antimony contamination would be due to its widespread presence in industries and being mixed with surface waters from wastewater originating from mineral deposits.

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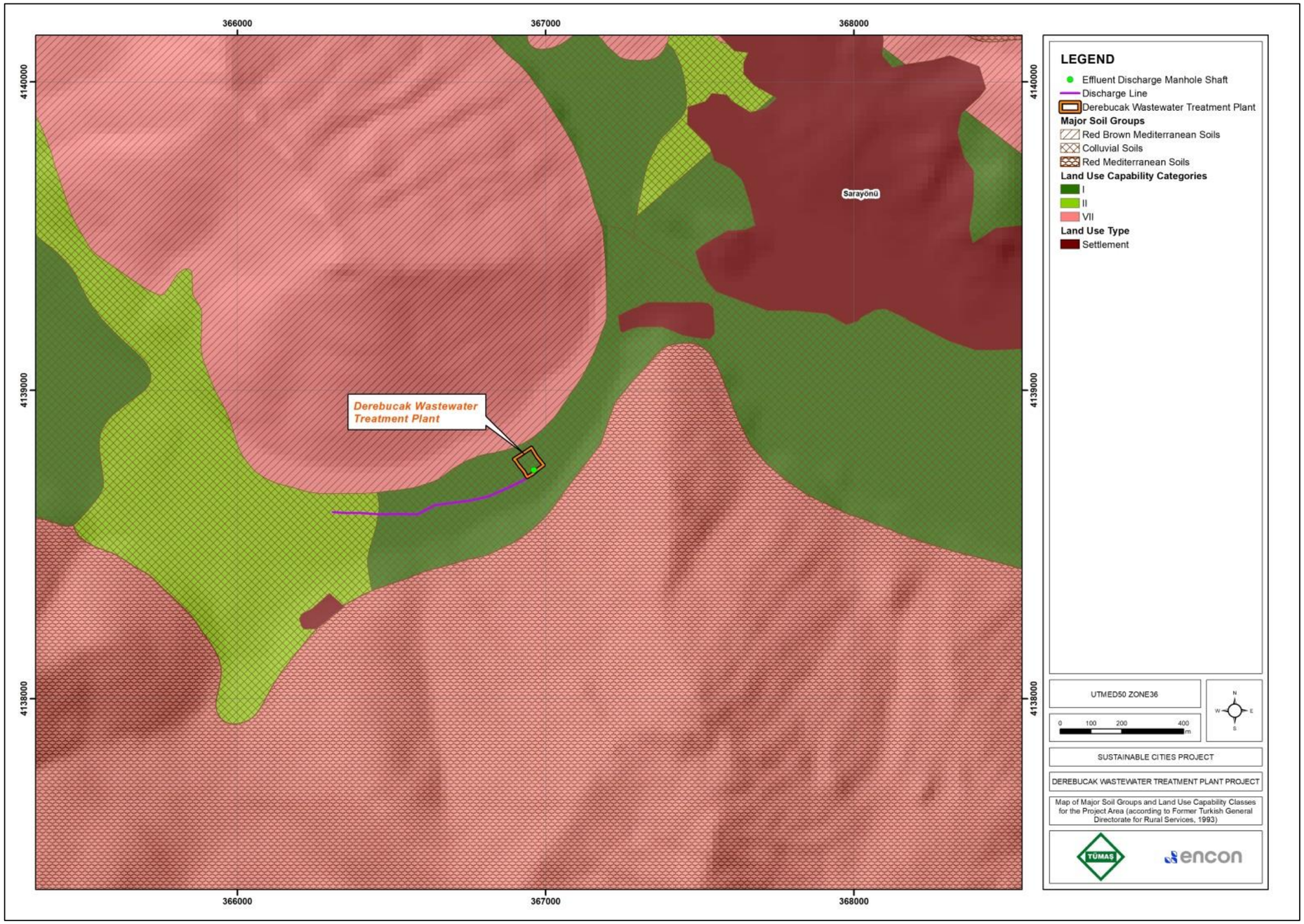

Figure IV.5 Great Soil Groups and Land Use Capability Classes for the Project Area

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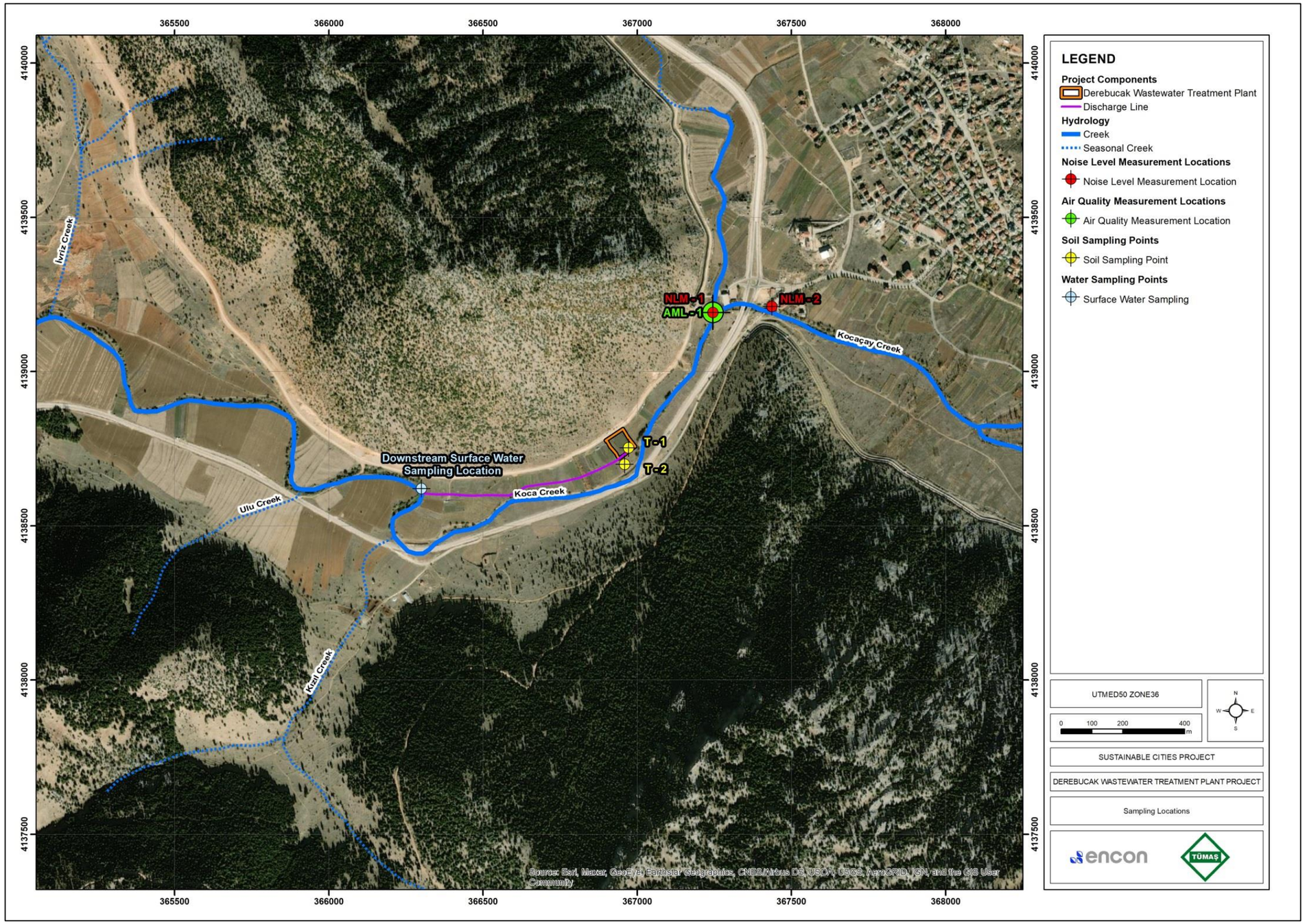


Figure IV.6 Sampling Locations

IV.1.7. Landscape

Derebucak WWTP will be built on parcel 159/25 of Sarayönü Neighborhood of Derebucak District. The WWTP site was previously utilized for strawberry cultivation; however, the area is currently in idle condition, with no land use for any purpose. In addition, there are no greenfield areas to be excavated for the Project. In addition, the Derebucak Ibradi Road passes near the Derebucak WWTP. Figure IV.2 shows photos taken at the WWTP site during a site visit conducted by ENCON on October 13, 2021.

IV.1.8. Surface Water Quality

The discharge line was previously constructed as a sewer (under the ground); currently the wastewater is delivered to Kocadere from the discharge line. Consequently, the river is polluted as the sewage system goes to this stream. As can be seen from Table IV.4, surface water is in the 4th class. During the meeting with the headman, it was determined that there was an odor originating from the river and poisoning was experienced from water. Poisoning has occurred as a result of consumption of grass that is fed by the river.

The effluent of the Derebucak WWTP will be discharged to Kocadere River. The discharge criteria of the Derebucak WWTP have been decided on the basis of the Water Pollution Control Regulation, Urban Wastewater Treatment Regulation, EU directives and WBG EHS Guidelines. Kocadere River is determined non-sensitive according to the Regulation on Determination of Sensitive Water Bodies and the Areas Affecting these Bodies and Improvement of Water Quality.

According to the information obtained during the field visits, it was understood that poisoning events occurred due to consumption from the creek. Also, people have odor complaints. As indicated in Chapter III.4.1, Derebucak sewage discharge wastewater analysis carried out within the scope of the Project in the location presented in Figure IV.6. The discharge standards determined for Derebucak WWTP are below these analysis results (see Table III.4, Table III.5 and Table III.9). Thus, it is seen that Derebucak WWTP makes a great contribution to protecting the water quality of the receiving environment and complaints will be prevented. The sample was taken from the discharge point of the Derebucak sewerage network. Analysis for Kocadere River was done by ENCONand the results are presented in Annex-7. Table IV.5 shows the wastewater standards' values that should be complied in the discharge of wastewater.

From the results of the analysis, it is seen that the river is polluted due to untreated wastewater. With the treatment plant to be built, the pollution load of the river will be significantly reduced.

Characteristics of Receiving Environment

The Derebucak WWTP that will be constructed within the scope of the Project will discharge its effluent to Kocadere River. However, during the site visit conducted by ENCON on October 13, 2021, it was determined that there is no permanent flow in Kocadere River, the river bed is currently dry and only untreated wastewater is discharged into the river bed. The photos of Kocadere River are provided in Figure IV.7.

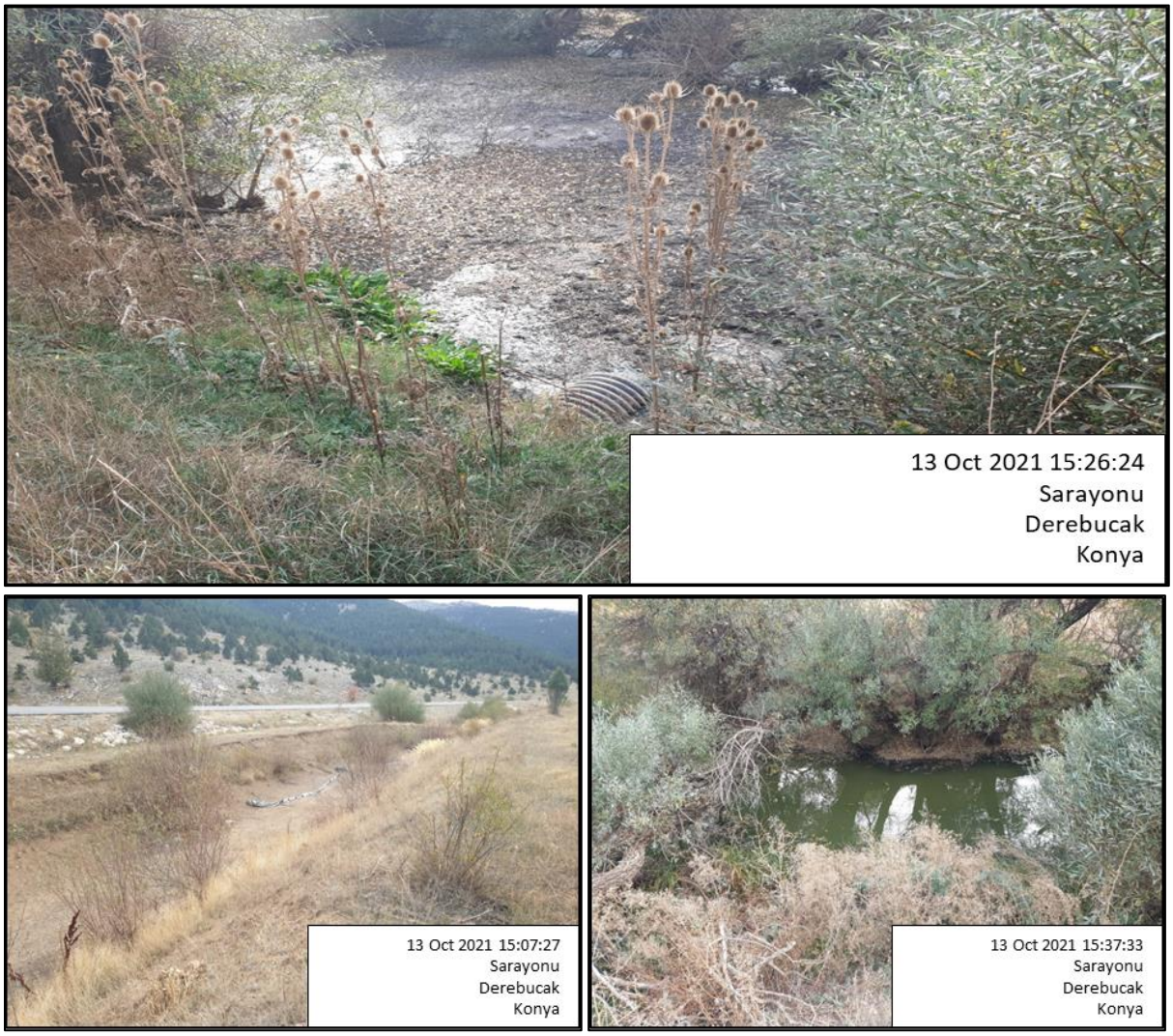


Figure IV.7 Photos of Receiving Environment – Kocadere River

To constitute a baseline inventory and to determine the existing quality of the receiving environment, a sampling study was conducted by ENCON Laboratory on December 7, 2021. In the scope of the study, surface water sample was taken from the downstream of the planned discharge location. Measurement and analysis results are presented in Table IV.4 together with the water quality classification criteria stipulated in the Water Pollution Control Regulation and Surface Water Quality Regulation (indicated with "*" sign). The laboratory reports are presented in Annex-5 of this report.

As seen from the Table III.4 downstream of the planned discharge location is classified as Class IV in terms of ammonium, pH, TP, TKN and total coliform; Class III due to BOD and dissolved oxygen parameters. Other measured parameters are mostly belonging to Class I and Class II.

Although total coliform levels are high, low *E.coli* and fecal coliform levels indicate that high total coliform levels might be caused by entry of soil or organic matter into the water.

Table IV.4 Surface Water Analysis Results

Parameters	Unit	Downstream of the Planned Discharge Location (X: 366301, Y 4138620)	Water Pollution Control Regulation and Surface Water Quality Regulation Water Quality Classes			
			I	II	III	IV
Ammonium	mg/L	13.9824	0.2	1	2	>2
TSS	mg/L	<15.00	-	-	-	-
BOD	mg/L	10.10	4	8	20	>20
Turbidity	NTU	1.47	-	-	-	-
Dissolved Oxygen	mg/L	5.6	8	6	3	<3
Escherichia Coli (*E.coli*)	CFU/100 mL	0.0	-	-	-	-
Fecal Coliform	CFU/100 mL	0.0	-	-	-	-
Conductivity*	µS/cm	850.0	<400	1000	3000	>3000
COD	mg/L	33.67	25	50	70	>70
Nitrate	mg/L	0.6616	<3	10	20	>20
Nitrite	mg/L	0.0756	-	-	-	-
pH	---	7.99	6-9	6-9	6-9	6-9
Temperature	°C	9.8	-	-	-	-
TDS	mg/L	430	-	-	-	-
TP	mg/L	1.42	<0.08	0.2	0.8	>0.8
TKN	mg/L	13.94	<0.5	1.5	5	>5
Total Coliform	CUF/100 mL	>100000	-	-	-	-
Salinity	‰	0.42	-	-	-	-

Table IV.5 Wastewater Discharge Criteria

Parameter	Standard
Temperature (˚C)	40
pH	6-10
Suspended Solid (mg/L)	500
Oil and gres (mg/L)	150
COD (mg/L)	1000
BOD (mg/L)	-
TN (mg/L)	100
TF (mg/L)	10

IV.1.9. Waste Management

Pursuant to the Environmental Law No. 2872, it is prohibited to directly or indirectly deliver, store, transport, dispose of all kinds of waste and residues to the receiving environment, in violation of the standards and methods determined in the relevant regulation.

In this regard, the waste generated during the construction phase and operation phase will be sent to the Konya Solid Waste Landfill Facility. The number of solid waste processing facilities in Konya as of 2019 is given in Table IV.6.

Table IV.6 Number of Solid Waste Processing Plants in Konya Province as of 2019

Solid Waste Disposal Facility (Municipal)	Number in Konya Province
Licensed Packaging Waste Collection Separation Facility and Recycling Facility	46
Hazardous Waste Recovery Facility	15
Waste Oil Recovery Facility	1
Vegetable Waste Oil Intermediate Storage Facility	2
End-of-Life Tire Recovery Facilities	2
Medical Waste Sterilization Facility	1
Non-Hazardous Waste Recovery Facility	85
Waste Electrical and Electronic Goods Processing Facility	2
Mining Waste Disposal-Storage Category B	1

The sludge will be disposed of in the Thermal Incineration Facility in the Konya Solid Waste Landfill Facility operated by Konya Metropolitan Municipality and electrical energy will be generated. The sludge will be transported by competent and licensed firms to the landfill and it will be stored in the landfill.

Konya Solid Waste Landfill Facility and Thermal Incineration Facility within this facility have environmental permits. The capacities of Konya Solid Waste Landfill Facility and Thermal Incineration Facility are 1500 ton/day and 822 ton/day, respectively.

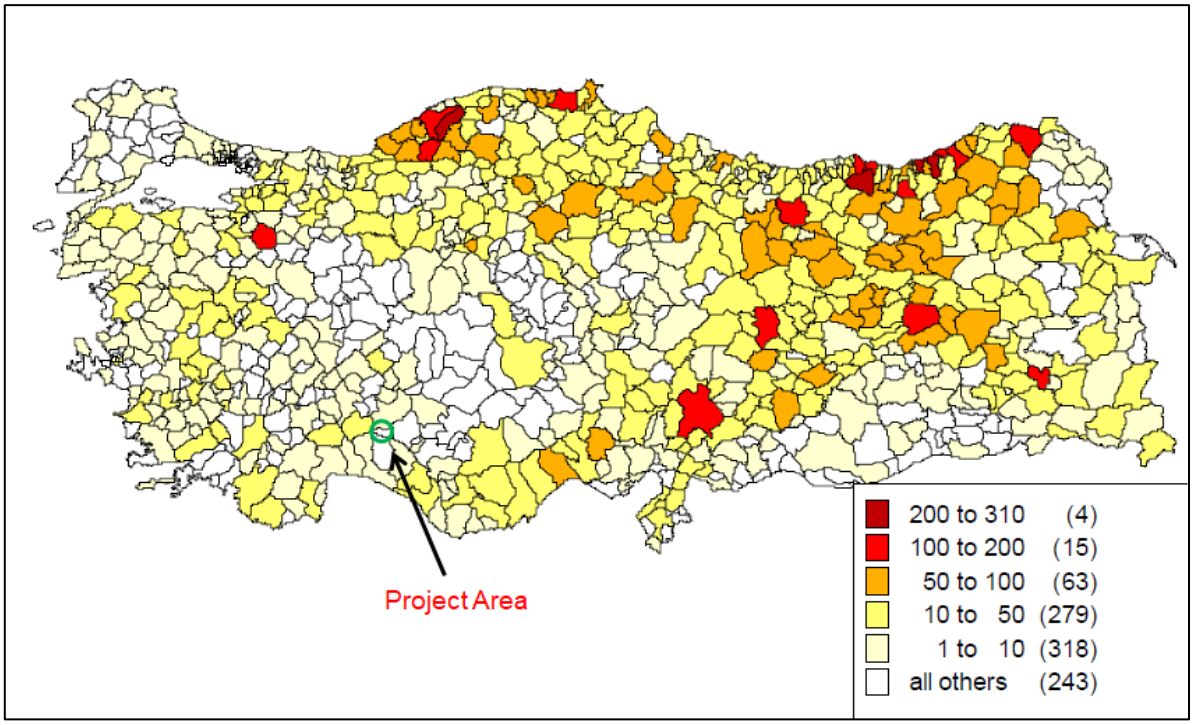
IV.1.10. Natural Hazards and Seismicity

Natural Hazards

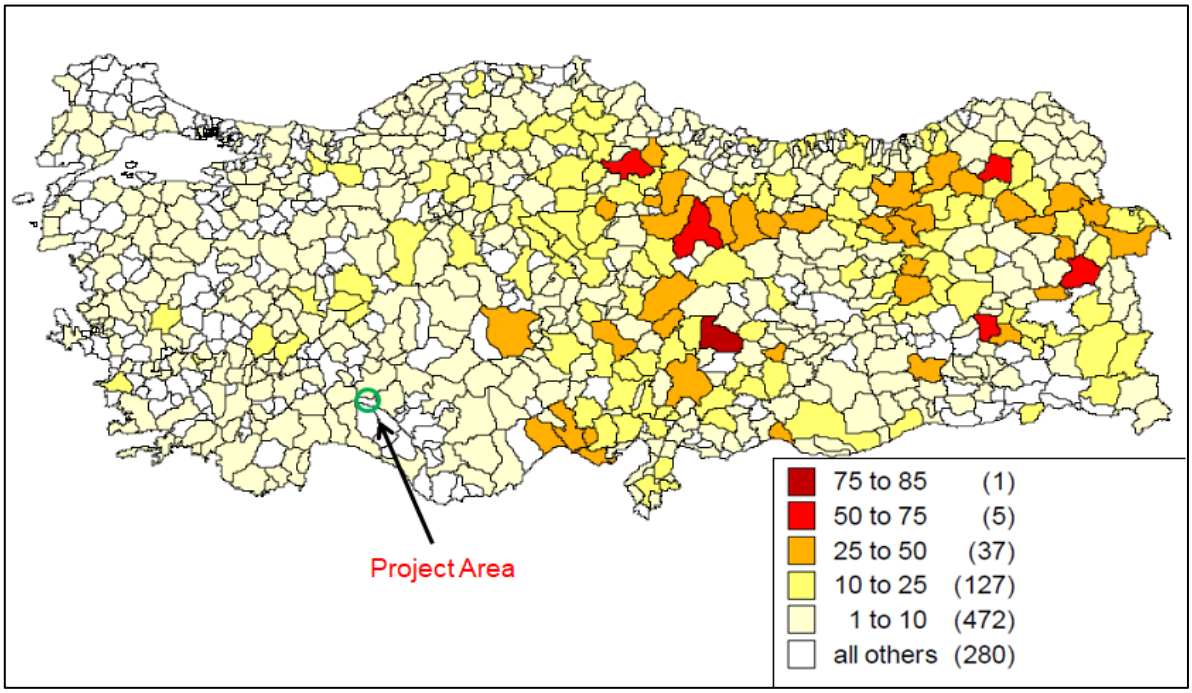
According to the report "Overview of 2019 within the scope of Disaster Management and Statistics of Nature-Related Events" prepared by Disaster and Emergency Management Presidency (AFAD) in 2020, the natural disasters that occurred in the province of Konya between 1950-2019 are landslide/rockfall (155 events), flood (91 events) and avalanche (1 event).

According to “Spatial and Statistical Distribution of Disasters in Türkiye Information Inventory” prepared by former Ministry of Public Works and Settlement in 2008, the natural disasters observed in Konya Province are; landslides, floods and rock falls.

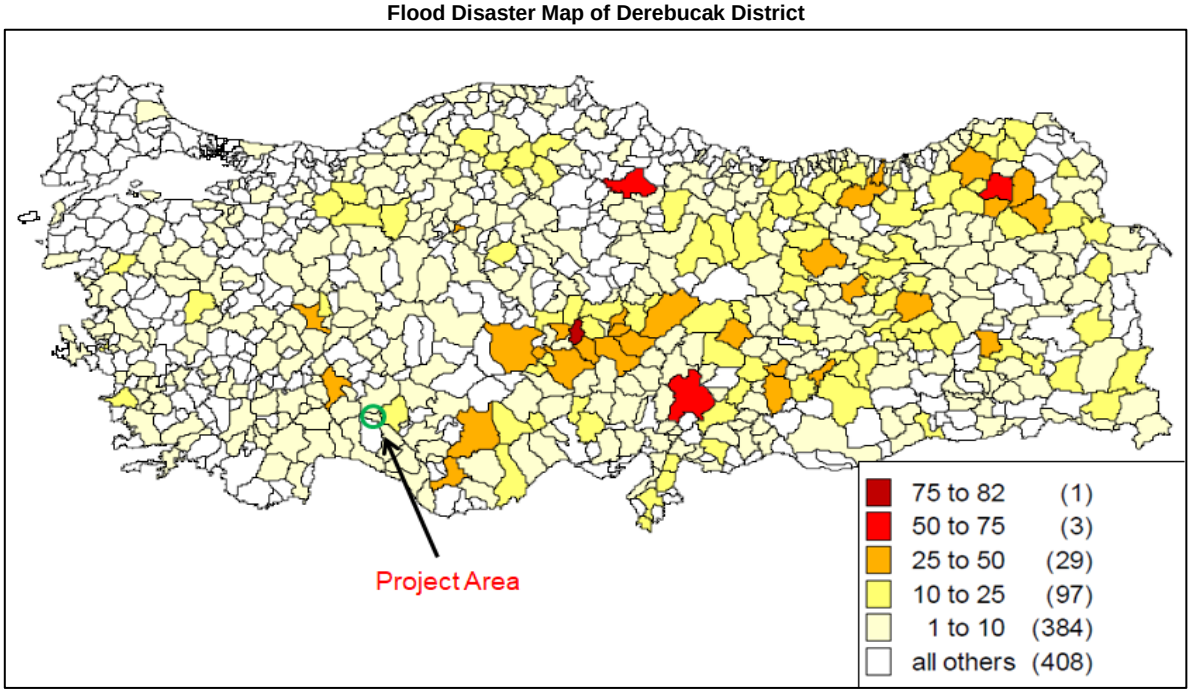
Considering the Distribution of Disaster Events maps prepared by former Ministry of Public Works and Settlement records of landslides, floods and rock falls can be observed in Derebucak District but they are not potentially high. The disaster distribution maps regarding to above given disasters are provided in Figure IV.8.



Landslide Disaster Map of Derebucak District



Flood Disaster Map of Derebucak District



Rock Falls Disaster Map of Derebucak District

Figure IV.8 Disaster Maps of Derebucak District

Seismicity

According to the Earthquake Hazard Map of Türkiye Map published in the Official Gazette numbered 30364 and dated 18.03.2018, ground acceleration of Derebucak District is classified as between 0.0-0.1 g. Active Fault Map of Konya Province is given in Figure IV.9, while the Earthquake

Hazard Map of Türkiye is provided in Figure IV.10. According to the active fault map, Alacadag fault zone is 45 km away from the project area and this zone has Quaternary fault.

In all types of structures to be built, principles of “Regulations for the structures to be built in disaster areas” of former Ministry of Public Works and Settlement shall be complied with.

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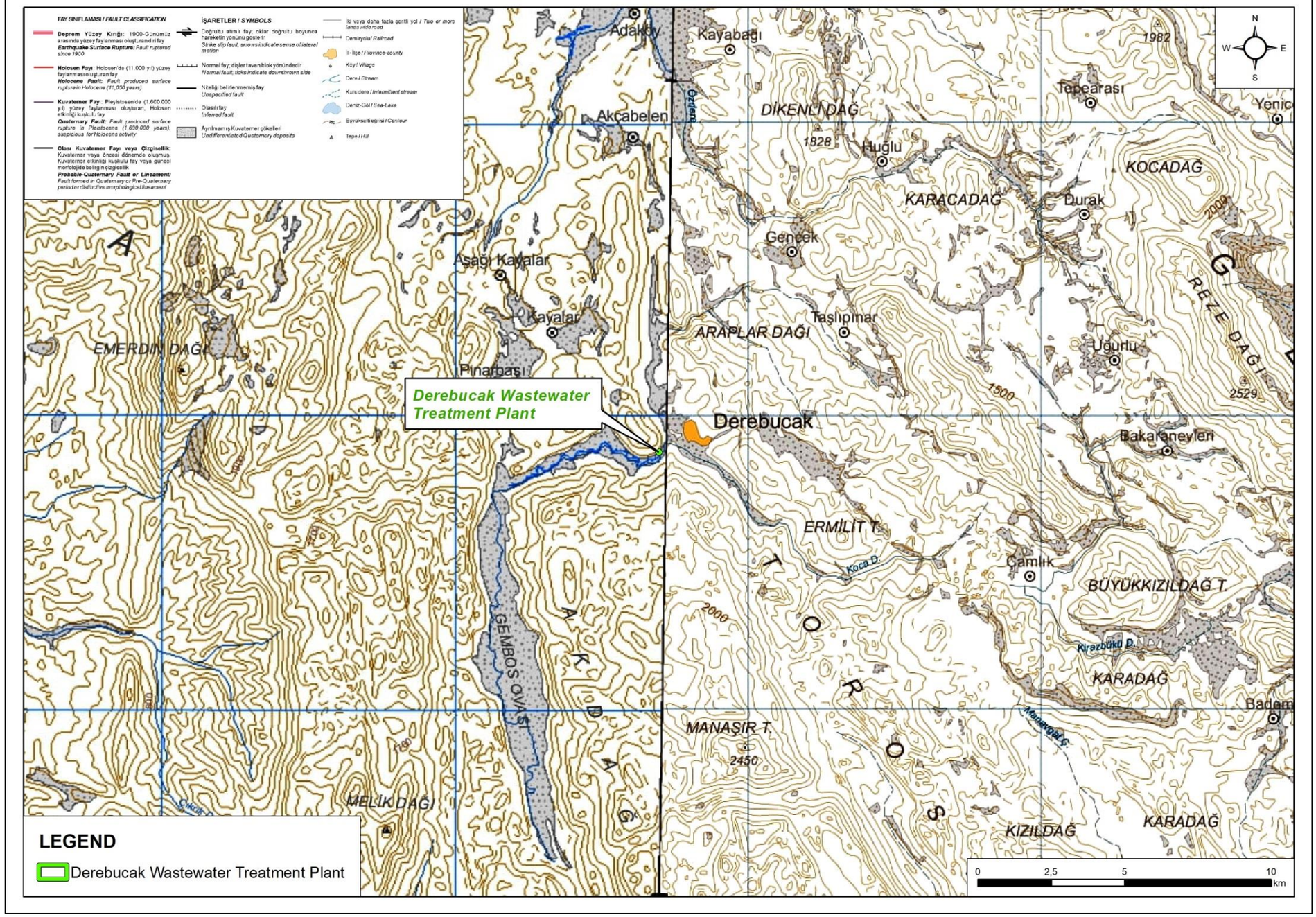

Figure IV.9 Active Fault Map of Konya

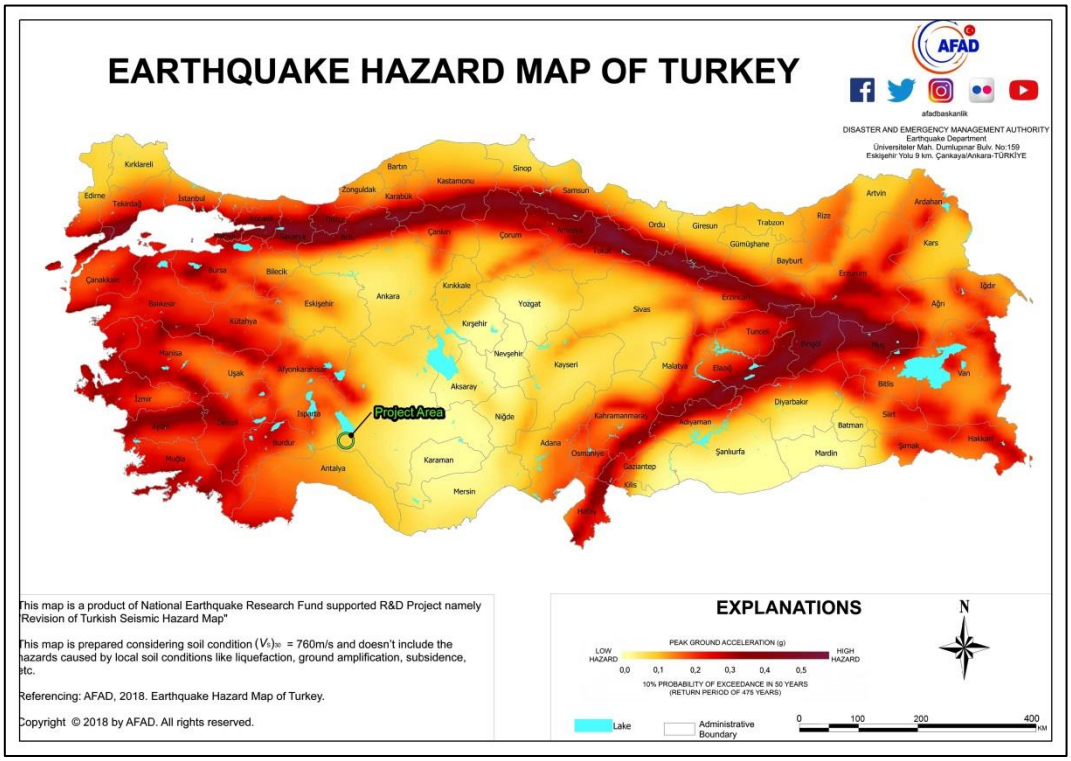

Figure IV.10 Earthquake Hazard Map of Türkiye

IV.1.11. Hydrogeology and Hydrology

Although Konya Closed Basin is not rich in surface water, it has significant reserves in terms of groundwater. Water-bearing formations in the Konya Closed Basin are; Paleozoic aged marbles, Mesozoic aged limestones, Neogene aged limestones and pebbly, sandy levels of Pliocene alluvium.

Derebucak District is located within the borders of the Gembos Basin. The Gembos Basin covers an area of 524 km² and is surrounded by the Koprucay Basin in the west, the Manavgat Basin in the south, the Beyşehir-Sugla Intermediate Basin in the east, the Soguksu-Yesildag Basin in the northwest, and the Ustunler Basin in the northeast. Within the basin, the four important rivers of the Derebucak District are Balat River, Seki River, Kocadere River and Uludere River (Gok, 2005).

Balat River

Originating from the Masaalti Spring, the Balat River flows north, where it joins the Malas River and passes through a deep valley around the Balattasi Hill. After Balat Plateau, it flows to the west with the streams that join the Balatini Cave especially in winter.

After the confluence of Borbogaz River, Balat River flows to the northeast and after that it continues through a valley and joins Kocadere River.

In the Balat River, the flow rates are high in the winter months when the precipitation is high. In addition, melting of snow in warmer months starting from March contributes to the flowrate. In summer, the decrease in flow rate is due to increases in temperature and decreases in precipitation.

Kocadere River

Kocadere River, which is the receiving environment for the treated wastewater discharge within the project, is named as the part of Balat River that continues between Kaplankaya Hill and Inardi Hills. Kocadere River is one of the biggest and important streams of the district. The stream flows in the northwest direction after Kaplankaya Hill. There are also large agricultural areas along the stream bed.

Kocadere River, like Balat Stream, reaches its highest levels in March and its lowest levels in September.

Seki River

Seki Stream merges with many creeks such as Kaygic River, Araplar River, Gok River and flows to the west. The stream takes the name Hussun River after entering Derebucak Polje by passing through Karakisik Gorge between Comlek Mountain (1635 m.) and Araplar Mountain (1678 m.).

While Seki River reaches its highest flowrate in February, it reaches its lowest flowrate in July.

Uludere River

Hussun River and Kocadere River merge and form Uludere River after passing Tinaztepe and Burmacisirti straits. The river is located in the west of Derebucak District. After flowing westward, it enters the Gembos polje. Flowing meanders at the base of the polje, the stream flows underground through sinkholes in the west.

The stream reaches its lowest flowrate in September and its highest flowrate in April. The reason for these increases in April is due to the melting of snow.

The hydrology of the project area and its vicinity is presented in Figure IV.11.

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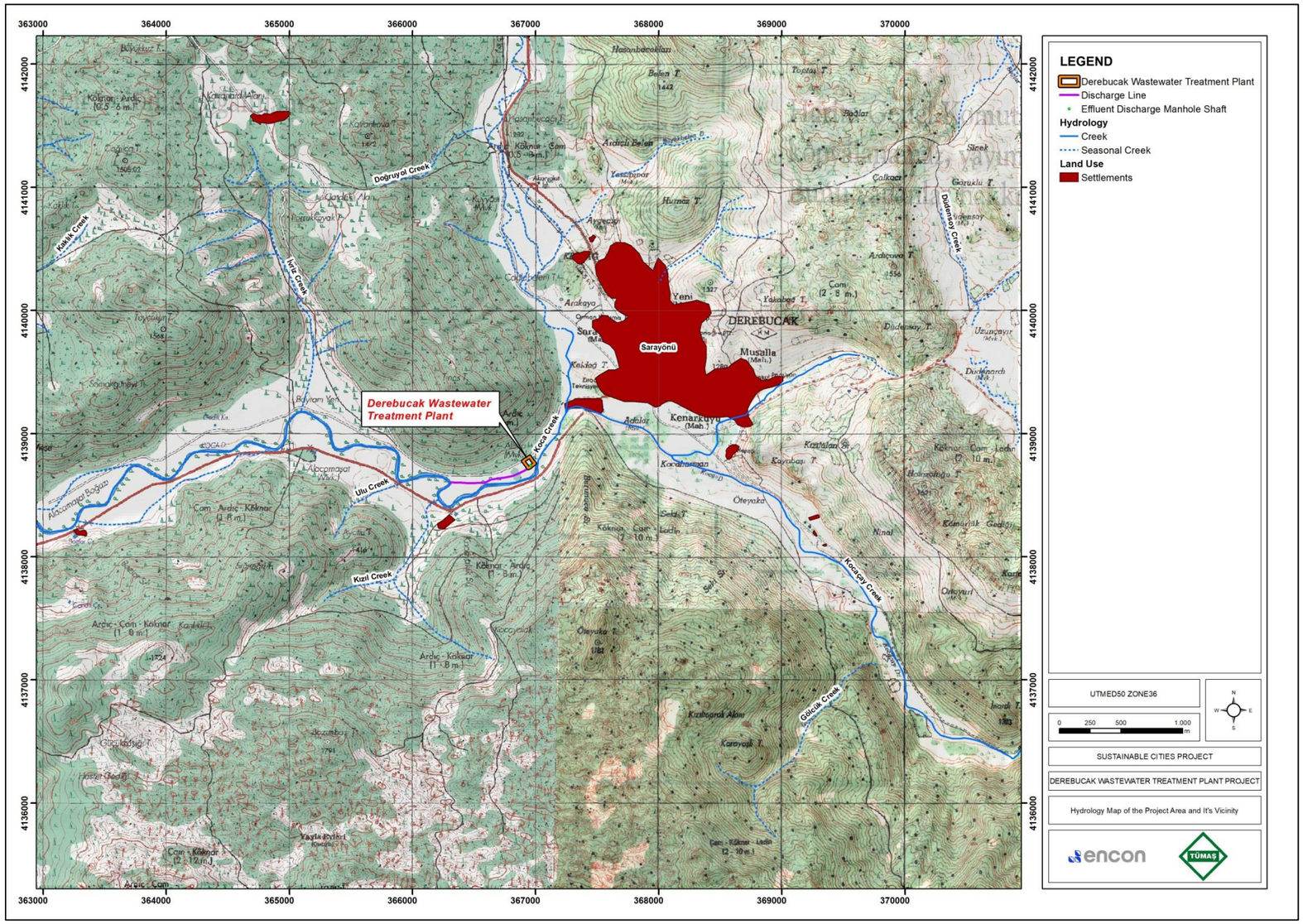

Figure IV.11 Hydrology Map of the Project Area and Its Vicinity

Apart from that, there are seven dams in Konya Province that serve as an irrigation source and two of them are also serving as drinking water source. There are also 18 ponds in Konya Province that serve as an irrigation source. The dams and ponds in the province are given in Table IV.7.

Table IV.7 Dams and Ponds in Konya Province

Name of the Dam/Pond	Corresponding River	Application Area	Area (m^2)
Dams			
Altınapa Dam	Meram River	Irrigation, Flood Protection, Drinking Water	3,823,919
Apa Dam	Carsamba River	Irrigation	15,506,487
Damlapınar Dam	Damlapınar River	Irrigation	960,780
Derebucak Dam	Kocaçay River	Irrigation	938,835
Ivriz Dam	Ivriz Stream	Irrigation, Flood Protection	4,663,876
May Dam	Meram Stream	Irrigation, Flood Protection	11,588,765
Sille Dam	Sille Stream	Irrigation, Flood Protection	240,231
Ponds			
Akören Pond	Bayındır River	Irrigation	888,234
Aydoğmuş Pond	Bogaz River	Irrigation	331,009
Başhüyük Pond	Kurudere River	Irrigation	296,177
Bostandere Pond	Kalayci River	Irrigation	405,092
Cihanbeyli Pond	Insuyu River	Irrigation	1,574,576
Çağlayan Pond	Yayla River	Irrigation	889,403
Cavus Pond	Ilmen River	Irrigation	276,139
Ciftlikozu Pond	Karakaya River	Irrigation	356,115
Çukurçimen Pond	Cokuk River	Irrigation	165,530
Derbent Pond	Belbaşı River	Irrigation	151,639
Erenkaya Pond	Carsak River	Irrigation	919,179
Evliyatekke Pond	Arkil River	Irrigation	268,769
Guneydere Pond	Gavur River	Irrigation	2,354,084
Kızılören Pond	Yayla River	Irrigation	145,670
Malas Pond	Uludere River	Irrigation and Tap	235,065
May-Kayasu Pond	Peynirli River	Irrigation	159,458
Sefaköy Pond	Kavakdere River	Irrigation	140,738

Source: Konya Closed Basin Protection Action Plan

IV.1.12. Protected Areas

To identify and evaluate the protected areas in and around the Project Area, desktop studies and literature research were carried out using the databases of the relevant institutions within the scope of the Project. For this purpose, the sensitive area list available in Annex 5 of the EIA Regulation was used as a reference. This list covers areas that need to be protected in accordance with international conventions that Türkiye is a contracting party and nationally declared protected areas.

Primary data sources utilized within the scope of the desktop studies, but not limited to, are listed below:

- Database of Ministry of Culture and Tourism, General Directorate of Cultural Heritage and Museums (https://kvmgm.ktb.gov.tr/),
- Database of Ministry of Agricultural and Forestry, General Directorate of Nature Conservation and National Parks (https://www.tarimorman.gov.tr/DKMP),
- Türkiye National Geographic Information Systems, National Geographic Information Platform (https://www.atlas.gov.tr/),
- Map of Prohibited and Open Hunting Areas in Konya Province for years 2021-2022 (https://avlakharitalari.tarimorman.gov.tr/AvlakHaritalari/42.jpg).

Protected Areas in accordance with National Legislation

Areas required to be protected as per the Turkish legislation defined under Annex 5 (Sensitive Regions) of the EIA Regulation are listed in the following items. The evaluations related to the indicated areas are presented therein.

National Parks, Nature Parks, Nature Monuments, and Nature Conservation Areas are defined in Articles 2 and 3 of the National Parks Law.

- There are no national parks, nature parks, nature monuments, or nature conservation areas in the project area. The protected areas around the Project Area are shown in
- Figure IV.17 and given with their distance and locations in Table IV.8.
- Kocakoru Forest Natural Park is the closest national park to the project area and is located 21 km northeast of the project area.
- There is one national park in Konya Province, Beyşehir Lake is located 18.1 km north of the project area.
- The closest natural monument to the project area is the Derebucak Pine Grove Natural Monument, 8.1 km southeast.
- Kasnak Oak Nature Conservation Area in Isparta is located about 68 km west of the project area.

Table IV.8 National Parks, Nature Parks, Nature Monuments, and Nature Conservation Areas around the Project Area

Provinces	Natural Monuments	Distances	Locations
Nature Parks			
Konya	Kocakoru Forest	21 km	Northeast
Konya	Kugulu	28.4 km	East
Konya	Yakamanastır	30.5 km	North
Isparta	Yazılıkanyon	47.3 km	West
Isparta	Baspınar	59.7 km	Northwest
National Park			
Konya	BeyşehirLake	18.1 km	North
Isparta	Kızıldag	18.6 km	North
Antalya	Koprulu Kanyon	24 km	Southwest
Antalya	Altınbesik Cave	35.7 km	South

Provinces	Natural Monuments	Distances	Locations
Isparta	Kovada Lake	54.9 km	Northwest
Natural Monuments			
Konya	Derebucak- Pine Grove	8.1 km	Southeast
Konya	Aspen	31.2 km	Northeast
Isparta	Tola Mountain European Chestnut	33.3 km	Northwest
Isparta	Summer Lime Tree	33.6 km	Northwest
Isparta	Tota Mountain Juniper	42 km	Northwest
Isparta	Catalcam	42.2 km	Northwest
Isparta	Sogut Tableland Big Juniper	46.3 km	West
Antalya	Zeytintası Cave	50.2 km	South
Isparta	Kırıntı Village East Plane	60.3 km	Northwest
Isparta	Kırıntı Village Plane	61.5 km	Northwest
Nature Conservation Area			
Isparta	Kasnak Oak	68 km	West
Burdur	Kargı Village Sıgla Forest	58.1 km	West

Wildlife Protection Areas, Wildlife Development Areas, and Wild Animal Nestling Areas are determined by the Land Hunting Law.

Map of prohibited and open hunting areas for years 2021-2022, prepared by the Ministry of Agricultural and Forestry, General Directorate of Nature Conservation and National Parks, is presented in

Figure IV.16. Antalya Cevizli Gidengelmez WDA is located 21.1 km southeast and Akseki and Ibradi Uzumdere WDA is located 26.4 km west of the Project Area (see Figure IV.17). There are various hunting areas in the province. There are Wild Animal Nestling Areas about 4.5 km south and 34 km southeast of the Project Area (see

Figure IV.16).

Areas defined as Cultural Property, Natural Property, Protected Site, and Protected Area according to Law on Protection of Cultural and Natural Properties No. 2863, published in the Official Gazette dated 23.07.1983 and numbered 18113, Article 3, Paragraph 1, Clause (a) (Definitions); Sub-clauses 1, 2, 3 and 5; and areas identified and registered in the same Law and amendments.

To identify the cultural assets and protected sites in the vicinity of the project area, the Directorate General of Cultural Assets and Museums has been queried. The identified immovable cultural assets in Konya Province are listed in Table IV.9, and the protected sites are listed in Table IV.10.

There is no cultural property, natural property, protected site, or protected area in the project area. Tavsancıl Rock-Cut Tomb Cultural Asset Protected area is 10.7 km north of the project area (see in Figure IV.17).

Table IV.9 Inventory of Immovable Cultural Assets in Konya Province

Asset Subtype	Number
Monuments	4
Administrative	82

Asset Subtype	Number
Cultural	452
Martyrdoms	5
Military	10
Industrial and Commercial	92
Religious	450
Graveyards	92
Civil Architecture Sample	537
Ruins	56
Total	**1780**

Source: *https://kvmgm.ktb.gov.tr*

Table IV.10 Protected Sites in Konya Province

Protected Sites	Number
Archaeological Sites	973
Urban Sites	8
Historical Sites	41
Historical Urban Sites	1
Mixed Sites	
Archaeological And Urban Sites	7
Archaeological-Historical-Urban Sites	1
Historical And Urban Sites	5
Archaeological And Historical Sites	1
Total	**1037**

Source: *https://kvmgm.ktb.gov.tr*

Areas defined in Regulation on the Assessment and Management of Air Quality

According to the 7th Article of Regulation on the Assessment and Management of Air Quality, zones and sub-zones for air quality identification are listed in Annex-1 of Memorandum 2013/37. With the relevant circular, Türkiye is divided into various regions and sub-regions. With this distinction, the Ministry of Environment, Urbanization, and Climate Change tried to determine the pollution profile of the provinces. The list in Annex-III of the circular is divided into two groups according to the pollution profile of provinces substances: "high pollution potential cities" and "low pollution potential cities." Pollution profiles of provinces were determined by using the 2012-2013 winter season air quality data and air quality bulletins received from air quality monitoring stations connected to the national air quality monitoring network. According to this, the Konya Province is in the list of "high pollution potential."

Aquaculture Production and Breeding Sites within the scope of Aquaculture Law

There are no aquaculture production and breeding sites in and around the Project Area.

Areas identified and declared as Special Environmental Protection Areas (SEPA) by the Cabinet of Ministers in accordance with the 9th Article of Environment Law

The nearest SEPA to Project Area is Belek SEPA, placed Antalya Province, located about 61 km west of the Project Area.

Areas defined in Pasture Law

The Project Area is not located in pastureland, which is subjected to Pasture Law No. 4342.

Areas designated in accordance with the Regulation of the Wetland Conservation

There are two RAMSAR areas, Meke Maar and Kızoren Pothole in Konya Province. There is neither any wetland area protected under RAMSAR Convention nor wetland with national importance and local significance in and around the Project Area.

Agricultural Areas: Agricultural development areas, irrigated areas, potentially irrigated areas, areas with land use capability class of I, II, III, and IV, rainfed agricultural lands classified as I and II, and specific product plantations areas

According to the Land Use map shown in Figure IV.3, the Project Area is in the garden (irrigated) area.

Wetlands: Natural or artificial, permanently, or temporarily, standing water or flowing, freshwater, hard or salt water, all the wetlands have importance for the organisms especially for aquatic birds, sea depth range below six meters during the low tide, swamp, reeds, and turbaries and ecologically wetlands on their coastal sides

Within the project's scope, the water treated at the WWTP will be discharged to Kocadere River. Kocadere rises from Çamlık Town and sinks in the sinkhole on the Gembos Plain. Kocadere River is not a protected wetland with national or international legislation.

Other Protected/Restricted Areas

In addition to the presented information above, the areas listed below (also listed in Annex 5 of the EIA Regulation) do not exist in the Project Area:

- Areas defined in the 17th, 18th, 19th, and 20th Articles in the Water Pollution Control Regulation,
- Forest Areas within the scope of Forest Law No. 6831,
- Areas designated in accordance with the Law on the Vaccination of Pesticides and Improvement of Olive Cultivation,
- Areas subjected to construction ban and areas of which their present characteristics should be protected according to Approved Environment Plans (areas of which their natural characteristics should be protected, biogenetic reserve areas, geothermal areas, etc.),
- Lakes, rivers, groundwater operation sites,
- Areas important for endemic species that are endangered or potentially endangered or important for scientific research, biosphere reserve, biotopes, biogenetic reserve areas, areas have unique characteristics for geologic and geomorphologic formations.

Protected Areas in accordance with International Conventions

Areas required to be protected in accordance with the international conventions to which Türkiye is a party and defined under Annex 5 (Sensitive Regions) of the EIA Regulation are listed in the following items, and the evaluations related to the indicated areas are presented therein.

Other Protected/Restricted Areas

There are no areas within the context of below mentioned protected/restricted areas.

- Areas designated as Special Protection Area in Türkiye in accordance with the Protocol on the Protection of Special Protection Areas in the Mediterranean,
- Fields on the list of 100 Coastal Historic Sites with Joint Prevention in the Mediterranean published by the selected United Nations Environment Program in accordance with the Geneva Declaration,
- Cultural, historical, and natural areas that the Ministry of Culture protects under Cultural Heritage and Natural Heritage status according to the 1st and 2nd articles of the Convention for the Protection of the World's Cultural and Natural Heritage,
- Protected areas in accordance with the Convention for the Protection of Wetlands with International Importance as Particularly Water Birds Living Environment (RAMSAR Convention),
- European Landscape Contract.

Internationally Recognized Areas within the Region of the Project Area

The map showing the Key Biodiversity Areas in and around the project area can be seen in Figure IV.12. Türkiye's KBAs have been identified on a national scale by Doga Dernegi (the Nature Society of Türkiye) in collaboration with the Ministry of Agriculture and Forestry, Birdlife International, and Royal Society for the Protection of Birds. The Akseki and İbradi Forest Key Biodiversity Area is located 440 m south of the project area.

There are 184 Important Bird Areas (IBAs) in Türkiye, according to the BirdLife International Data Zone. Twenty-one of them are classified as IBAs in danger. The Akseki and Ibradi Forest Important Bird Area is located 440 m south of the Project Area, as shown in Figure IV.13.

The Akseki and İbradi KBA; consists of two main parts, namely Akseki and İbradı basins, in the northeast of Manavgat district. It covers an area of 134,492 hectares. The KBA includes extensive Mediterranean coniferous mountain forests, low altitude dry coniferous forests, maquis communities, and steppes and riparian plant communities. The most remote forests of the region are on karst plateaus.

Important Plant Areas (IPAs) are globally important sites for wild plants and threatened habitats. IPAs are natural or semi-natural areas containing affluent populations of rare, endangered, and/or endemic plant species and/or have extraordinarily rich and/or valuable vegetation in terms of botany. The closest IPA is Kizildag IPA; 12.2 km east of the project area (see Figure IV.14).

The recognized areas around the Project Area and their distances are given in the Table IV.11.

Table IV.11 Recognized Areas' distances to the Project Area

Recognized Area	Distance	Location
Akseki and Ibradi Forest KBA/IBA	440 m	South
KoprucayValley KBA/IBA	11 km	West
Kızıldag KBA/IPA	12.2 km	East
Dedekoy Mountains KBA/IPA	15 km	Northeast
BeyşehirLake KBA/IBA/IPA	17.7 km	North
Aksu Valley KBA	44.1 km	West
Geyikli Mountains KBA/IPA	44.4 km	Southeast
Antalya Plains KBA/IBA	64.7 km	Southwest
EgirdirLake KBA/IBA	73.6 km	Northwest

As shown in the Figure IV.17, there is no nationally protected area in or around the project area. The Alliance for Zero Extinction (AZE), established in 2004 and comprising 88 biodiversity conservation Non-Governmental Organizations (NGOs), is dedicated to identifying and safeguarding all KBAs, effectively holding the entire global population of at least one Critically Endangered or Endangered species. In Türkiye, there are three AZE sites have been determined. The closest one to the project area is Gulluk Mountains, located about 90.2 km southwest of the project area (see Figure IV.15). Since Gulluk Mountains AZE is quite far from the project area, it will not be affected by the Project activities.

The Ramsar Convention is a convention that aims to protect wetlands, which are the habitat of waterfowl of international importance. In Türkiye, 14 wetlands have been declared as Ramsar areas. There are two RAMSAR areas, Meke Maar and Kızoren Pothole, in Konya Province. There is neither any wetland area protected under RAMSAR Convention nor wetland with national importance and with local significance in and around the Project Area.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Sites are places of importance to cultural or natural heritage as described in the UNESCO World Heritage Convention, established in 1972. Türkiye accepted the convention on 16 March 1983, making its historical sites eligible for inclusion on the list. As of 2021, there are nineteen World Heritage Sites in Türkiye, including seventeen cultural and two mixed sites. There is no protected area per this convention in and around the Project Area.

Man and the Biosphere Programme (MAB) is an intergovernmental scientific program launched in 1971 by UNESCO. It aims to establish a scientific basis for improving relationships between people and their environments. There is no protected area per this program in and around the Project Area.

Akseki and Ibradi Forest KBA/IBA area are located 440 meters south of the project area, but these areas are wild and natural areas with high biodiversity value. The project area is relatively poor in terms of biodiversity, and the anthropogenic effect in the project area is high.

There are no legally protected and internationally recognized areas of high biodiversity value within the Project area.

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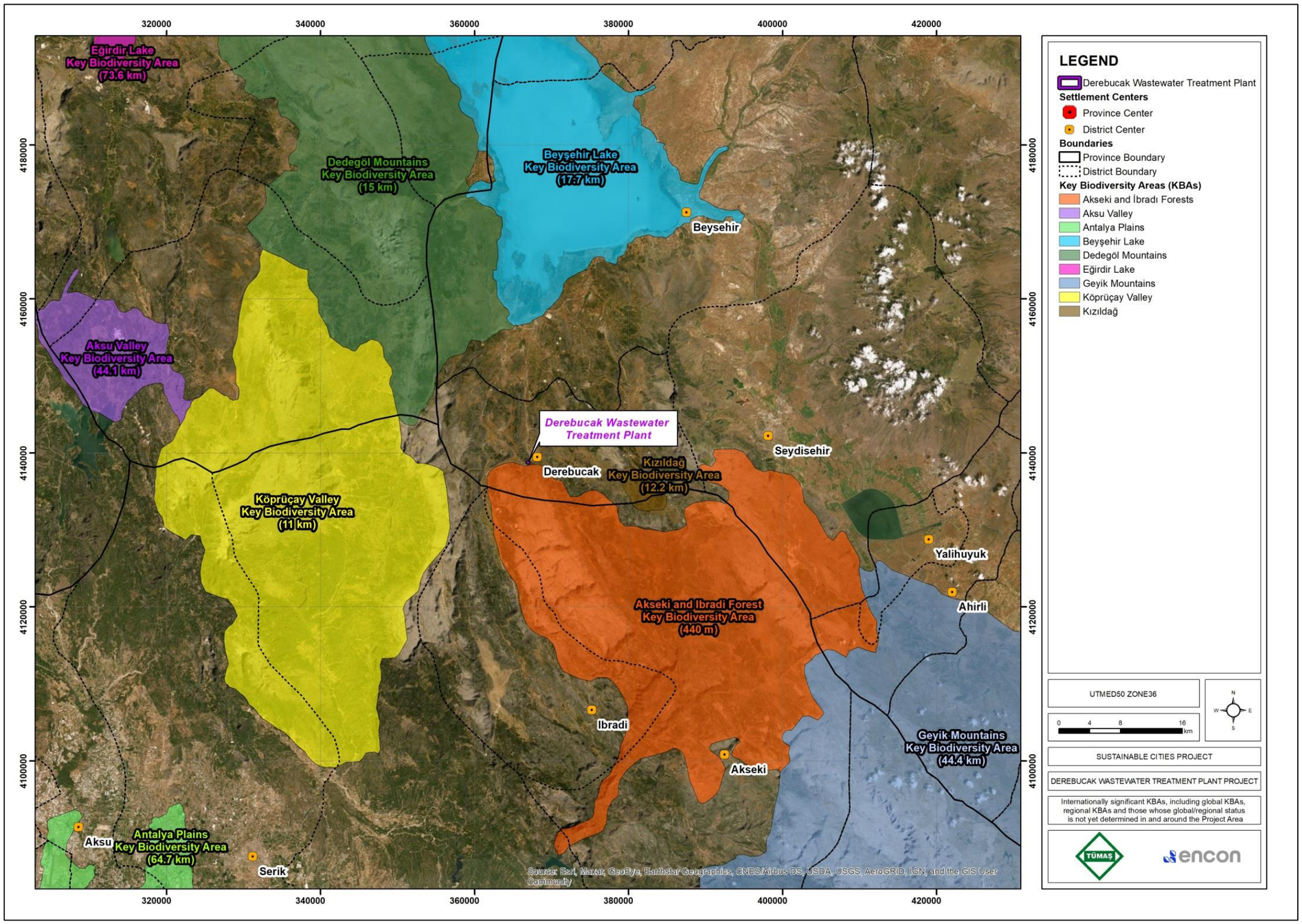

Figure IV.12 Key Biodiversity Areas in and around the Project Area

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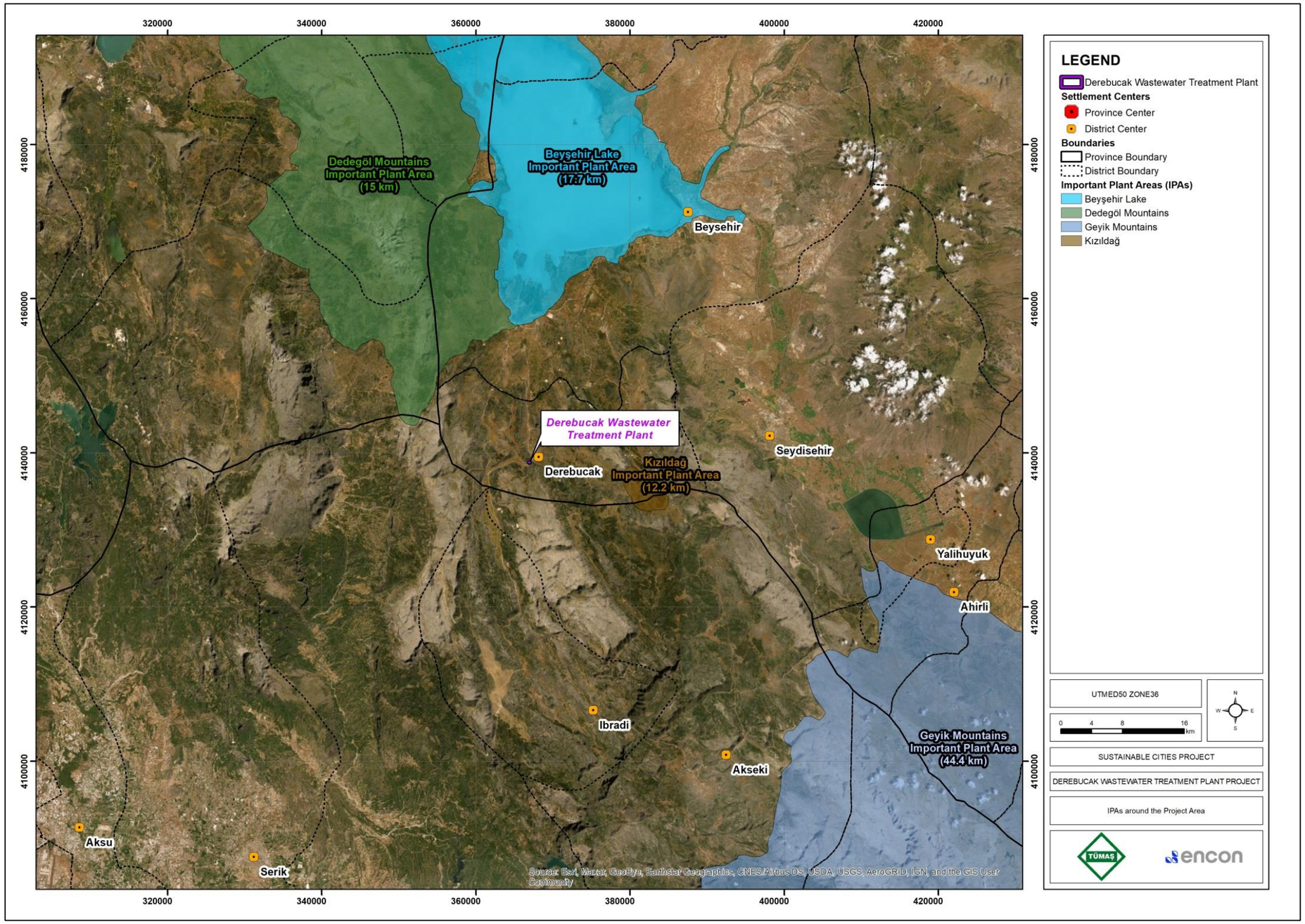

Figure IV.13 Important Plant Areas in and around the Project Area

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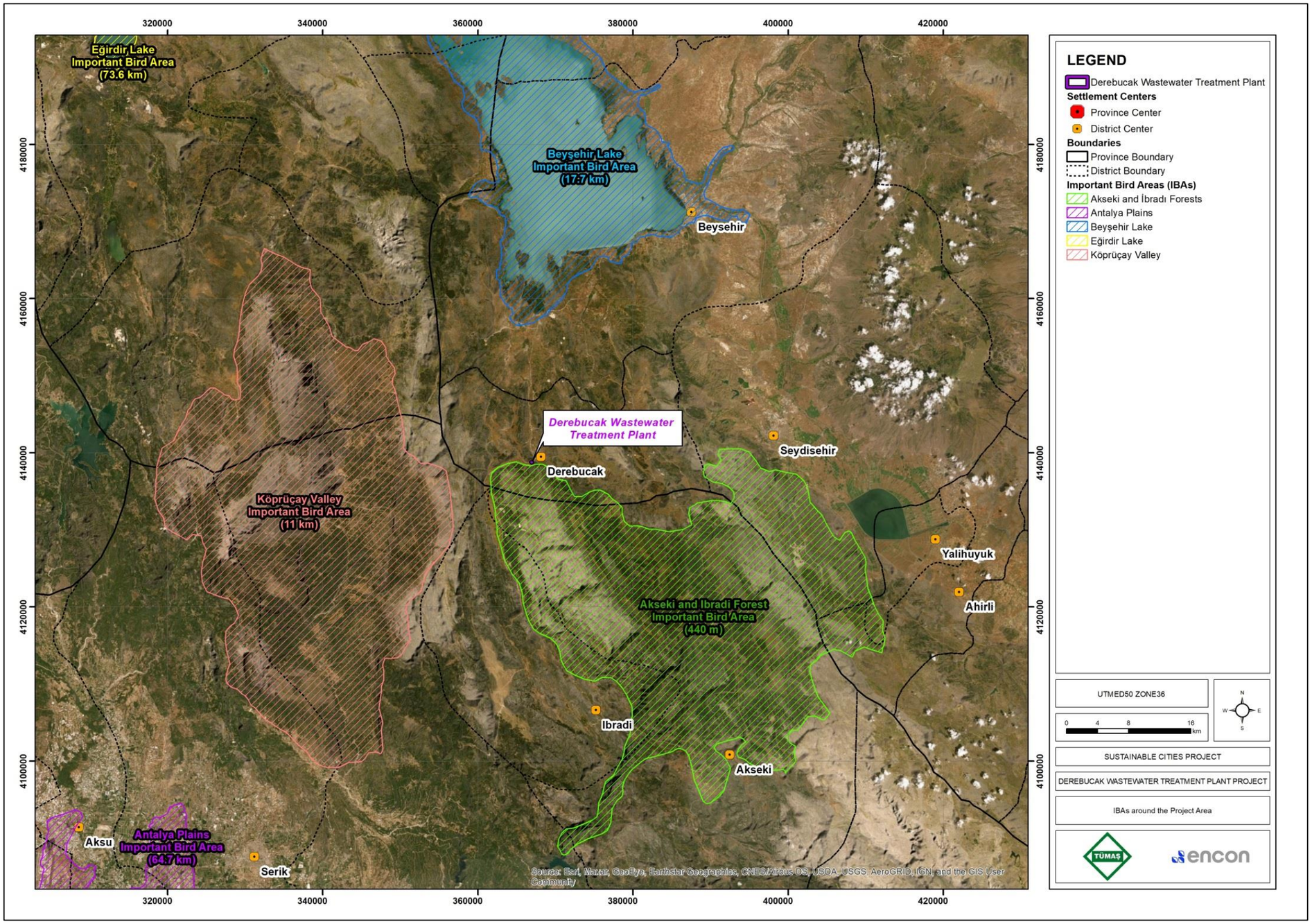

Figure IV.14 Important Bird Areas in and around the Project Area

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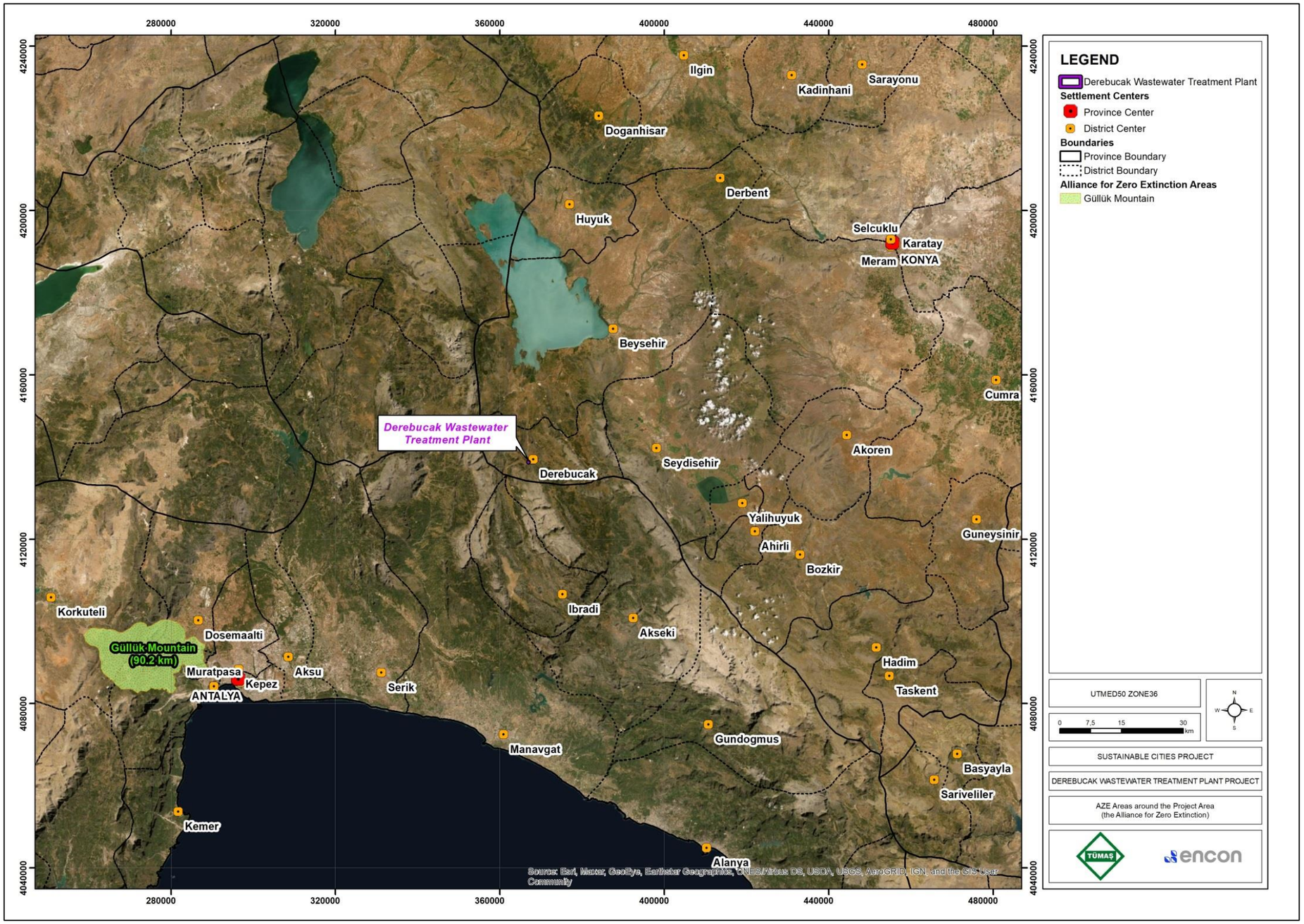

Figure IV.15 Zero Extinction Areas around the Project Area

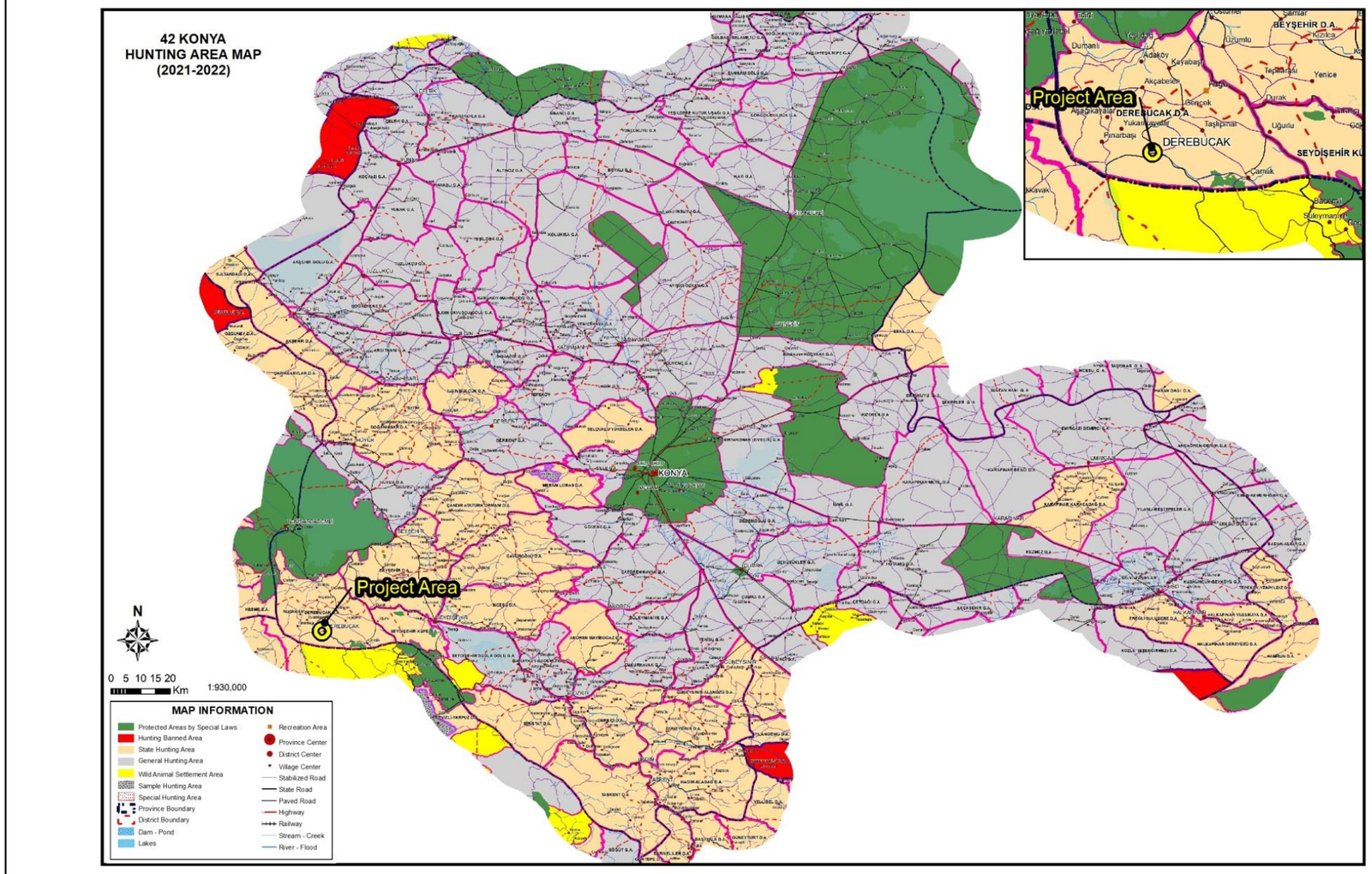

Figure IV.16 Prohibited and Open Hunting Areas in Konya (2021-2022)

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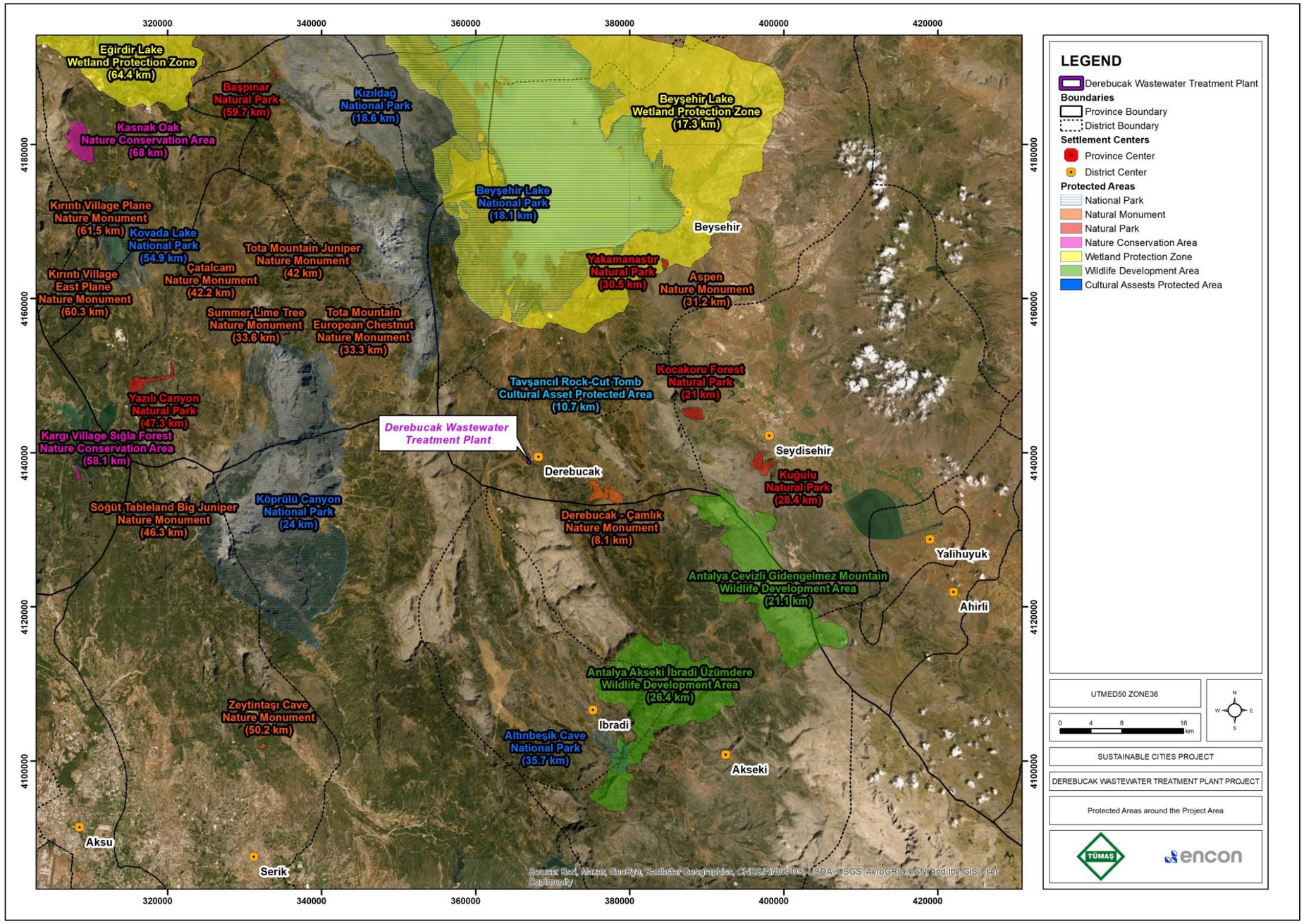


Figure IV.17 Protected Areas around the Project Area

IV.1.13. Air Quality

Sarayönü Air Quality Monitoring Station in Konya Province monitors PM_{10}, $PM_{2.5}$, CO, NO_2, NO_x and O_3 at the Sarayönü Neighborhood. The monthly average concentrations for these parameters measured between May 6, 2021 and September 31, 2021 are presented in Table IV.12 with the limit values. As seen from the table, all concentrations regarding to given parameters are below the regulatory limit value. During the period from May to September 2021, the concentrations of P M_{10}, $PM_{2,5}$, CO, NO_2, and NO_x were far below the limits indicated in the Regulation. Only in July 2021, the concentration of O_3 exceeded the regulatory limit of 120 µg/m^3.

Table IV.12 Air Quality Parameters measured in Sarayönü Station between 06.05.2021 and 31.09.2021

Months	Average Monthly Concentrations					
	PM_{10} (µg/m^3)	$PM_{2.5}$ (µg/m^3)	CO (µg/m^3)	NO_2 (µg/m^3)	NO_x (µg/m^3)	O_3 (µg/m^3)
May 2021	22.93	4.25	177.52	3.77	4.24	61.01
June 2021	10.13	4.03	184.24	4.04	4.47	-
July 2021	37.05	6.30	183.80	2.97	3.28	165.72
August 2021	36.68	8.02	238.26	3.30	3.97	64.70
September 2021	20.65	4.58	201.59	4.52	5.58	65.84
Daily Average	25.82	5.53	197.80	3.66	4.23	66.88
Limit Value	50*	25**	10,000*	40*	30*	120*

Source: https://sim.csb.gov.tr/STN/STN_Report/StationDataDownloadNew
* As stipulated by the Regulation on the Assessment and Management of Air Quality
** Turkish Legislation has not described a limit value for $PM_{2.5}$. Therefore, in the assessment of the measurement result, the limit value set forth by the Ambient Air Quality and Cleaner Air for Europe (Directive 2008/50/EC) and WBG 24-hour limit values are used, which is 25 µg/m^3 for both of them.

To constitute a baseline inventory and to determine air quality in the project area; 24-hour PM_{10} and $PM_{2.5}$ measurements were conducted at the nearest sensitive receptor that is institutional type at coordinates of AML*-367246/4139191 presented in Figure IV.6**.** The measurement results are presented in Table IV.13 with the limit values specified in WBG EHS Guideline and Regulation on the Assessment and Management of Air Quality. In addition, the photos from the measurement campaigns are presented in Figure IV.18. The measurement location for air quality is presented in Figure IV.6.

Table IV.13 PM_{10} and $PM_{2.5}$ Measurement Results (December 2020) with WBG EHS Guideline and Turkish Regulation Limit Values

Parameter	Averaging Period	WBG EHS Guideline Limit Value in µg/m^3	Regulation on the Assessment and Management of Air Quality Limit Value in µg/m^3	Measurement Results at Coordinates of AML*-367246/4139191 in µg/Nm^3
NO_2	24-Hour	20	40	-
	10-Minute	500		
PM_{10}	1-Year	20		
	24-Hour	50	50	15.26
$PM_{2.5}$	1-Year	10		
	24-Hour	25	25**	7.41
O_3	8-Hour daily maximum	100	120	-

Source:https://www.ifc.org/wps/wcm/connect/4e01e089-ad1a-4986-b955-e19e1f305ff0/1-1%2BAir%2BEmissions%2Band%2BAmbient%2BAir%2BQuality.pdf?MOD=AJPERES&CVID=ls0KF2J
https://sim.csb.gov.tr/STN/STN_Report/StationDataDownloadNew
*Air Quality Measurement Location

** Turkish Legislation has not described a limit value for $PM_{2.5}$. Therefore, in the assessment of the measurement result, the limit value set forth by the Ambient Air Quality and Cleaner Air for Europe (Directive 2008/50/EC) and WBG 24-hour limit values are used, which is 25 µg/m³ for both of them.

Figure IV.18 Photos from Air Quality Measurement Locations

According to the Industrial Air Pollution Control Regulation, PM_{10} values should not exceed 50 µg /Nm³ more than 35 times in a year. On the other hand, according to WBG General EHS Guidelines: Air Emissions and Ambient Air Quality, PM_{10} and $PM_{2.5}$ values should not exceed 50 µg/Nm³ and 25 µg /Nm³, respectively. Therefore, PM_{10} and $PM_{2.5}$ baseline measurement results satisfy both national and WBG General EHS Guidelines ambient air quality limit values.

IV.1.14. Noise Level

Environmental noise in Türkiye is regulated by the Regulation on the Assessment and Management of Environmental Noise (RENC), which is published in the Official Gazette dated 30.11.2022 and numbered 32029. This regulation is intended to ensure that precautions are taken to prevent disturbance to peace and tranquility, and to ensure the physical and mental health of persons potentially exposed to environmental noise. For this purpose, the regulation sets out requirements regarding noise mapping, acoustic reporting, environmental noise assessment for determination of noise exposure levels and preparation and application of action plans to prevent or mitigate negative impacts of noise exposure on human being and the environment.

The noise limit values for the operation defined in the RENC Annex VII Table 4 are presented in Table IV.14.

Table IV.14 Environmental Noise Limits Values for Industrial Plants provided in RENC

Areas	Measured Parameter	L_{day} (dBA) (07:00-19:00)	$L_{evening}$ (dBA) (19:00-23:00)	L_{night} (dBA) (23:00-07:00)
Industrial plants, transportation resources	LA_{eq},S_{min}	65	60	55
Workplaces	$LA_{eq\ 63\text{-}250\ Hz}$	Background + 5 dB(A)		Background +3 dB(A)
In case of multiple workplaces	LA_{eq},S_{min}	Background + 7 dB(A)		Background +3 dB(A)
All resources	LC_{max}	100 dB(C)		

WBG General EHS Guidelines

Noise limit levels are described under WBG General EHS Guidelines: Environmental Noise. The noise limit values are based on World Health Organization (WHO) Guidelines for Community Noise. WBG General EHS Guidelines requires that noise impacts should not exceed the levels presented in Table IV.15, or result in a maximum increase in background noise levels of 3 dB at the nearest receptor location off-site.

Table IV.15 Noise Level Guidelines of WBG EHS Guidelines

Receptor	One Hour L_{Aeq} (dBA)	
	Daytime 07:00 – 22:00	Nighttime 22:00 – 07:00
Residential, institutional, educational	55	45
Industrial, commercial	70	70

Noise during the construction phase will be mainly generated due to the activities of construction machinery and equipment. To determine the impact significance, background noise levels should be known. Therefore, a noise level measurement study was conducted to determine the background levels around the WWTP site.

Two locations were selected as sensitive receptors (NML-1 and NML-2), among which one is the same and the other is close to air quality measurement location (AML). NMLs are the nearest sensitive receptors to the WWTP site presented in Figure IV.6. The distance of AML to the sensitive receptor is 382 m, which is also the distance of NML-1. The distance of NML-2 is 243 m. Air quality measurement and noise measurements were made at the same locations. The background noise measurements were carried out at that point on December 7 and 8, 2021 by ENCON Laboratory and the photograph from measurement points are given in Figure IV.19. The results are presented in Table IV.16 and laboratory reports are presented in Annex-5 of this report. NML locations were selected due to their proximity to the health center.

Figure IV.19. Photographs Taken from Measurement Points

Table IV.16 Background Noise Level Measurement Results

Measurement Point	Type of the Receptor	Measurement Coordinates (UTMED50-Z35)		Measurement Results and Limit Values (Leq) (dBA)				
				RENC			WBG General EHS Guideline	
		X	Y	Daytime (07.00-19.00)	Evening (19.00-23.00)	Night (23.00-07.00)	Daytime (07.00-22.00)	Nighttime (22.00-07.00)
NML	Residential, Instituonal and Educational	367246	4139191	53.4	54.4	52.1	53.5	52.7
NML	Residential, Instituonal and Educational	388612	502246	60.8	56.4	48.0	60.3	49.8
Limit Values				65	60	55	55	45

The measurement locations are defined as "Educational, cultural and health facilities as noise sensitive areas" according to RENC, since there are a hospital and a hotel near the determined measurement points. For the same reasons, the location of the region is included in the "residential, institutional and educational" heading according to Noise Level Guidelines of WBG EHS Guidelines. Limit values were chosen based on these headings. As it is seen from Table III.16, background noise levels are below the limit values defined in RENC for daytime and evening for first location, while the night level is above the limit value. In addition, measurement results of daytime and evening are slightly above the limit values, while measurement result of night level is below the limit value for the second measurement location. Morover, while nighttime result for first measurement location is above the limit values defined in WBG General EHS Guidelines: Environmental Noise, both daytime and nighttime results are above the limit values for second measurement location according to same limit

values. Since the location is close to hospitals and settlements, it is normal for the noise measurement results to be high. The distances of the project area to the receptors are shown in the Table IV.17.

Table IV.17 Distances of Receptors to WWTP

Receptor	Distance (m)
School	1,362
School	1,180
Mosque	1.156
Mosque	1,420
Mosque	1,428
Health Center	853
Municipal Building	1,494
School	1,106

IV.2. Ecology and Biodiversity

For this Project, the biological environment was investigated, including habitat structures of the Project Area, protected areas, and key biodiversity areas (KBA). For this purpose, both desktop studies and field surveys were carried out. The related literature and previous studies have been reviewed, and the general biological characteristics of the region have been revealed. The field visit was conducted with the ENCON biologist on October 13, 2021 to the project area within the scope of biodiversity studies. The studies were carried out to cover the project area of influence that is 250 m around the project area (see Figure IV.20).

Figure IV.20 Biological field studies in and around the Planned Derebucak the Project Area

After field observations, for the detection of flora species Türkiye e-flora website (https://www.turkiyeflorasi.org.tr), for the detection of endemic plants, the “Red Book of Plants of Türkiye” that was prepared by Prof. Dr. Tuna Ekim et al. and the website (https://bizimbitkiler.org.tr), which contains up-to-date information, was used. Within the scope of desktop studies, previous thesis and article studies in the region were researched.

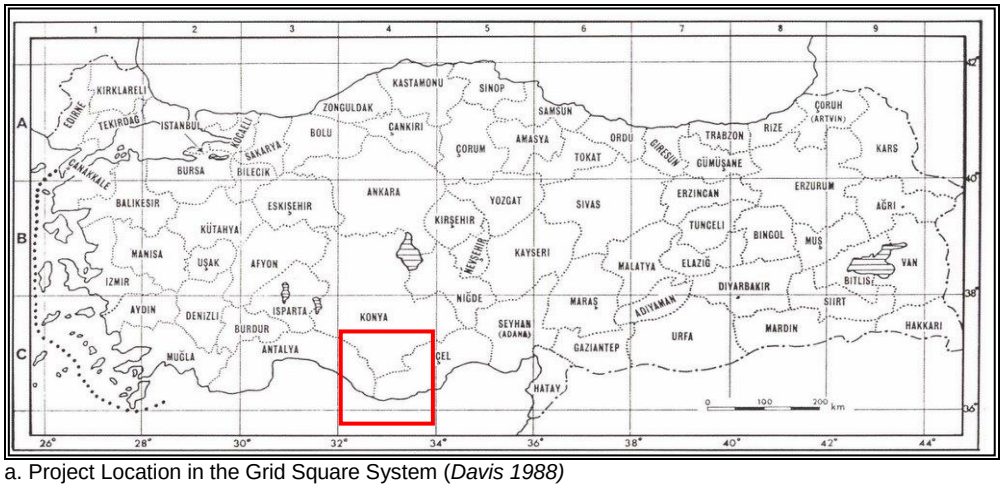
Fauna studies have been carried out in and around the project area and in the habitats suitable feeding, shelter, and breeding areas for fauna species. In determining the terrestrial fauna species, the existence of suitable habitats, traces, and signs of animals (nests, nest holes, excrement and footprints, feeding signs, etc.) were used. In addition, fauna studies conducted in the region were researched, and interviews with the local people were used. No hunting-collecting-killing was done while identifying the species in and around the area during the faunistic field studies. GPS was used to determine the elevations and geographical coordinates during field studies.

Data from the literature on biotopes, protected areas, endemic species, endangered species, and wildlife habitats in and around the project area were collected and evaluated. According to national and international sources, the danger categories of flora and fauna species were assessed.

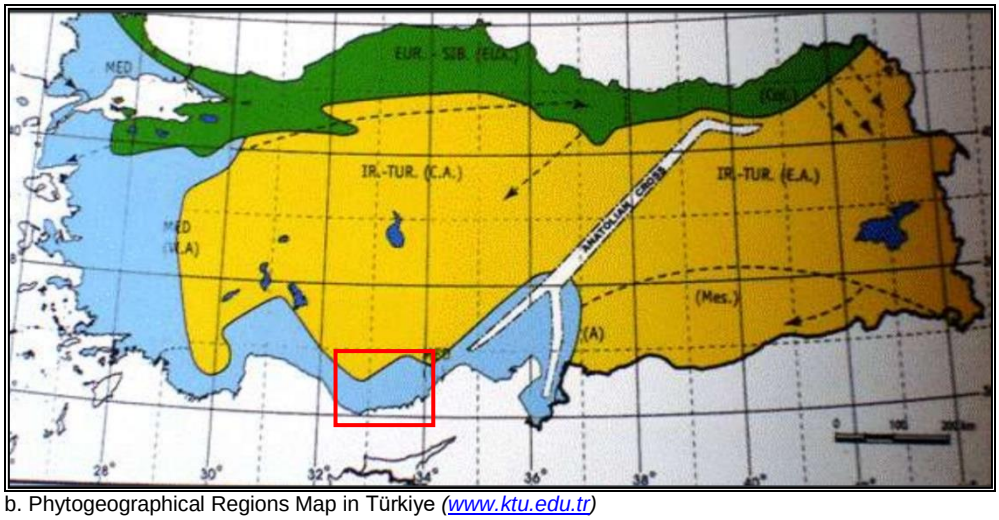
Vegetation Types of the Biodiversity

The vegetation type of the research area is closely related to the climate characteristics, altitude, and soil characteristics (Buldur, A.D., 1998, s.78).

The planned WWTP area is in the transition zone of the Mediterranean and Central Anatolian regions; in other words, between the Mediterranean and Irano-Turanian Phytogeographical Region, as seen in Figure IV.21. The project area is located in the C4 grid in the grid square system of the flora of Türkiye. Since the project area is in a high-altitude region (about 1200 m altitudes), it shows the characteristics of both Mediterranean and Subaerial climates.



a. Project Location in the Grid Square System (*Davis 1988)*



b. Phytogeographical Regions Map in Türkiye (www.ktu.edu.tr)
Davis P.H., Harper P.C. andHege I.C. (eds.), 1971. Plant Life of South-West Asia. The Botanical Society of Edinburg]
EUR.-SİB.(EUX): Europa-Siberian Region (Euxin sub-region); Col.:Colsic sector of the Euxine sub-region
MED.: Mediterranean Region (Eastern Mediterranean sub-region); W.A: Western Anatolia region; T.: Taurus Region; A.: Amanus Region
IR.-TUR.: Iran-Turanian Region; C.A.: Central Anatolia Region; E.A.: Eastern Anatolia Region (Mes: Mesopotamia) X: Central European/Balkan subregion of possibly Euro-Siberian region (mt): Mountain

Figure IV.21 Bioecological Location of the Project

In the Derebucak district, the summers are hot and dry; winters are snowy and cold. The average annual precipitation is 920.7 mm, and the climate is semi-humid.

Since the whole district does not have a particular climate type and topographic structure, the vegetation varies. *Pinus brutia* forests are characteristic in the lower levels of the region. As seen in large parts of the Mediterranean Region, where these forest areas are destroyed, maquis form mixed forests. In higher levels, the vegetation type is mixed forests include *Pinus nigra, Cedrus libani, and Abies cilicica* species.

The natural vegetation of the Derebucak District is divided into three categories: forest areas, shrub and maquis areas, and steppe areas. As a result of the floristic studies carried out in and around the project area; it has been determined that *Pinus brutia (Calabrian Pine), Pinus nigra (Black pine), Juniperus communis (common juniper), Juniperus excelsa (Greek juniper), Juniperus oxycedrus (sharp cedar), Quercus cerris (Türkiye oak), Quercus pubescens (Downy oak), Quercus libani (Lebanese oak), Cedrus libani (Taurus Lebanon cedar), and Abies cilicica subsp iIsaurica (Taurus fir*) species are common around the Project Area.

The planned WWTP area has previously been cultivated. Therefore, the project area has been exposed to anthropogenic effects, and its natural biodiversity has changed widely, adapting to these impacts.

As a result of field and desktop studies, it has been determined that the project area has ruderal vegetation that has been exposed to anthropogenic effects. The Kocadere River, where the discharge will be made, has riparian vegetation around it (see Figure IV.22).

a) Ruderal vegetation (the WWTP Area)

b) Riparian Vegetation around the Project Area

Figure IV.22 Vegetation types in and around the Project Area

International Legal and Regulatory Framework for Ecology and Biodiversity

Bern Convention

Bern Convention was put forward in 1982 in order to protect the European wildlife and natural habitats. Species to be protected according to the Bern Convention are listed in four appendices, which are presented in Table IV.18 with their explanations.

Table IV.18 Annexes to the Bern Convention

Annex	Explanation
I	Strictly protected flora species
II	Strictly protected fauna species
III	Protected fauna species
IV	Prohibited means and methods of killing, capture and other forms of exploitation

The Convention aims at conserving and promoting biodiversity, developing national policies for the conservation of wild flora and fauna and their natural habitats, protection of the wild flora and fauna from the planned development and pollution, developing trainings for protection practices, promoting and coordinating the researches made regarding this subject. It has been signed by 26 member states of the European Council (as well as Türkiye) with the aim of conserving the wildlife in Europe. Species that are not included within the appendices of the Convention are those that do not require any special protection. Species are not listed individually but instead are protected due to the habitat protection approach of the Bern Convention. All the countries party to the BERN Convention, have signed the Convention on Biological Diversity as well. Parties of this convention are responsible for ensuring sustainable use of resources in line with their national development trends and preserving threatened species.

CITES

CITES stands for the Convention on International Trade in Endangered Species of Wild Flora and Fauna. It is an international agreement that has been ratified by governments of 164 states (including Türkiye), whose aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival. The principles of CITES are based on sustainability of the trade in order to safeguard ecological resources (live animals and plants, vast array of wildlife products derived from them, including food products, exotic leather goods, etc.). CITES was signed in 1973 and entered in force on July 1, 1975. Türkiye ratified the Convention in 1996. Categories and species included in CITES are listed in three different appendices based on their protection statuses. These appendices and their explanations are given in Table IV.19.

Table IV.19 Appendices to CITES

Appendix	Explanation
I	covers the species, which are under the threat of extinction. Trade in the specimens of these species is not allowed except extraordinary circumstances
II	includes species, which are not threatened with extinction, but trade in specimens is restricted in order to prevent utilization incompatible with their survival
III	for which other parties of CITES is applied for assistance in controlling trade and which are conserved at least in one country.

IUCN

The International Union for Conservation of Nature (IUCN) publishes its Red List of Threatened Species, which intends to draw attention to species whose populations are at risk or under threat. The IUCN places a species on the Red List only after studying its population and the reasons for its decline. Some countries pay greater attention to IUCN-listed species than Bern-listed species, since the Red List relies on more research. The 1994 (ver.2.3) and 2001 (ver.3.1) categories and criteria of the IUCN Red List are presented below in Table IV.20. The Red List Categories and Criteria

had been re-formed through evaluating more open and easier to use systems. As a result, the IUCN Commission made revisions in February 2000, and the new set of categories and criteria was published in 2001.

Table IV.20 IUCN Red List Categories and Criteria

IUCN Red List Categories and Criteria 1994 (ver. 2.3)		IUCN Red List Categories and Criteria 2012 (ver. 4.0)	
EX	Extinct	EX	Extinct
EW	Extinct in the Wild	EW	Extinct in the Wild
CR	Critically Endangered	CR	Critically Endangered
EN	Endangered	EN	Endangered
VU	Vulnerable	VU	Vulnerable
LR	Lower Risk		
	cd : conservation dependent	NT	Near Threatened
	nt : near threatened	LC	Least Concern
	lc : least concern		
DD	Data Deficient	DD	Data Deficient
NE	Not Evaluated	NE	Not Evaluated

IV.2.1. Flora

The planned WWTP area consists of ruderal vegetation. For this reason, possible flora species of the region consist of herbaceous plants and widely distributed species. According to field studies and literature reviews, the flora types in and around the project area are presented in Table IV.21.

No endemic or threatened flora species were identified/detected in and around the project area. In addition, there are no protected flora species as per the BERN and CITES conventions.

Table IV.21 Flora Species in and around the Project Area[2]

Family	Taxon	Endemism	IUCN	BERN	CITES		
				Annex 1	App1	App2	App3
ACANTHACEAE	*Acanthus hirsutus* L.	-	-	-	-	-	-
AMARANTHACEAE	*Amaranthus retroflexus* L.	-	-	-	-	-	-
APIACEAE	*Anthriscus nemorosa* (Bieb.) Sprengel	-	-	-	-	-	-
	Eryngium campestre L. var. virens Link	-	-	-	-	-	-
	Scandix pecten-veneris L.	-	-	-	-	-	-
ASTERACEAE	*Centaurea solstitialis* L. subsp. *solstitialis*	-	-	-	-	-	-
	Centaurea virgata Lam.	-	-	-	-	-	-
	Cichorium intybus L.	-	LC	-	-	-	-
	Echinops viscosus DC. subsp. *viscosus*	-	-	-	-	-	-
	Onopordum bracteatum Boiss. & Heldr.	-	-	-	-	-	-
	Tripleurospermum parviflorum (Willd.) Paloed.	-	-	-	-	-	-
BORAGINACEAE	*Anchusa azurea* Miller var. *azurea*	-	-	-	-	-	-
	Buglossoides arvensis (L.) Johnston	-	-	-	-	-	-
	Echium italicum L.	-	-	-	-	-	-
	Heliotropium dolosum De Not.	-	-	-	-	-	-
BRASSIACEAE	*Capsella bursa-pastoris* L.	-	LC	-	-	-	-

[2]*IUCN 2022. The IUCN Red List of Threatened Species. Version 2021-3. https://www.iucnredlist.org*
Gok, Ramazan. Geographically Derebucak District (Konya). MS thesis. Selcuk University Social Sciences Institute, 2006.
Basturk, K. A. Y. A., and Caner ALADAĞ. "Precipitation, Temperature and Vegetation Relations in the Conditions of Konya." Journal of Selcuk University Institute of Social Sciences 22 (2009): 265-278.
DEMİRELMA, Hakkı, and Kuddisi ERTUGRUL. "Endemic Plants of the Region between Derebucak (Konya), İbradi-Cevizli (Antalya) and Danger Categories." Selcuk University Faculty of Science Journal of Science 2.34 (2009): 137-148.
Turkish Red Data Book of Turkish Plants (TRDB; Appim et al., 2000)
Turkish Plants Lists (www.bizimbitkiler.org.tr)
Türkiye e-flora website (https://www.Türkiyeflorasi.org.tr)

Family	Taxon	Endemism	IUCN	BERN	CITES		
				Annex 1	App1	App2	App3
	Lepidium perfoliatum L.	-	LC	-	-	-	-
	Sisymbrium altissimum L.	-	-	-	-	-	-
CARYOPHYLLACEAE	*Holosteum umbellatum* L. var. *glutinosum* (Bieb.) Gay.	-	-	-	-	-	-
	Silene spergulifolia (Desf.) Bieb.	-	-	-	-	-	-
	Vaccaria hispanica (Mill.) Rauschert	-	-	-	-	-	-
CONVOLVULACEAE	*Convolvulus arvensis* L.	-	-	-	-	-	-
FABACEAE	*Astragalus angustifolius* Lam. Subsp. *angustifolius*	-	-	-	-	-	-
	Medicago lupulina L.	-	LC	-	-	-	-
	Ononis spinosa L. subsp. *leiosperma* (Boiss.) Sirj.	-	LC	-	-	-	-
	Trifolium campestre Schreb.	-	-	-	-	-	-
	Trigonella spruneriana Boiss. var. *sprunerina*	-	-	-	-	-	-
LAMIACEAE	*Ajuga chamaepitys* (L.) Schreber subsp. *chia* (Schreber) Arcangeli	-	-	-	-	-	-
	Mentha longifolia (L.) Hudson subsp. *typhoides* (Briq.) Harley	-	LC	-	-	-	-
	Phlomis pungens Willd. var. *hirta* Velen	-	-	-	-	-	-
	Salvia frigida Boiss.	-	-	-	-	-	-
	Teucrium polium L.	-	-	-	-	-	-
LINACEAE	*Linum austriacum* L. subsp. *austriacum*	-	-	-	-	-	-
PAPAVERACEAE	*Papaver dubium* L.	-	-	-	-	-	-
	Papaver rhoeas L.	-	LC	-	-	-	-
PINACEAE	*Pinus brutia var. brutia*	-	LC	-	-	-	-
	Pinus nigra subsp. nigra var. caramanica	-	LC	-	-	-	-
POLYGONACEAE	*Polygonum aviculare L.*	-	LC	-	-		
	Rumex acetosella L.	-	LC	-	-		
	Rumex pulcher L.	-	LC	-	-		

Family	Taxon	Endemism	IUCN	BERN	CITES		
				Annex 1	App1	App2	App3
RANUNCULACEAE	*Adonis flammea* Jacq.	-	-	-	-	-	-
	Consolida orientalis (Gay.) Schrod.	-	-	-	-	-	-
	Nigella arvensis L. var. *glauca* Boiss.	-	-	-	-	-	-
	Ranunculus illyricus L. subsp. illyricus	-	-	-	-	-	-
ROSACEAE	*Amygdalus communis L.*	-	-	-	-	-	-
	Potentilla recta L.	-	-	-	-	-	-
	Rosa canina L.	-	LC	-	-	-	-
RUBIACEAE	*Asperula arvensis* L.	-	-	-	-	-	-
	Galium verum L. subsp. *verum*	-	LC	-	-	-	-
SALICACEAE	*Salix alba* L.	-	LC	-	-	-	-
	Salix triandra L. subsp. bornmuelleri	-	LC	-	-	-	-
	Populus alba L.	-	LC	-	-	-	-
SCROPHULARIACEAE	*Verbascum cherianthifolium* Boiss. var. *cherianthifolium*	-	-	-	-	-	-
	Veronica beccabunga L.	-	LC	-	-	-	-
CYPERACEAE	*Bolboschoenus maritimus* L.	-	LC	-	-	-	-
JUNCACEAE	*Juncus inflexus* L.	-	LC	-	-	-	-
POACEAE	*Agrostis stolonifera* L.	-	LC	-	-	-	-
	Alopecurus arundinaceus Pairet.	-	LC	-	-	-	-
	Bromus tectorum L.	-	-	-	-	-	-
	Hordeum murinum L. subsp. *glaucum* (Steudel.) Tzvelev.	-	LC	-	-	-	-
	Phleum pratense L.	-	LC	-	-	-	-
	Poa bulbosa L.	-	-	-	-	-	-

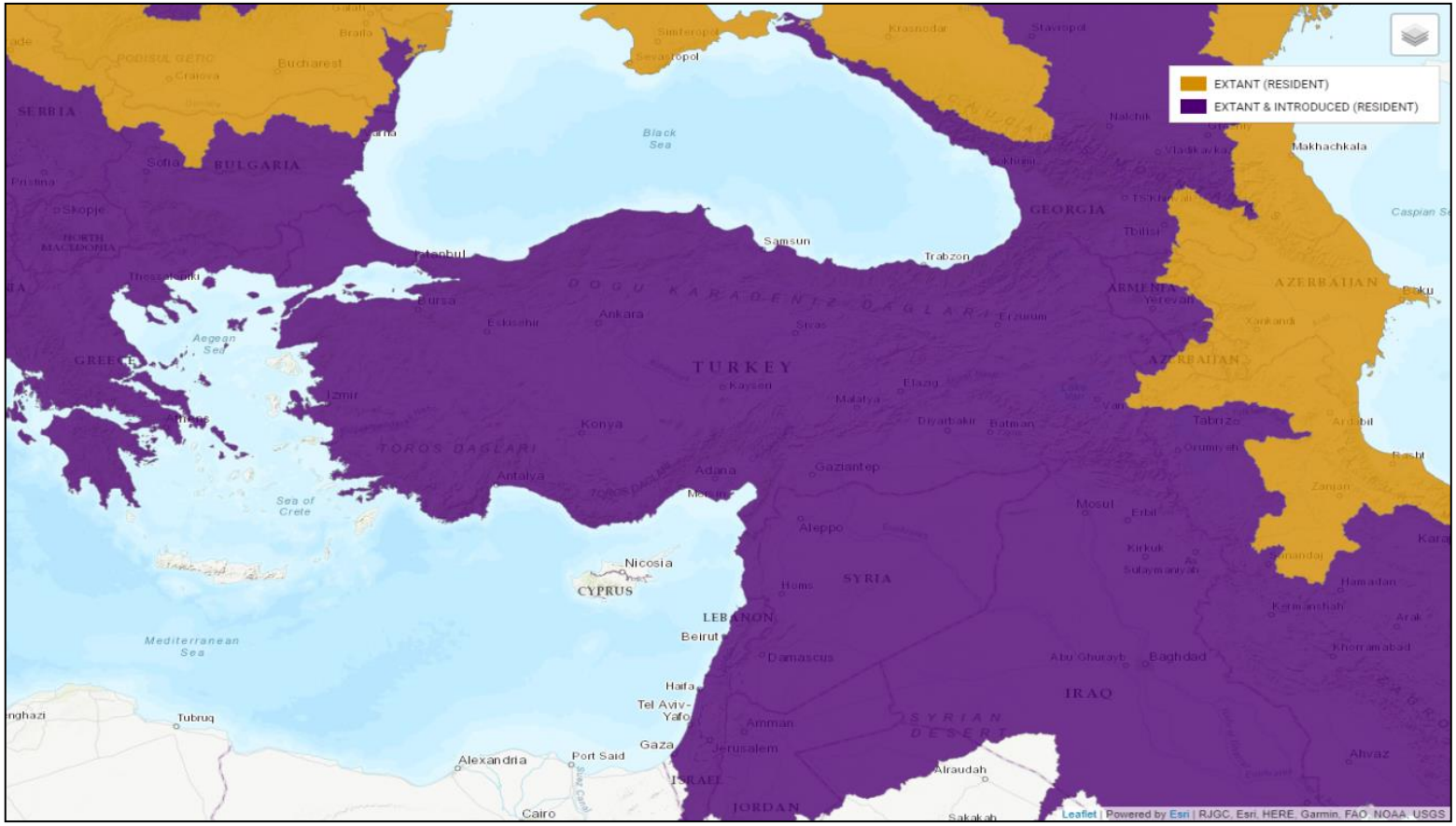
IV.2.2. Fauna

The fauna lists prepared via the field and desk studies carried out in and around the project area and the interviews made with the local people are given under the following headings.

Fish

In the current situation, it has been determined that the region's wastewater is given to Kocadere. Therefore, there is pollution in the stream. The aquatic biodiversity in the stream has been adversely affected by this situation. No flow was observed in the stream; it was determined that there was only flow when precipitation. Local people stated that carp, minnow and European chub are found in the Kocadere River. The fish species that are possibly found in and around the discharge area are given in Table IV.22.

These species are not only found in the discharge areas but also exist in other regions in Türkiye. Among the detected species, there are no endemic or protected species in the region. *Cyprinus carpio* (Sazan) is considered as VU according to the IUCN Red List but populations found in inland waters of Türkiye consist of cultural forms (see Figure IV.23).



Source: https://www.iucnredlist.org/

Figure IV.23 Geographic range map of *Cyprinus carpio*

Table IV.22 Possible fish species in Kocadere River[3]

ORDER	FAMILY	SPECIES	TURKISH NAME	ENGLISH NAME	IUCN
FISH					
Cypriniformes	Cyprinidae	*Capoeta damascina*	Siraz	Levantine Scraper	LC
Cypriniformes	Cyprinidae	*Capoeta baliki*	Siraz	Fourbarbel Scraper	LC
Cypriniformes	Cyprinidae	*Squalius cephalus*	Akbalık	European chub	LC
Cypriniformes	Cyprinidae	*Cyprinus carpio*	Sazan	Carp	VU
Cypriniformes	Leuciscidae	*Alburnus escherichii*	İnci	Sakarya Bleak	LC
Cypriniformes	Leuciscidae	*Pseudophoxinus battalgili*	Yag Balıgı	Tuz Lake Spring Minnow	LC
Cypriniformes	Salmonidae	*Salmo trutta*	Alabalık	Brown Trout	LC

Amphibians and Reptilians

Reptile and amphibian species are concentrated in riparian habitats near Kocadere River. The amphibian and reptile species observed in the Project Area during field studies and likely to be found by literature studies are shown in Table IV.23.

Among the detected species, only tortoise (*Testudo graeca*) is in the category VU (Vulnerable) according to IUCN. However, the tortoise is a widely spread reptile species found in every region except Türkiye's Eastern Black Sea region. Other reptile species are not in any threatened category; according to the IUCN categories, species are LC (Least Concern) and widespread in Türkiye. There are no endemic or critical amphibian and reptile species.

Table IV.23 Reptile and Amphibian Species in and around the Project Area[4]

ORDER	FAMILY	SPECIES	TURKISH NAME	ENGLISH NAME	THREATENED CATEGORIES		
					IUCN	BERN	CITES
AMFIBIA							
Anura	Bufonidae	*Pseudepidalea viridis*	Gece Kurbagası	Green Toad	LC	Annex-II	-
Anura	Bufonidae	*Bufo bufo*	Sigilli Kurbaga	Common Toad	LC	Annex-III	-
REPTILIA							
Testudines	Testudinidae	*Testudo graeca*	Tosbaga	Spur-thighed Tortoise	VU	Annex-II	APP-2
Squamata	Amphisbaenidae	*Blanus strauchi*	Kor kertenkele	Turkish Worm Lizard	LC	Annex-III	-
Squamata	Gekkonidae	*Hemidactylus turcicus*	Genis parmakli keler	Turkish Gecko	LC	Annex-III	-
Squamata	Agamidae	*Laudakia stellio*	Dikenli Keler	Hardim	LC	Annex-II	-
Squamata	Lacertidae	*Ophisops elegans*	Tarla Kertenkelesi	wester sanke-eyed lizard	LC	Annex-II	-
Squamata	Lacertidae	*Anatololacerta danfordi*	Toros Kertenkelesi	Danford's Lizard	LC	Annex-III	-
Squamata	Scincidae	*Ablepharus budaki*	Budak Ketenkelesi	-	LC	Annex-III	-

[3] *IUCN 2022. The IUCN Red List of Threatened Species. Version 2021-3. https://www.iucnredlist.org*
İlhan, Ali, Suleyman BALIK and S. A. R. I. Hasan. "Distribution And Conservation Status Of Central and West Anatolia Endemic Inland Water Fishes." Aquatic Sciences and Engineering 29.2 (2014): 9-34.
[4] *Olgun, Kurtulus Kumlutas, Yusuf and Baran İbrahim. Türkiye Amphibians and Reptiles. TUBITAK, 2012.*
The Amphibians and Reptiles Monitoring & Photography Society in Türkiye (AdaMerOs Herptil Türkiye) (http://www.turkherptil.org/)
IUCN 2022. The IUCN Red List of Threatened Species. Version 2021-3. https://www.iucnredlist.org

ORDER	FAMILY	SPECIES	TURKISH NAME	ENGLISH NAME	THREATENED CATEGORIES		
					IUCN	BERN	CITES
Squamata	Colubridae	*Eirenis modestus*	Uysal Yilan	Ring-headed dwarf snake	LC	Annex-III	-
Squamata	Colubridae	*Dolichophis jugularis*	Kara Yilan	-	LC	Annex-III	-
Squamata	Colubridae	*Platyceps collaris*	Toros Yilani	Collared Dwarf Racer	LC	Annex-III	-
Squamata	Colubridae	*Natrix natrix*	Yarisucul Yilan	Grass Snake	LC	Annex-III	-
Squamata	Colubridae	*Natrix tasellata*	Su Yilani	Dice snake	LC	Annex-II	-

Birds

It has been determined that the project site is not on the main migration route for large migratory birds flying with long wings. The area is also not used as accommodation and wintering areas during migration. In addition, there are no suitable habitats in and around the Project Area to accommodate migratory bird species.

Bird species determined during site survey and literature research in the Project Area are presented in Table IV.24. Except for the Turtle Dove (*Streptopelia turtur*), other bird species detected are in the LC category according to IUCN. Although Turtle Dove (*Streptopelia turtur*), is in the VU (Vulnerable) category, it is a species that breeds in all regions of Türkiye, as seen in the IUCN map in Figure IV.24. There are no endemic or critical bird species within the project area.

Source: https://www.iucnredlist.org

Figure IV.24 Geographic range map of Turtle Dove (*Streptopelia turtur*)

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Table IV.24 Bird Species in and around the Project Area[5]

ORDER	FAMILY	SPECIES	TURKISH NAME	ENGLISH NAME	THREATENED CATEGORIES		
					IUCN	BERN	CITES
AVES							
Pelecaniformes	Pelecanidae	*Pelecanus onocrotalus*	Ak Pelikan	White Pelican	LC	Annex-II	-
Ciconiiformes	Ciconiidae	*Ciconia nigra*	Kara Leylek	Black Stork	LC	Annex-II	APP-II
Ciconiiformes	Ciconiidae	*Ciconia ciconia*	Leylek	White Stork	LC	Annex-II	APP-II
Accipitriformes	Accipitridae	*Milvus migrans*	Kara Caylak	Black Kite	LC	Annex-II	APP-II
Accipitriformes	Accipitridae	*Circaetus gallicus*	Yılan Kartalı	Short-Toed Eagle	LC	Annex-II	APP-II
Accipitriformes	Accipitridae	*Circus cyaneus*	Gokce Delice	Hen Harrier	LC	Annex-II	APP-II
Accipitriformes	Accipitridae	*Accipiter nisus*	Atmaca	Sparrowhawk	LC	Annex-II	APP-II
Accipitriformes	Accipitridae	*Buteo buteo*	Sahin	Buzzard	LC	Annex-II	APP-II
Accipitriformes	Accipitridae	*Buteo rufinus*	Kızıl Sahin	Long-Legged Buzzard	LC	Annex-II	APP-II
Accipitriformes	Accipitridae	*Aquila chrysaetos*	Kaya Kartalı	Golden Eagle	LC	Annex-II	APP-II
Accipitriformes	Pandionidae	*Pandion haliaetus*	Balık Kartalı	Osprey	LC	Annex-II	APP-II
Falconiformes	Falconidae	*Falco tinnunculus*	Kerkenez	Kestrel	LC	Annex-II	APP-II
Falconiformes	Falconidae	*Falco peregrinus*	Gok Dogan	Peregrine	LC	Annex-II	APP-I
Gruiformes	Rallidae	*Fulica atra*	Sakarmeke	Common Coot	LC	Annex-III	–
Suliformes	Phalacrocoracidae	*Phalacrocorax carbo*	Karabatak	Great Cormorant	LC	Annex-III	-
Anseriformes	Anatidae	*Anser anser*	Boz kaz	Greylag Goose	LC	Annex-III	-
Anseriformes	Anatidae	*Mareca strepera*	Boz Ordek	Gadwall	LC	Annex-III	-
Anseriformes	Anatidae	*Anas platyrhynchos*	Yesilbas	Mallard	LC	Annex-III	-
Galliformes	Phasianidae	*Alectoris chukar*	Kınalı Keklik	Chukar	LC	Annex-III	–
Galliformes	Phasianidae	*Perdix perdix*	Cilkeklik	Grey Partridge	LC	Annex-III	-
Galliformes	Phasianidae	*Coturnix coturnix*	Bıldırcın	Quail	LC	Annex-III	-
Charadiiformes	Scolopacidae	*Actitis hypoleucos*	Dere Dudukcunu	Common Sandpiper	LC	Annex-II	-
Columbiformes	Columbidae	*Columba livia*	Kaya Guvercini	Rock Dove	LC	Annex-III	-
Columbiformes	Columbidae	*Columba palumbus*	Tahtalı	Woodpigeon	LC	-	–
Columbiformes	Columbidae	*Streptopelia turtur*	Uveyik	Turtle Dove	VU	Annex-III	-
Cuculiformes	Cuculidae	*Cuculus canorus*	Guguk	Cuckoo	LC	Annex-III	-
Strigiformes	Strigidae	*Bubo bubo*	Kulaklı orman	Eurasian	LC	Annex-	APP-

[5] *Sullu, N. "Avifauna of Konya-Eregli Akgol. Selcuk University." Graduate School of Natural and Applied Sciences, Master Thesis, Konya (2006).*
Anonymous Birds of Türkiye: TRAKUS (https://www.trakus.org/)
Kiziroglu,İ., 2009. The Pocket Book for Birds of Türkiye, ISBN: 975-7460-01-X, Ankamat Printing House,Ankara, 564
IUCN 2022. The IUCN Red List of Threatened Species. Version 2021-3. https://www.iucnredlist.org

ORDER	FAMILY	SPECIES	TURKISH NAME	ENGLISH NAME	THREATENED CATEGORIES		
					IUCN	BERN	CITES
			baykusu	Eagle-owl		II	II
Caprimulgifores	Apodidae	*Apus apus*	Ebabil	Swift	LC	Annex-III	–
Coraciiformes	Meropidae	*Merops apiaster*	Arıkusu	Bee-Eater	LC	Annex-II	-
Coraciiformes	Coraciidae	*Coracias garrulus*	Gokkuzgun	Roller	LC	Annex-II	-
Bucerotiformes	Upupidae	*Upupa epops*	İbibik	Eurasian Hoopoe	LC	Annex-II	-
Piciformes	Picidae	*Dendrocopos syriacus*	Alaca Agackakan	Syrian Woodpecker	LC	Annex-II	-
Passeriformes	Alaudidae	*Melanocorypha calandra*	Bogmaklı Toygar	Calandra Lark	LC	Annex-II	–
Passeriformes	Alaudidae	*Melanocorypha bimaculata*	Kucuk Bogmaklı Toygar	Bimaculated Lark	LC	Annex-II	-
Passeriformes	Alaudidae	*Galerida cristata*	Tepeli Toygar	Crested Lark	LC	Annex-III	-
Passeriformes	Alaudidae	*Lullula arborea*	Orman Toygarı	Woodlark	LC	Annex-III	-
Passeriformes	Alaudidae	*Alauda arvensis*	Tarlakusu	Skylark	LC	Annex-III	-
Passeriformes	Alaudidae	*Eremophila alpestris*	Kulaklı Toygar	Shore Lark	LC	Annex-II	–
Passeriformes	Hirundinidae	*Hirundo rustica*	Kır Kırlangıcı	Swallow	LC	Annex-II	-
Passeriformes	Motacillidae	*Anthus campestris*	Kır İncirkusu	Tawny Pipit	LC	Annex-II	-
Passeriformes	Motacillidae	*Motacilla alba*	Ak Kuyruksallayan	Pied Wagtail	LC	Annex-II	-
Passeriformes	Troglodytidae	*Troglodytes troglodytes*	Cıtkusu	Wren	LC	Annex-II	–
Passeriformes	Muscicapidae	*Erithacus rubecula*	Kızılgerdan	Robin	LC	Annex-II	-
Passeriformes	Muscicapidae	*Luscinia megarhynchos*	Bulbul	Nightingale	LC	Annex-II	-
Passeriformes	Muscicapidae	*Phoenicurus ochruros*	Kara Kızılkuyruk	Black Redstart	LC	Annex-II	-
Passeriformes	Muscicapidae	*Phoenicurus phoenicurus*	Kızılkuyruk	Redstart	LC	Annex-II	-
Passeriformes	Muscicapidae	*Saxicola rubetra*	Cayır Taskusu	Whinchat	LC	Annex-II	–
Passeriformes	Muscicapidae	*Saxicola torquata*	Taskusu	Stonechat	LC	Annex-II	-
Passeriformes	Muscicapidae	*Oenanthe isabellina*	Boz Kuyrukkakan	Isabellina Wheatear	LC	Annex-II	-
Passeriformes	Muscicapidae	*Oenanthe oenanthe*	Kuyrukkakan	Northern Wheatear	LC	Annex-II	-
Passeriformes	Muscicapidae	*Oenanthe hispanica*	Kara Kulaklı Kuyrukkakan	Black-Eared Wheatear	LC	Annex-II	-
Passeriformes	Muscicapidae	*Monticola solitarius*	Gokardıc	Blue Rock Thrush	LC	Annex-II	–
Passeriformes	Turdidae	*Turdus merula*	Karatavuk	Blackbird	LC	Annex-III	-
Passeriformes	Turdidae	*Turdus viscivorus*	Okse Ardıcı	Mistle Thursh	LC	Annex-III	-
Passeriformes	Sylviidae	*Cettia cetti*	Kamıs Bulbulu	Cetti's Warbler	LC	Annex-III	-
Passeriformes	Sylviidae	*Hippolais pallida*	Ak Mukallit	Olivaceous Warbler	LC	Annex-III	–
Passeriformes	Sylviidae	*Sylvia melanocephala*	Maskeli Otlegen	Sardinian Warbler	LC	Annex-II	-

ORDER	FAMILY	SPECIES	TURKISH NAME	ENGLISH NAME	THREATENED CATEGORIES		
					IUCN	BERN	CITES
Passeriformes	Sylviidae	*Sylvia communis*	Ak Gerdanlı Otlegen	Whitethroat	LC	Annex-II	-
Passeriformes	Sylviidae	*Sylvia atricapilla*	Kara Baslı Otlegen	Blackcap	LC	Annex-II	-
Passeriformes	Sylviidae	*Phylloscopus collybita*	Cıvgın	Chiffchaff	LC	Annex-II	-
Passeriformes	Muscicapidae	*Muscicapa striata*	Benekli Sinekkapan	Spotted flycatcher	LC	Annex-II	–
Passeriformes	Aegithalidae	*Aegithalos caudatus*	Uzun Kuyruklu Bastankara	Long-Tailed Tit	LC	Annex-III	-
Passeriformes	Paridae	*Parus ater*	Cam bastankarası	Coal Tit	LC	Annex-II	-
Passeriformes	Paridae	*Parus caeruleus*	Mavi Bastankara	Blue Tit	LC	Annex-II	-
Passeriformes	Paridae	*Parus major*	Buyuk Bastankara	Great Tit	LC	Annex-II	-
Passeriformes	Sittidae	*Sitta krueperi*	Kucuk Sıvacı	Krueper's Nuthatch	LC	Annex-II	–
Passeriformes	Sittidae	*Sitta neumayer*	Kaya Sıvacısı	Rock Nuthatch	LC	Annex-II	-
Passeriformes	Oriolidae	*Oriolus oriolus*	Sarıasma	Golden Oriole	LC	Annex-II	-
Passeriformes	Laniidae	*Lanius collurio*	Kızıl Sırtlı Orumcekkusu	Red-Backed Shrike	LC	Annex-II	-
Passeriformes	Laniidae	*Lanius minor*	Kara Alınlı Orumcekkusu	Lesser Grey Shrike	LC	Annex-II	-
Passeriformes	Corvidae	*Garrulus glandarius*	Alakarga	Jay	LC	–	–
Passeriformes	Corvidae	*Pica pica*	Saksagan	Magpie	LC	-	-
Passeriformes	Corvidae	*Corvus monedula*	Kucuk Karga	Jackdaw	LC	-	-
Passeriformes	Corvidae	*Corvus frugilegus*	Ekin Kargası	Rook	LC	-	-
Passeriformes	Corvidae	*Corvus cornix*	Les Kargası	Hooded Crow	LC	-	-
Passeriformes	Corvidae	*Corvus corax*	Kuzgun	Raven	LC	Annex-III	–
Passeriformes	Sturnidae	*Sturnus vulgaris*	Sıgırcık	Starling	LC	-	-
Passeriformes	Passeridae	*Passer domesticus*	Serce	House Sparrow	LC	-	-
Passeriformes	Passeridae	*Passer montanus*	Agac Sercesi	Tree Sparrow	LC	Annex-III	-
Passeriformes	Fringillidae	*Fringilla coelebs*	İspinoz	Chaffinch	LC	Annex-III	-
Passeriformes	Fringillidae	*Carduelis chloris*	Florya	Greenfinch	LC	Annex-II	–
Passeriformes	Fringillidae	*Carduelis carduelis*	Saka	Goldfinch	LC	Annex-II	-
Passeriformes	Fringillidae	*Carduelis cannabina*	Ketenkusu	Linnet	LC	Annex-II	-
Passeriformes	Emberizidae	*Emberiza cia*	Kaya Kirazkusu	Rock Bunting	LC	Annex-II	-
Passeriformes	Emberizidae	*Emberiza hortulana*	Kirazkusu	Ortolan	LC	Annex-III	-
Passeriformes	Emberizidae	*Miliaria calandra*	Tarla Kirazkusu	Corn Bunting	LC	Annex-III	-

Mammals

The mammalian species of the region, like other fauna groups, are widely distributed species with high adaptation to the environment. Mammal species expected to be seen in the project area are presented in Table IV.25. There are no endemic or critical mammal species.

Table IV.25 Mammal Species in and around the Project Area[6]

ORDER	FAMILY	SPECIES	TURKISH NAME	ENGLISH NAME	THREATENED CATEGORIES		
					IUCN	BERN	CITES
MAMMALIA							
Insectivora	Erinaceidae	*Erinaceus concolor*	Kirpi	Hedgehog	LC	-	-
Insectivora	Soricidae	*Crocidura suaveolens*	Beyazdisli Bocekcil	Lesser Shrew	LC	Annex-II	-
Chiroptera	Rhinolophidae	*Rhinolophus hipposideros*	Nalburunlu Kucukyarasa	Lesser Horseshoe Bat	LC	Annex-II	-
Chiroptera	Vespertilionidae	*Pipistrellus pipistrellus*	Cuce Yarasa	Common Pipistrelle	LC	Annex-III	-
Chiroptera	Vespertilionidae	*Myotis myotis*	Farekulaklı Buyuk Yarasa	Greater Mouse-eared Bat	LC	Annex-II	-
Chiroptera	Vespertilionidae	*Myotis blythii*	Farekulaklı Kucuk Yarasa	Lesser Mouse-eared Myotis	LC	Annex-II	-
Lagomorpha	Leporidae	*Lepus europaeus*	Yabani Tavsan	European Hare	LC	Annex-III	-
Rodentia	Gliridae	*Dryomys nitedula*	Orman Yediuyuru	Forest Dormouse	LC	Annex-III	-
Rodentia	Sciuridae	*Sciurus anomalus*	Anadolu Sincabı	Caucasian Squirrel	LC	Annex-II	-
Rodentia	Sciuridae	*Spermophilus taurensis*	Toros Gelengisi	Taurus ground squirrel	LC		
Rodentia	Spalacidae	*Nannospalax xanthodon*	Nehringi Kor Faresi	Nehring's Blind Mole Rat	DD	-	-
Rodentia	Muridae	*Apodemus slyvaticus*	Adi Tarla Faresi	Long-tailed Field Mouse	LC	-	-
Rodentia	Muridae	*Apodemus flavicollis*	Sarı Boyunlu Orman Faresi	Yellow-necked Field Mouse	LC	-	-
Rodentia	Muridae	*Rattus rattus*	Ev Sicani	Black Rate	LC	-	-
Rodentia	Muridae	*Mus musculus*	Ev Faresi	House Mouse	LC	-	-
Carnivora	Canidae	*Vulpes vulpes*	Tilki	Red Fox	LC	-	APP-3
Carnivora	Canidae	*Canis lupus*	Kurt	Grey Wolf	LC	Annex-II	-
Carnivora	Mustelidae	*Mustela nivalis*	Gelincik	Least Weasel	LC	Annex-III	-
Carnivora	Mustelidae	*Meles meles*	Porsuk	Eurasian Badger	LC	Annex-III	-
Carnivora	Mustelidae	*Martes foinea*	Kaya Sansari	Stone Marten	LC	Annex-III	APP-3
Artiodactyla	Suidae	*Sus scrofa*	Yaban Domuzu	Wild Boar	LC	Annex-III	-

[6] *IUCN 2022. The IUCN Red List of Threatened Species. Version 2021-3. https://www.iucnredlist.org*
Anonymous Mammalia of Türkiye: TRAMEM (https://www.tramem.org/)

IV.3. Socio-Economic Environment

In this section, information regarding the economic activities and demographic features of Konya Province and Derebucak District are presented. For this information, the Feasibility Report of the Derebucak WWTP Project, the data obtained from TurkStat and related literature sources, the findings of the field visit conducted by Encon on October 13, 2021, the interview with the mukhtar of the Sarayonu neighborhood was used.

As indicated Chapter IV.1.12, there are 1,037 protected sites in Konya Province including some archaeological and urban sites. However, there is no cultural property, natural property, protected site, or protected area in the Project Area. Tavsancil Rock-Cut Tomb Cultural Asset Protected area is 10.7 km north of the project area.

Konya Province ranks as the 7th province of Türkiye in terms of total population, as of 2020 with its population of 2,250,020. Population density (number of people per square kilometer) of the province is 58 people/km^2. It is lower than the average of Türkiye (109 people/km^2) (TurkStat, 2020).

IV.3.1. Population

Konya Province is divided into 31 districts. According to the 2020 census results obtained from the Address Based Population Registration System (ABPRS), the population of the Derebucak District, where the Project Area is located, is 5976. The population distribution of Konya Province and the population of the districts together with the gender distribution are given in Table IV.26.

Table IV.26 Population of Konya Districts

District	Male	Female	Total	Male (%)	Female (%)
Ahirli	2,275	2,299	4,574	49.74	50.26
Akören	3,016	2,820	5,836	51.68	48.32
Aksehir	46,076	47,889	93,965	49.04	50.96
Altinekin	7,308	6,981	14,289	51.14	48.86
Beyşehir	38,763	38,927	77,690	49.89	50.11
Bozkır	12,341	12,966	25,307	48.77	51.23
Celtik	4,839	4,590	9,429	51.32	48.68
Cihanbeyli	25,825	25,092	50,677	50.49	49.51
Cumra	33,924	33,766	67,690	50.12	49.88
Derbent	1,963	2,089	4,052	48.45	51.55
Derebucak	2,847	2,843	5,690	50.04	49.96
Doganhisar	7,129	7,683	14,812	48.13	51.87
Emirgazi	4,001	3,723	7,724	51.80	48.20
Eregli	76,239	74,739	150,978	50.50	49.50
Guneysinir	4,624	4,642	9,266	49.90	50.10
Hadim	5,500	5,492	10,999	50.02	49.98
Halkapinar	1,961	1,948	3,909	50.17	49.83
Huyuk	7,408	7,736	15,144	48.92	51.08
Ilgin	26,543	26,946	53,489	49.62	50.38
Kadinhani	15,765	15,441	31,206	50.52	49.48
Karapinar	25,535	24,788	50,323	50.74	49.26
Karatay	186,287	184,640	370,927	50.22	49.78

District	Male	Female	Total	Male (%)	Female (%)
Kulu	25,794	25,818	51,612	49.98	50.02
Meram	172,651	175,674	348,325	49.57	50.43
Sarayönü	13,939	13,832	27,771	50.19	49.81
Selcuklu	338,768	351,899	690,667	49.05	50.95
Seydişehir	32,801	32,664	65,465	51.10	49.90
Taskent	2,867	2,901	5,768	49.71	50.29
Tuzlukcu	2,950	3,112	6,062	48.66	51.34
Yalıhuyuk	853	857	1,710	49.88	50.12
Yunak	10,652	10,339	20,991	50.75	49.25

Source: TurkStat, 2022

The population census results of TurkStat for Konya Province between 1965 and 2000 was performed via the traditional census method (by physical counting of individuals at the localities where they are physically present on census day); while the census results between 2007 and 2020 were carried out via address based population registration system (see Table IV.27).

Table IV.27 Census Results for Konya Province

TurkStat –Traditional Census Results							
Year	**1965**	**1970**	**1975**	**1980**	**1985**	**1990**	**2000**
Capita	1,122,622	1,280,239	1,422,461	1,562,139	1,769,050	1,750,303	2,192,166
TurkStat – Address Based Population Registration System Results							
Year	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Capita	1,959,082	1,969,868	1,992,675	2,013,845	2,038,555	2,052,281	2,079,225	2,108,808
Year	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Capita	2,130,544	2,161,303	2,180,149	2,205,609	2,232,374	2,250,020	2,277,017	2,311,656

Source: TurkStat, 2022

As seen from Table IV.27, the population increased from 2,232,374 in 2019 to 2,311,656 in 2022 with an annual population growth rate of 3.55 %.

With its population of 5,690 in 2022 (ABPRS, TurkStat), Derebucak District constitutes 0.007% of Türkiye's population (85,279,553). Figure IV.25 shows the annual population growth rate of Derebucak District during the last 6 years period. As seen fromFigure IV.25, Derebucak District has seen a continuous decline in its population. In 2020, the decrease in population growth rate slowed down from -0.93% to -0.66 %. Overall, the population density of the district has decreased. The population density of the Derebucak District was 12.11 people/km^2 in 2019, while it is 11.99 people/km^2 in 2020.

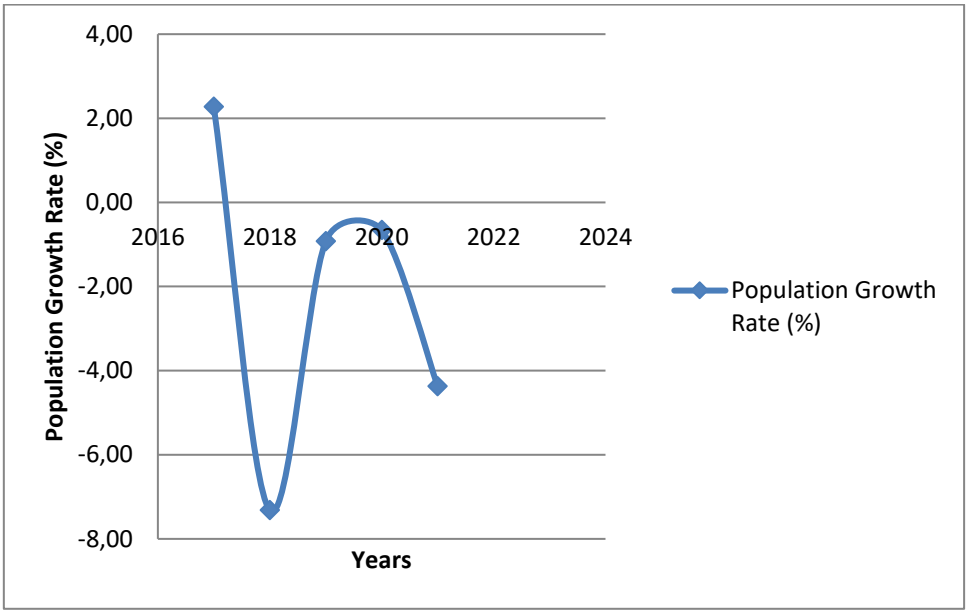

Figure IV.25 Population Growth Rate of Derebucak District between 2017 and 2022

Age and gender distribution of the population in Derebucak District is presented in Figure IV.26. As seen from the figure, the age distribution of Derebucak District is balanced and the age group of “55-59” and “60-64” has the highest ratio within the population. The active population in the 10-59 age range constitutes 57.89% of the total population in the district.

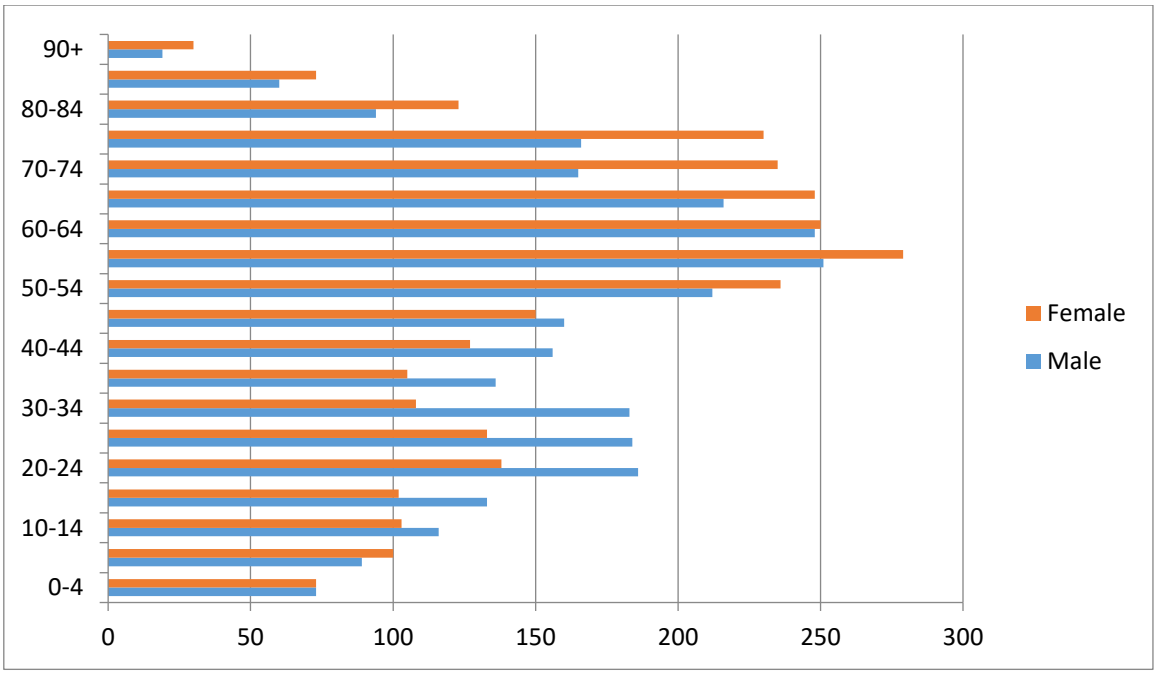

Figure IV.26 Age and Gender Distribution of the Population of Derebucak District in 2022

The population distribution in neighborhoods close to the Project area is presented in Table IV.28.

Table IV.28 Population Distribution in Neighborhoods Close to the Project Area

Neighborhoods (Derebucak District)	Population	Percentage
Çamlık	917	16.11
Durak	285	5.00
Gencek	863	15.17
Goynem	944	16.60
Kenankuyu	358	6.29
Musalla	362	6.36
Pinarbasi	545	9.58
Sarayönü	542	9.53
Taslipinar	155	2.72
Tepearasi	152	2.68
Ugurlu	41	0.72
Yeni	526	9.24
Total	**5,690**	**100.00**

Source: TurkStat, 2022

By considering the numbers of people and their percentage, it is observed that the neighborhoods not in AoI are not directly affected but the most populated neighborhoods such as Çamlık, Gencek, Goynem, Pinarbasi, Sarayönü and Yeni constitute the major part of the total population.

IV.3.2. Socio-Economic Characteristic

With a surface area of 39,000 km^2, Konya Province is the largest province in Türkiye and is located in the south of Türkiye's Central Anatolia Region. Its location at the crossroads of important roads and railways, which connects Europe and Aegean Region to the Middle East, makes the city important.

Türkiye adopted the European Union's framework for regional policies and statistics in 2002, which categorized the country into 12 Nomenclature of Territorial Units for Statistics (NUTS) – 1 Region, 26 NUTS-2 Sub-regions, and 81 NUTS-3 (provinces) based on population, socioeconomic, and geographical data.

Konya Province takes place in TR5 Region[7], one of the 26 NUTS 2 Level Regions of Türkiye and in Konya sub-region (TR52) together with the other Central Anatolian city of Karaman Province as seen in Figure IV.27.

[7] *NUTS classification for Türkiye has been developed to collect regional statistics, to identify the framework of regional policies and to create a statistics database comparable to the European Union Regional Statistics System. Under this classification scheme, Turkish provinces are defined in NUTS-3. The neighboring provinces with economic, social and geographical similarities are hierarchically categorized as NUTS-2 by considering regional development plans and population. While, similarly, NUTS-1 is defined based on the grouping of NUTS-2. In this context, NUTS-1 which is TR5 (at the first level), corresponds to West Anatolia region and NUTS-2 of TR52 (at the second level) corresponds to Ankara and Konya sub-regions. At the NUTS-3, Konya sub-region (TR52) is divided into two provinces as Konya (TR 521) and Karaman (TR 522).*

Figure IV.27. Konya Subregion (TR52)

TR52 Region has a strategic position on a national and international scale due to its geographical location and socioeconomic structure. Having a total area of 47,420 km^2, TR52 Region comprises 6.05% of Türkiye's total area.

According to the Socio-Economic Development Ranking Survey of Provinces and Regions, 2017, which was published by the Ministry of Industry and Technology, General Directorate of Development Agencies, Konya Province was ranked as 14th while Derebucak District was ranked as 661st in Türkiye in terms of socio-economic development. The development indicators for Konya Province are presented in Table IV.29.

Table IV.29 Indicators for Development Level of Konya Province

Parameters	Value
Socio-economic development ranking (Ministry of Development, 2011)	14th
Annual population growth rate (Konya Province Environmental Status Report for 2019)	1.21 ‰
GDP per capita (TurkStat, 2019)	7,201 $
Total exportation (TurkStat, 2019)	1.9 billion $
Total importation (TurkStat, 2019)	877.6 million $
Total cultivated agricultural area (Derebucak Group Feasibility Report, 2020)	1,876,344ha
Total number of literate persons, 6+ (TurkStat, 2020)	1,963,962
Number of primary school (TurkStat, 2019)	728
Number of middle school (TurkStat, 2019)	594
High School Graduation, 15+ (TurkStat, 2020)	361,476
University Graduation, 15+ (TurkStat, 2020)	253,942
Number of Hospital (TurkStat, 2019)	45
Number of Hospital Bed (TurkStat, 2019)	7,597
Forest Area / Total Area Ratio (Konya Province Environmental Status Report for 2019)	14.1%
Total number of tourists overnight stays in certified accommodations (TurkStat, 2020)	2,699,470
Net Migration Rate (TurkStat, 2020)	-2.22‰

According to this index, Derebucak District is one of the districts having 4th Development Level. Table IV.30 shows the socio-economic development ranking of the districts of Konya Province on the provincial basis.

Table IV.30 Socio-Economic Development Ranking of Districts on the Provincial Basis

District	Overall Ranking	Ranking within the Province	Development Level
Selcuklu	2	1	1
Meram	167	2	2
Karatay	200	3	2
Aksehir	228	4	2
Eregli	249	5	3
Seydişehir	281	6	3
Beyşehir	300	7	3
Ilgin	391	8	3
Cumra	397	9	3
Cihanbeyli	426	10	3
Akören	449	11	3
Karapinar	453	12	3
Kulu	462	13	4
Sarayönü	488	14	4
Hadim	496	15	4
Taskent	526	16	4
Guneysinir	528	17	4
Huyuk	542	18	4
Kadinhani	561	19	4
Doganhisar	578	20	4
Tuzlukcu	588	21	4
Yalihuyuk	613	22	4
Bozkır	649	23	4
Derebucak	661	24	4
Altinekin	676	25	5
Celtik	682	26	5
Yunak	692	27	5
Derbent	726	28	5
Halkapinar	749	29	5
Emirgazi	782	30	5
Ahirli	807	31	5

Source: SEGE, 2017

On the other hand, neighbourhood level socio-economic conditions were identified through face-to-face interview with the Sarayönü Neighborhood muhktar on October 13, 2021, which is the closest neighborhood to the Project Area. Photograph from the interview is presented in Figure IV.28.

Figure IV.28 Photograph Taken During the Interview Conducted with Sarayönü Neighborhood Mukhtar

The findings of the interview are presented below:

- Major economic activities of the residents are agriculture. Other than that, the majority of the residents live on pension.
- Among the residents, as vulnerable/disadvantaged groups, there are eight people, who receive support from social assistance and solidarity foundation. Six of them are physically and/ or mentally disabled family member, while two of them are elderly people. Also, there are approximately 15 female-headed households.
- Approximately 30 university graduates and 30 unskilled workers are unemployed in the neighborhood.
- Agricultural irrigation in the project area is carried out with the water supplied from the Derebucak Dam. However, strawberry cultivators in the project area suffer from limited amount of water resources.

In addition, for stakeholder identification and analysis, phone calls were made with the mukhtars on 17 February 2023 and information was obtained about vulnerable/disadvantaged groups. The findings of the interviews are given below:

- Sarayonu: Among the residents, as vulnerable/disadvantaged individuals/groups, there are eight people, who receive support from social assistance and solidarity foundation. Six of them are physically and/or mentally disabled family members, while two of them are elderly people. Also, there are approximately 15 female-headed households.
- Musalla: Among the residents, as vulnerable/disadvantaged individuals/groups, there are five people, who receive support from social assistance. Two of them are elderly people over 70 years of age, who live alone and need of care, while two of them are people with chronic diseases.
- Yeni: Among the residents, as vulnerable/disadvantaged individuals/groups, there are eight people, who receive support from social assistance. Four of them are physically and/or mentally disabled family members. Also, there are two female-headed households and two Syrian refugee households.
- Kenankuyu: Among the residents, as vulnerable/disadvantaged individuals/groups, there are twelve people, who receive support from social assistance. Three of them are physically and/or mentally disabled family members, while eight of them are elderly people.

Agriculture and Livestock

Provincial Level

In terms of overall agricultural production value in 2019, the Konya Province is in the first place, accounting for 5.3% of Türkiye's total agricultural production value. Many types of vegetables and fruits are produced in Konya Province, especially field crops such as wheat, barley, sugar beet, haricot, potatoes, sunflower, hash, cumin, and safflower. As a result, agriculture is one of the province's most important economic activities. It meets about 40% of Türkiye's seed production (http://www.kto.org.tr).

According to TurkStat 2020 data, 14,732,575 decares of the 18,590,788 decare agricultural land of the province are used for the cultivation of cereals and other herbal products, 476,977 decares for the cultivation of fruits, beverages and spice plants, 308,814 decares for the cultivation of vegetable products, 836 decares for the cultivation of ornamental plants and 3,071,586 decares of it have been left fallow. A visual representation of the agricultural land use in Konya Province is given in Figure IV.29.

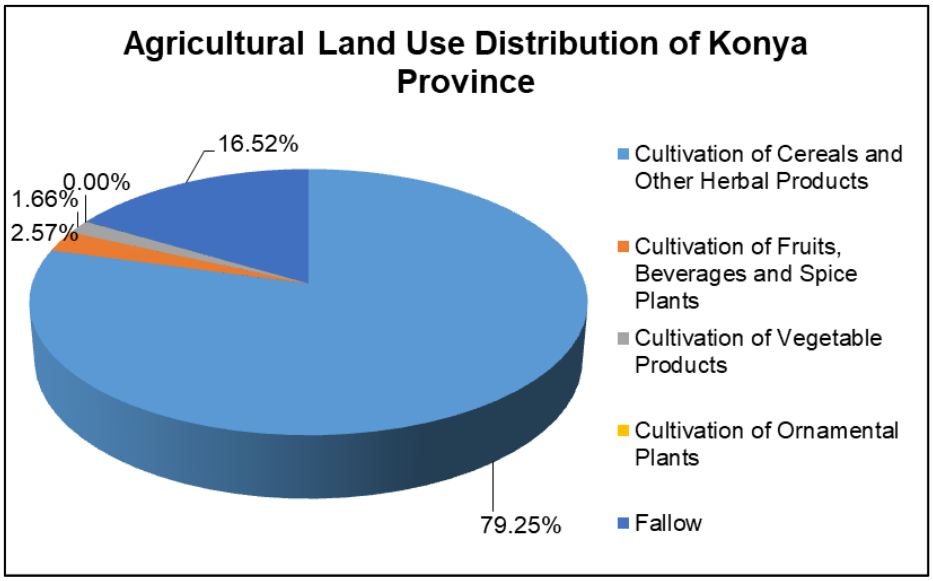

Figure IV.29 Agricultural Land Use Distribution of Konya Province (Source: TurkStat 2020)

Since the cultivated area of the products classified in the cereals and other herbal products group in the agricultural production in the province corresponds to approximately 95% of the total cultivated area, it is seen that the products in this group are the most cultivated products in the province. In other words, vegetable, fruit and ornamental plant production areas in the province are quite low compared to the areas where other agricultural products are cultivated. Agricultural products produced in significant amounts in the province are summarized in Table IV.31.

Table IV.31 Quantities of Crops Produced in Significant Amounts in Konya Province and Size of Cultivated Area (TurkStat, 2020)

Product Type	Cultivated Area (Decare)	Production (Ton)
Sugar Beet	914,750	7,228,473
Corn (Slage)	417,091	2,570,984
Clover	359,916	1,774,504
Wheat, Excluding Durum Wheat	4,234,024	1,301,497
Corn	1,033,998	1,070,626
Barley (Other)	3,154,438	1,027,276
Potatoes (Excluding Sweet Potatoes)	151,807	638,171
Durum Wheat	1,968,582	619,203
Sunflower Seed (Oil)	668,054	278,546
Barley (Beer)	699,389	239,086
Vetch (Hungarian)	126,591	222,809
Total	13,728,640	16,971,175

According to TurkStat 2020 data, livestock breeding is also common in the province. There are 951,640 bovines and 2,843,229 ovines in the province. In addition, there are 11,234,107 poultry animals and 1,093 beekeeping businesses in the province.

District Level

According to TurkStat 2020 data, 23,539 decares of the 48,408 decare agricultural land of the Derebucak District are used for the cultivation of cereals and other herbal products, 915 decares for the cultivation of fruits, beverages and spice plants, 254 decares for the cultivation of vegetable products and 3,700 decares of it have been left fallow. A visual representation of the agricultural land use in Derebucak District is given in Figure IV.30.

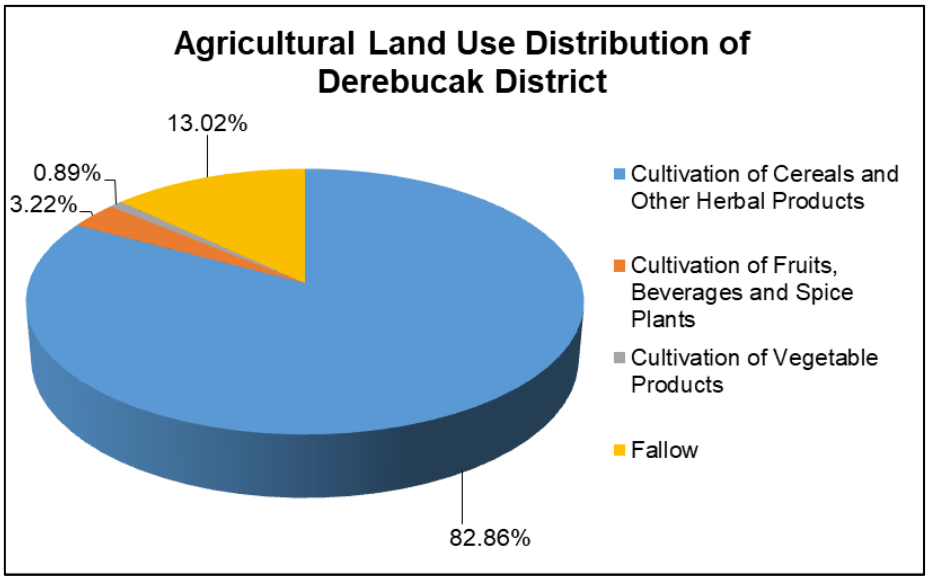

Figure IV.30 Agricultural Land Use Distribution of Derebucak District

Since the cultivated area of the products classified in the cereals and other herbal products group in the agricultural production in the district corresponds to approximately 95% of the total cultivated area, it is seen that the products in this group are the most cultivated products in the district. In other words, vegetable, fruit and ornamental plant production areas in the district are quite low compared to the areas where other agricultural products are cultivated. Agricultural products produced in significant amounts in the district are summarized in Table IV.32.

Table IV.32 Quantities of Crops Produced in Significant Amounts in Derebucak District and Size of Cultivated Area (TurkStat, 2020)

Product Type	Cultivated Area (Decare)	Production (Ton)
Corn (Slage)	900	4,500
Durum Wheat	9,179	2,042
Beans, Dry	8,000	1,760
Vetch (Common)	900	1,440
Total	18,979	9,742

According to TurkStat 2020 data, livestock breeding is also common in the district. There are 2,346 bovines and 13,167 ovines in the district. In addition, there are 2,445 poultry animals and 27 beekeeping businesses in the district.

Industry

There are nine (9) organized industrial zones, eight (8) of which are active, 19 small industrial sites supported by the Ministry of Industry and Technology, 15 small industrial sites in the city center, 11 small industrial sites and 14 private industrial sites in the districts of Konya.

The main fields of activity in the industrial zones are automotive spare parts industry, machinery industry, agricultural machinery and equipment industry, plastic industry, furniture and wood industry, metal industry, casting industry, food industry, construction materials and packaging industry.

On the other hand, industry is not developed in Derebucak District. There is also no industrial facility in Derebucak District that can be connected to the planned WWTP. (http://www.kto.org.tr, 2023).

Education

As of 2018, the literacy rate of the Konya Province is 97.51%. On the other hand, schooling rate for primary school, middle school and secondary education are 90.05%, 94.21 and 85.56%, respectively. There are 728 primary schools, 594 secondary schools and 374 secondary education institutions in the province.

According to TurkStat and Provincial Directorate of National Education, as of 2018, there are 63 classrooms, 61 teachers and 476 students in the Derebucak District. While the number of students per classroom in the district is 7.6, the number of students per teacher is 7.8. As of 2017, the rate of illiterate people in the district is 8.4%.

While 35.9% of the population in the district is graduated from primary school, the number of secondary schools, middle schools, highschools or equivalent vocational school and higher education graduates correspond to 9.9%, 9.1%, 11.4% and 5.4% of the population in the district, respectively.

On the other hand, according to an interview conducted with the Sarayönü Neighborhood Mukhtar there are schools in the neighborhood. However, most of the students go to school in other neighborhoods since the parents do not like the quality of the lessons in the schools of neighborhood. Students go to these schools by school busses or on foot.

Health

According to the 2020 data obtained from the Konya Provincial Directorate of Health (https://konyaism.saglik.gov.tr), there is a total of 48 hospitals in the province, 35 of which are state and 13 are private hospitals. There is also Derebucak State Hospital in Derebucak District.

The number of physicians per thousand people is two in Konya Province according to the 2019 data of TurkStat, which is the same average for Türkiye. While the average number of hospital beds per hundred thousand people in Konya Province is 340, this rate is 286 in Türkiye.

On the other hand, according to the interview conducted with the Sarayönü Neighborhood Mukhtar, neighborhood residents complain about the odor from Kocadere River and some of the residents have been poisoned/got sick from the water due to the untreated wastewater discharged into the river.

IV.3.3. Transportation

Transportation is provided mainly by highways in the city. D715 Ankara-Konya-Antalya road is located on the North-South axis of the province. On the East-West axis, the D300 Aksaray-Konya-Afyon road is located.

Konya Province is located within the boundaries of the 3rd Regional Directorate of General Directorate of Highways. The total length of the 66 provincial roads registered to the General Directorate of Highways of Konya is 1,739 km.

Konya's railway connection has been active since 1898. Trains passing through Konya are Toros Express, Central Anatolian Blue Train and Meram Express. The most important work in railway transportation is the high-speed train project between Konya and Ankara provinces, which has been successfully completed and is still in service. With the completion of this project in 2011, the transportation time between Konya and Ankara provinces was reduced to 1 hour and 40 minutes, and significant progress was made in Konya railway transportation. In 2013, high-speed train services between Konya and Eskisehir started. In 2015, Konya-Istanbul high-speed train services were started as well.

The closest airport, Konya Airport, which is located in Selcuklu District, is located 151 km away from the city center. Transportation in Derebucak District is mostly provided by private vehicles and public transportation vehicles. The access to Derebucak District from another province must be via Konya Province.

The road numbered D687 connects Beyşehir District of Konya Province and Serik District of Antalya Province. The 17 km part of this road serves the transportation between Yenisarbademli District and Derebucak District, and the 15 km part serves between Derebucak District and Konya-Antalya Provincial Border.

As for the roads reaching Derebucak District, there is a Beyşehir Derebucak (Gembos) Road with a total length of 62 km that 25.6 km of which is surface coated divided road and 36.4 km of which is surface coated single road standard. Also, there is the Beyşehir-Derebucak road with a length of 26 km.

The road distances to some of the cities from the Derebucak District are also given in Table IV.33.

Table IV.33 Road Distances of Derebucak District to Some Important City Centers

City Center	Distance (km)
Konya	136
Ankara	395
Istanbul	702
İzmir	580
Antalya	148
Isparta	222
Afyonkarahisar	251
Aksaray	283
Nigde	374
Karaman	238

Source: General Directorate of Highways Website

IV.4. Existing Infrastructure

IV.4.1. Existing Water Supply and Distribution Systems

All of the drinking water needs of the Derebucak District are met from water bodies. The water allocated from the Bogaz1 Well and Karakasik Local Spring is approximately 26 l/s.

Reservoirs

There is only one reservoir in the district, which has a volume of 300 m^3. Information regarding the reservoir is given in Table IV.34.

Table IV.34 Derebucak Reservoir and Source Information

No	District	Name of the Reservoir	Volume of the Reservoir (m^3)	Name of the Water Body	Source (l/s)	Service Areas
1	Derebucak	Derebucak Central Reservoir1	300	Bogaz1 Well and Karakasik Local Spring	16+10	Sarayönü + Kenankuyu + Musalla + Yeni

Source: Derebucak Wastewater Treatment Plant, Feasibility Report, December 2020

The existing drinking water network in Derebucak District was built in 2010 according to the information received from the KOSKI and the network consists of PVC and PE pipes. Total network length is 31,311 m. Information regarding to drinking water network is given in Table IV.35.

Table IV.35 Existing Drinking Water Network of Derebucak District

Neighborhood	Pipe Type	Pipe Diameter	Length (m)
Sarayönü	PE	75PE 90PE 110PE 140PE	11,150
Kenankuyu	PE	75PE 110PE	7,430
Yeni	PE-PVC	75PE 90PE 110PE 140PE 160PE 225PE 225PVC	12,731

Source: Derebucak Wastewater Treatment Plant, Feasibility Report

IV.4.2. Existing Wastewater System

The Ø400, Ø300 and Ø200 mm sewerage network lines were renewed in 2017 in order to eliminate the faults in the sewerage network in the Derebucak District Center. The construction of the renewal was completed in 2018. Within this respect, information on the existing sewerage network is given in Table IV.36.

Table IV.36 Existing Sewerage Network of Derebucak District

Pipe Diameter	Length (m)
Ø400	1,202
Ø300	1,160
Ø200	1,211
Ø200	10,800
Total	**14,373**

Source: Derebucak Wastewater Treatment Plant, Feasibility Report

Currently, wastewater is discharged into Kocadere River without treatment. The untreated wastewater discharge into the Kocadere River puts considerable pressure on the environment and public health. During the site visit, an odor problem was observed at the discharge point. There is currently no storm water line in Derebucak District.

V. ENVIRONMENTAL AND SOCIAL IMPACTS OF THE PROJECT

The main purpose of an Environmental and Social Impact Assessment (ESIA) is to identify and assess the potential positive and adverse impacts/risks that may be caused by the Project activities on the natural environment and on the socio-economic wellbeing and conditions of the population (community and workforce) at local and regional level. The following assessment is based on the Project characteristics and activities and the baseline conditions in the project area.

As a result of this assessment relevant mitigation measures were developed to avoid, minimize, mitigate and off-set significant adverse impacts and enhance beneficial impacts. Furthermore, the significance of project-induced residual adverse effects on the environment and community after implementation of the mitigation measures are assessed. Finally, planned monitoring activities for checking the effectiveness of the proposed mitigation measures are identified.

V.1. Scope-in/Scope-out Process

The first step in the ESIA is the scoping process of the planned project activities and the environmental and social aspects with which they would interact, in order to identify the issues to be focused on in the ESMP study. The analysis of these potential interactions has been done using a color code (see Table V.1) in a modified Leopold matrix[8] (see Table V.2). This approach provided the means to identify the potential interactions each project activity may have on a range of resources/receptors within the Project Area of Influence (AoI).

The Turkish EIA Regulation defines the area of influence as "*the area affected by a planned project before operation, during operation and after operation*". The area of influence may be different for different types of impacts and different environmental components (physical, biological, social) (WB Energy Sector Management Assistance Program (ESMAP), December 2012).

According to WBG International Finance Corporation (IFC) Performance Standard (PS) 1 Assessment and Management of Environmental and Social Risks and Impacts, the AoI is to encompass the following as appropriate:

- The area likely to be affected by: (i) the Project (e.g. project sites, immediate air shed and watershed, or transport corridors) and the Project Sponsors' activities and facilities that are directly owned, operated or managed (including by contractors) and that are a component of the project (e.g. tunnels, access roads, borrow and disposal areas construction camps); (ii) impacts from unplanned but predictable developments caused by the project that may occur later or at a different location; or (iii) indirect project impacts on biodiversity or on ecosystem services upon which Affected Communities' livelihoods are dependent.
- Associated facilities, which are facilities that are not funded as part of the project and that would not have been constructed or expanded if the project did not exist and without which the project would not be viable.
- Cumulative impacts that result from the incremental impact, on areas or resources used or directly affected by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted.

[8] *The Leopold Matrix is a large two-dimensional matrix. It lists on one axis, the project activities which could cause environmental impact, and on the other, existing environmental conditions that may be affected. The items on the axes are general enough to be used as a reference checklist of the full range of actions and impacts that may relate to the proposed development. The axis listing environmental factors that may be affected is also useful as a reference and checklist in describing the existing environment.*

Table V.1 Colour Code Used in the Scope-in/Scope-out Process

(White)	An interaction is not reasonably expected.	Aspect "scoped out"
(Grey)	An interaction is reasonably possible, but none of the resulting impacts is likely to lead to significant effects, and/or interaction is addressed through embedded mitigation measures.	Aspect "scoped out", but rationale is provided in relevant section of current report
(Red)	An interaction is reasonably possible and at least one of the resulting impacts is likely to lead to a negative effect (low, medium or significant).	"Scoped in" – subject to impact assessment.
(Green)	Impacts that are considered likely to be positive.	"Scoped in" – subject to impact assessment.

Those interactions that are colored white are scoped out of further consideration in the impact assessment process and no discussion is warranted in this ESMP. Those interactions that are colored grey are also scoped out, but during the impact assessment process these potential interactions have been reviewed to confirm that resulted impacts are not significant and/or are appropriately addressed through one or more embedded controls. Those interactions marked with red and green are scoped in and subject to impact assessment. These impacts would be assessed for their significance and additional mitigation measures, beyond the already planned embedded controls, would be proposed as necessary. Table V.2 and Table V.3 summarize the potential interactions between the Project and environmental resources (air, water, noise, etc.) and socio-economic receptors.

Table V.2 Potential Interactions between Project Activities and Environmental Resources

Project phase/activity	**Environmental Resources**								
	Air Quality and Odour	**Geology, Soils and Contaminated Land**	**Groundwater**	**Surface Water Resources**	**Noise and Vibration**	**Biological Environment**	**Landscape and Visual (Aesthetics)**	**Resources and Wastes**	**Climate Change**
Construction									
Vegetation clearance and levelling works at Derebucak WWTP site									
Construction of the WWTP									
Collection of the wastes generated by the construction of the WWTP and their disposal									
Operation									
Repair (necessary intervention of professional services)									
Waste generation, including sludge									
Regular maintenance of the WWTP									
Emissions and odour									

Table V.3 Potential Interactions between the Project Activities and Social/Socio-economic Receptors

Project phase/activity	Social / Socio-economic Receptors									
	Socio Economics					Other Social Receptors				
	Local Economics	Macro Economics	Infrastructure and Services	Demographic Structure of Settlements / Social Cohesion	Ecosystem Services	Land Use	Livelihood	Worker Health and Safety (Labor & Working Conditions)	Community Health, Safety and Security	Archaeological and Cultural Heritage
Construction										
Increased employment opportunities for the local										
Procurement of goods and services (from local market)										
Physical presence of construction workers and labor influx										
Construction traffic (transportation of workers and materials)										
Operation of construction machinery, equipment and generators, hazardous materials										
Wastes/Wastewater handling and disposal										
Operation										
Employment of personnel and procurement of goods and services (from local market)										
Wastes handling and disposal										
Failure of operation										

V.2. Impact Assessment Approach and Methodology

The purpose of impact assessment and mitigation is to identify and evaluate the significance of potential impacts (positive or negative) and risks on identified receptors and resources according to defined assessment criteria; to develop and describe the measures that will be taken to avoid or minimize any potential adverse effects and enhance potential benefits; and to report the significance of the residual impacts that remain following mitigation.

The assessment of environmental and social impacts/risks has been done based on the criteria provided below using mainly expert judgement, relevant standards and guidelines:

- **Nature of the impact:** Positive (+), Negative (-)
- **Type of Impact:** Direct, Indirect, Cumulative
- **Extent/area of Impact:** On-site/project footprint, Local, Regional, National

- **Duration of Impact:** Short term, Mid-term, Long term, Permanent
- **Likelihood of Impact Occurrence:** Very likely/certain, Likely, Unlikely

The magnitude and severity of the adverse impacts have been assessed based on the criteria given above and significance of the impacts has been determined based on this assessment and sensitivity of the receiver/source exposed to the impact, as much as possible. The matrix given in Table V.4 combines the sensitivity information with the magnitude of impacts. The significance of the impact is first designated without mitigation measures and then evaluated with proposed mitigation measures. This evaluation serves to determine the significance of the residual impacts (impact left after employing mitigation measures).

Table V.4 Impact Significance Matrix*

Sensitivity of Receptor	Magnitude of Impact			
	High	**Medium**	**Low**	**Negligible/None**
High	High	High	Medium	Negligible/None
Medium	High	Medium	Low	Negligible/None
Low	Medium	Low	Low	Negligible/None

** Adapted from Scottish Natural Heritage – A handbook on environmental impact assessment, 2013*

V.3. Area of Influence

Project's location with its area of influence is presented in Figure V.1.The size of land allocated for the Derebucak WWTP is approximately 2400 m^2. As described before, the Project will have impacts especially on the vicinity of the project sites. While determining area of influence, direct impacts, unplanned but predictable developments, indirect impacts and associated facilities were taken into account. The potential area of influence for the Project includes the neighborhoods that are located in the Project area and their close vicinity. The settlement areas located within the social potential area of influence is shown in Figure V.2. The size of AoI is 332.13 ha and the size of social AoI is the same.. The closest sensitive receptor to the project area is the Health Center located 853 m northeast of the plant. The identified sensitive receptors are shown on a map presented in Figure V.3.

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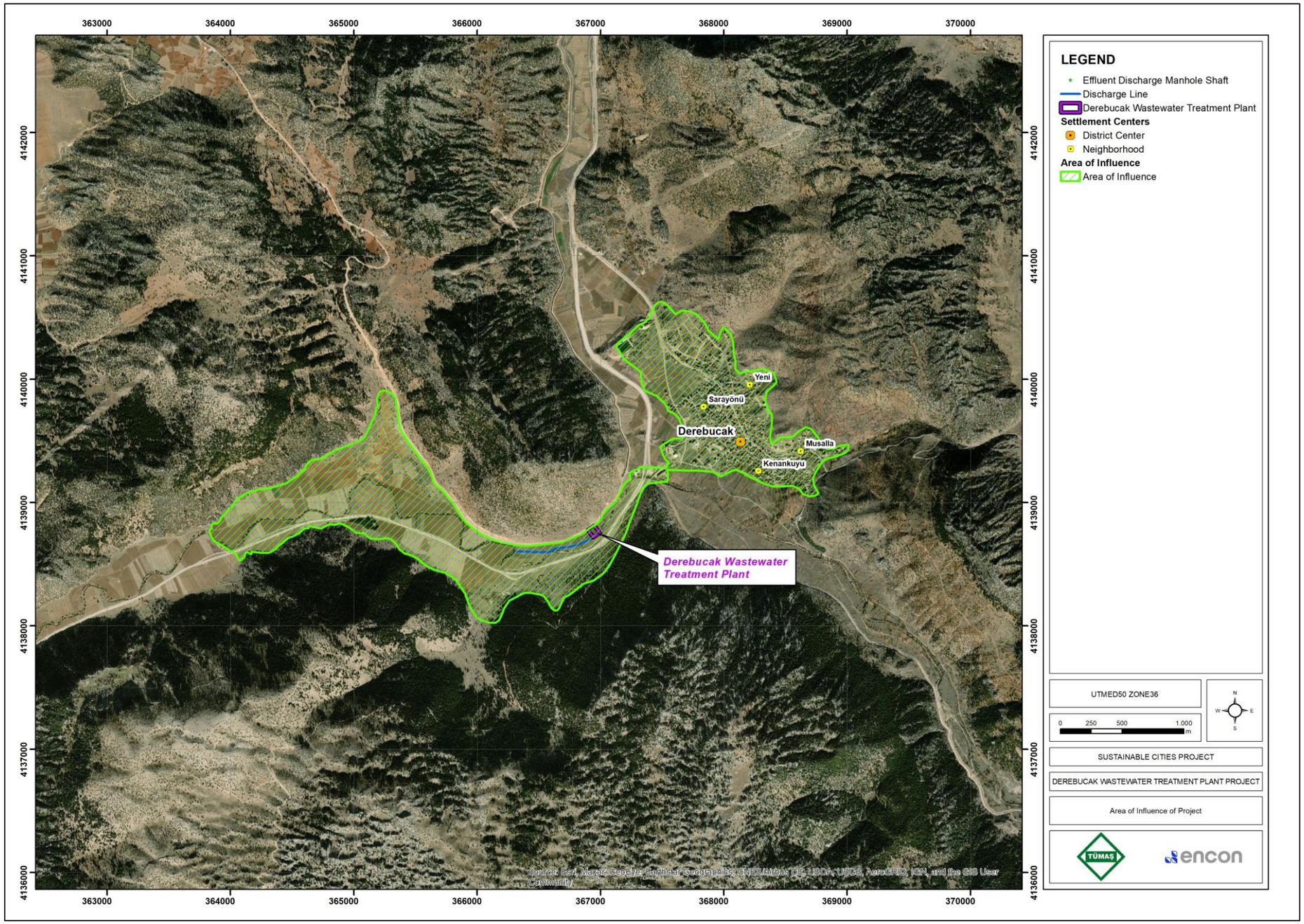

Figure V.1 AoI of the Project

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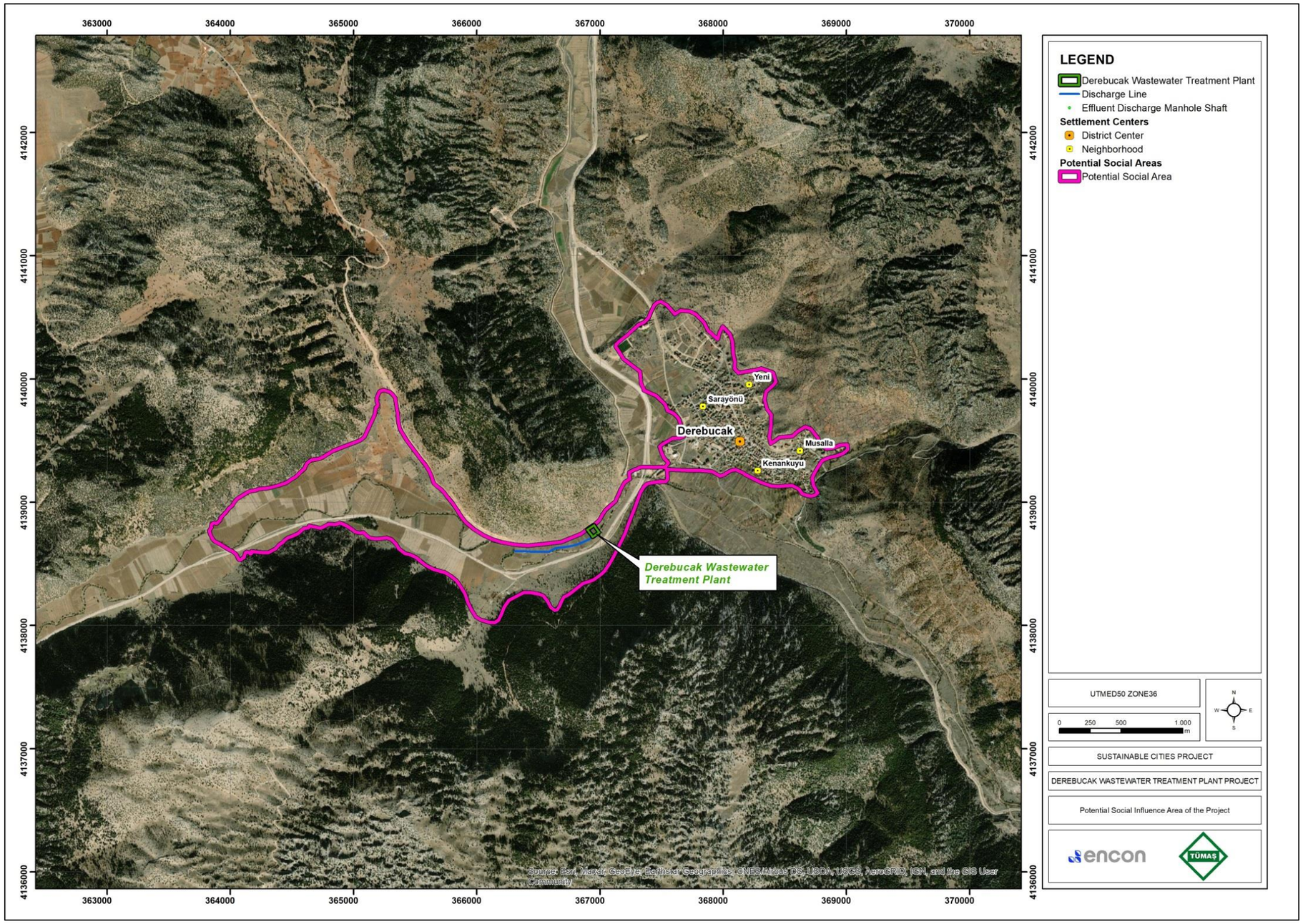

Figure V.2 Potential Social AoI of the Project

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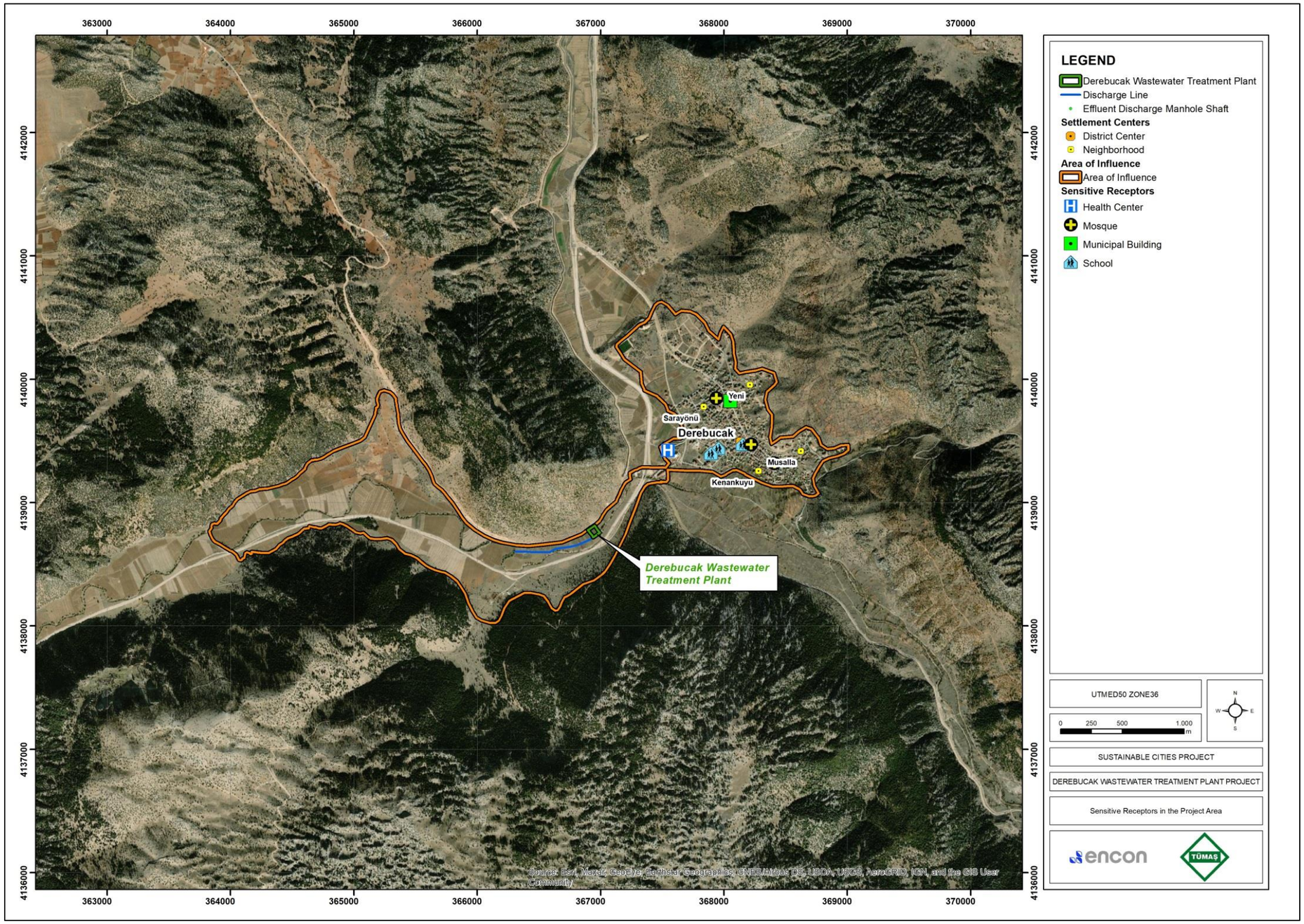


Figure V.3 Sensitive Receptors in AoI of the Project

V.4. Environmental Impacts (Physical and Biological Environment)

In Table V.5, identification of the level of impact in terms of environmental resources (air, geology, water, etc.) for two project phases (construction and operation phases) is presented.

The Project would have environmental impacts during the construction and the operation phases.

The following Table V.5 provides a detailed overview of the identified impacts and their assessment as a result of the execution of the project activities in different project phases.

Table V.5 Matrix Figure with Identification of Impact Level in Terms of Environmental and Social Attributes

No	Environmental and Social Attributes	Impact																		
		Nature		Type			Extent/area				Duration				Likelihood of Occurrence			Sensitivity of the Receptor	Magnitude of the Impact	Impact Significance without ESMP	Impact Significance with ESMP
		Positive (+)	Negative (-)	Direct	Indirect	Cumulative	On-site/project footprint	Local	Regional	National	Short term	Mid-term	Long term	Permanent	Very likely/ certain	Likely	Unlikely	High	High	High	High
																		Medium	Medium	Medium	Medium
																		Low	Low	Low	Low
																		Negligible/ None	Negligible/ None	Negligible/ None	Negligible/ None
A. CONSTRUCTION PHASE																					
1. Air Quality																					
1	Increase in dust concentration		✓	✓			✓				✓				✓			**Medium**	**Low**	**Low**	**Low**
2	Increase in SO_2 PM, NO_x emission		✓	✓			✓				✓				✓			**Medium**	**Low**	**Low**	**Low**
3	Impact on human health		✓		✓			✓			✓					✓		**Medium**	**Low**	**Low**	**Negligible/ None**
2.Soils and Contaminated Land																					
1	Loss of topsoil at the WWTP area		✓	✓			✓							✓		✓		**Medium**	**Medium**	**Medium**	**Low**
2	Contamination of soil		✓	✓			✓						✓			✓		**Medium**	**Medium**	**Medium**	**Low**
3	Erosion potential		✓	✓			✓						✓			✓		**Low**	**Low**	**Low**	**Low**
3. Water Resources																					
1	Change in surface water quality		✓	✓				✓			✓						✓	**Low**	**Negligible/ None**	**Negligible/ None**	**Negligible/ None**
2	Change in groundwater quality		✓	✓				✓			✓						✓	**Medium**	**Low**	**Low**	**Low**
4. Noise and Vibration																					
1	Increase in noise level		✓	✓				✓			✓				✓			**Medium**	**Low**	**Low**	**Low**

No	Environmental and Social Attributes	Impact																		
		Nature		Type			Extent/area				Duration				Likelihood of Occurrence			Sensitivity of the Receptor	Magnitude of the Impact	Impact Significance without ESMP	Impact Significance with ESMP
		Positive (+)	Negative (-)	Direct	Indirect	Cumulative	On-site/project footprint	Local	Regional	National	Short term	Mid-term	Long term	Permanent	Very likely/ certain	Likely	Unlikely	High	High	High	High
																		Medium	Medium	Medium	Medium
																		Low	Low	Low	Low
																		Negligible/ None	Negligible/ None	Negligible/ None	Negligible/ None
2	Increase in vibration level		✓	✓			✓				✓				✓			**Medium**	**Low**	**Low**	**Negligible/ None**
5. Biological Environment																					
1	Decrease in the terrestrial and aquatic species/reduction of local animal populations due to loss of habitats and disturbance of the biological environment		✓		✓			✓			✓					✓		**Low**	**Low**	**Low**	**Negligible/ None**
6. Landscape and Visual (Aesthetics)																					
1	Impairment of quality of life due to the overall presence of annoying construction works and activities and altered landscape		✓	✓				✓			✓				✓			**Low**	**Medium**	**Low**	**Low**
7. Resources and Wastes																					
1	Improper waste management		✓	✓				✓			✓					✓		**Medium**	**Low**	**Low**	**Low**
2	Resources used during works		✓	✓				✓			✓				✓			**Low**	**Low**	**Low**	**Negligible/ None**
8.Climate Change																					
1	Contribution to climate change through Green House Gas (GHG) emissions		✓	✓					✓		✓				✓			**Medium**	**Low**	**Low**	**Low**
9. Socioeconomic Environment																					

No	Environmental and Social Attributes	Impact																	
		Nature		Type			Extent/area				Duration				Likelihood of Occurrence			Sensitivity of the Receptor	Magnitude of the Impact	Impact Significance without ESMP	Impact Significance with ESMP
		Positive (+)	Negative (-)	Direct	Indirect	Cumulative	On-site/project footprint	Local	Regional	National	Short term	Mid-term	Long term	Permanent	Very likely/ certain	Likely	Unlikely	High	High	High	High
																		Medium	Medium	Medium	Medium
																		Low	Low	Low	Low
																		Negligible/ None	Negligible/ None	Negligible/ None	Negligible/ None
1	Job creation and local procurement	✓		✓				✓					✓		✓			**Positive**			
2	Infrastructure damage		✓	✓				✓			✓					✓		**Low**	**Low**	**Low**	**Negligible/ None**
10. Occupational Health and Safety																					
1	Workers' exposure to work-related occupational health and safety risks		✓	✓			✓				✓				✓			**High**	**High**	**High**	**Low**
11. Community Health, Safety and Security																					
1	Project traffic and construction activities related risks		✓	✓				✓			✓					✓		**Low**	**Low**	**Low**	**Low**
2	Community encroachment		✓	✓			✓				✓						✓	**Low**	**Medium**	**Low**	**None/ Negligible**
3	General construction related impacts on community		✓	✓			✓						✓		✓			**Medium**	**Low**	**Low**	**None/ Negligible**
4	Gender Based Violence (GBV), Sexual Exploitation Abuse / Sexual Harassment (SEA/SH)		✓	✓				✓					✓			✓		**High**	**Medium**	**Medium**	**Low**
12. Archaeological and Cultural Heritage																					
1	Chance finds		✓	✓			✓				✓						✓	**Low**	**Low**	**Low**	**Negligible/ None**

No	Environmental and Social Attributes	Impact																		
		Nature		Type			Extent/area				Duration				Likelihood of Occurrence			Sensitivity of the Receptor	Magnitude of the Impact	Impact Significance without ESMP	Impact Significance with ESMP
		Positive (+)	Negative (-)	Direct	Indirect	Cumulative	On-site/project footprint	Local	Regional	National	Short term	Mid-term	Long term	Permanent	Very likely/ certain	Likely	Unlikely	High	High	High	High
																		Medium	Medium	Medium	Medium
																		Low	Low	Low	Low
																		Negligible/ None	Negligible/ None	Negligible/ None	Negligible/ None
13. Labor Force and Working Conditions																					
1	Protecting the workforce		✓	✓			✓				✓				✓			**Medium**	**Low**	**Low**	**Low**
2	Workers Engaged by Third Parties and the Supply Chain		✓	✓			✓				✓				✓			**Medium**	**Low**	**Low**	**Low**
3	Working Conditions		✓	✓			✓						✓		✓			**High**	**Low**	**Medium**	**Low**
4	Labor Influx		✓	✓				✓			✓					✓		**Low**	**Low**	**Low**	**Negligible/ None**
B. OPERATION PHASE																					
1. Air Quality																					
1	Odorous gas emission		✓	✓				✓					✓		✓			**Medium**	**Medium**	**Medium**	**Low**
2. Soils and Contaminated Land																					
1	Contamination of Soil		✓		✓		✓					✓					✓	**Medium**	**Low**	**Low**	**Negligible/ None**
3. Water Resources																					
1	Change in overall physicochemical water quality of Kocadere River	✓		✓					✓				✓		✓			**Positive**			
2	Change in groundwater quality		✓		✓			✓			✓						✓	**Medium**	**Low**	**Low**	**Low**
3	Wastewater generation		✓	✓				✓					✓			✓		**Medium**	**Low**	**Low**	**Low**

No	Environmental and Social Attributes	Impact																		
		Nature		Type			Extent/area				Duration				Likelihood of Occurrence			Sensitivity of the Receptor	Magnitude of the Impact	Impact Significance without ESMP	Impact Significance with ESMP
		Positive (+)	Negative (-)	Direct	Indirect	Cumulative	On-site/project footprint	Local	Regional	National	Short term	Mid-term	Long term	Permanent	Very likely/ certain	Likely	Unlikely	High	High	High	High
																		Medium	Medium	Medium	Medium
																		Low	Low	Low	Low
																		Negligible/ None	Negligible/ None	Negligible/ None	Negligible/ None
4. Noise and Vibration																					
1	Increase in Noise Levels		✓	✓			✓							✓		✓		**Medium**	**Low**	**Low**	**Low**
5. Biological Environment																					
1	Change in surface water quality	✓		✓					✓				✓		✓			**Positive**			
6. Landscape and Visual (Aesthetics)																					
1	The existence of the WWTP		✓	✓				✓						✓		✓		**Low**	**Low**	**Low**	**Low**
7. Resources and Waste																					
1	Generation of different types of waste in the WWTP site		✓	✓				✓					✓			✓		**Medium**	**Low**	**Low**	**Low**
2	Sludge generation		✓	✓				✓					✓		✓			**Medium**	**Medium**	**Medium**	**Low**
3	Resources used for operation		✓	✓				✓					✓		✓			**Low**	**Low**	**Low**	**Low**
4	Handling of chlorine		✓	✓			✓				✓				✓			**Medium**	**Medium**	**Medium**	**Low**
9. Climate Change																					
1	GHG emissions		✓	✓					✓		✓						✓	**Medium**	**Low**	**Low**	**Low**
10. Socioeconomic Environment																					
1	Local procurement	✓		✓				✓					✓		✓			**Positive**			

No	Environmental and Social Attributes	Impact																		
		Nature		Type			Extent/area				Duration				Likelihood of Occurrence			Sensitivity of the Receptor	Magnitude of the Impact	Impact Significance without ESMP	Impact Significance with ESMP
		Positive (+)	Negative (-)	Direct	Indirect	Cumulative	On-site/project footprint	Local	Regional	National	Short term	Mid-term	Long term	Permanent	Very likely/ certain	Likely	Unlikely	High	High	High	High
																		Medium	Medium	Medium	Medium
																		Low	Low	Low	Low
																		Negligible/ None	Negligible/ None	Negligible/ None	Negligible/ None
2	Infrastructure damage		✓	✓				✓			✓					✓		**Low**	**Low**	**Low**	**Negligible/ None**
11. Community Health, Safety and Security																					
1	Community's exposure to disease due to improper handling of wastes, including sludge		✓	✓				✓			✓						✓	**Low**	**Medium**	**Low**	**Negligible/ None**
2	Increased traffic due to waste and sludge disposal		✓		✓			✓			✓						✓	**Low**	**Low**	**Low**	**Low**
3	Failure of operation		✓	✓					✓		✓						✓	**Medium**	**High**	**High**	**Low**
4	Community encroachment		✓	✓			✓				✓						✓	**Low**	**Medium**	**Low**	**None/ Negligible**
5	Gender Based Violence (GBV), Sexual Exploitation Abuse / Sexual Harassment (SEA/SH)		✓	✓				✓					✓			✓		**High**	**Medium**	**Medium**	**Low**
12. Occupational Health, Safety																					
1	Workers' exposure to work-related occupational health and safety risks		✓	✓			✓						✓		✓			**High**	**High**	**High**	**Low**
13. Labor Force and Working Conditions																					
1	Protecting the workforce		✓	✓			✓						✓		✓			**Medium**	**Low**	**Low**	**Low**

No	Environmental and Social Attributes	Impact															Sensitivity of the Receptor	Magnitude of the Impact	Impact Significance without ESMP	Impact Significance with ESMP
		Nature		Type			Extent/area				Duration				Likelihood of Occurrence						
		Positive (+)	Negative (-)	Direct	Indirect	Cumulative	On-site/project footprint	Local	Regional	National	Short term	Mid-term	Long term	Permanent	Very likely/ certain	Likely	Unlikely	High	High	High	High
																		Medium	Medium	Medium	Medium
																		Low	Low	Low	Low
																		Negligible/ None	Negligible/ None	Negligible/ None	Negligible/ None
2	Workers Engaged by Third Parties and the Supply Chain		✓	✓			✓				✓				✓			**Medium**	**Low**	**Low**	**Low**
3	Working Conditions		✓	✓			✓						✓		✓			**High**	**Low**	**Medium**	**Low**
4	Gender Based Violence (GBV), Sexual Exploitation Abuse / Sexual Harassment (SEA/SH)		✓	✓				✓					✓			✓		**High**	**Medium**	**Medium**	**Low**

V.4.1. Air Quality

Standards and Limit Values

Standards for PM_{10} (particles with aerodynamic diameter smaller than 10 µm) are defined for particles which are respirable by humans and therefore, PM_{10} is the accepted measure of particles in atmosphere. In this context, both the Regulation on the Assessment and Management of Air Quality, and Industrial Air Pollution Control Regulation define the standards in terms of PM_{10}.

Regulation on the Assessment and Management of Air Quality (RAMAQ)

Long and short terms standards were specified for the harmonization of environmental regulations in the process of accession to the European Union. However, the regulation sets a transition period for the application of these limit values.

Industrial Air Pollution Control Regulation (IAPCR)

Industrial Air Pollution Control Regulation (IAPCR) aims to control emissions in form of smoke, dust, gas, vapor and aerosol which are released to the atmosphere as a result of activities of industrial plants and energy generation facilities, to protect human beings and the environment from pollution, and to manage and prevent negative impacts of air pollution which result in significant problems on public health.

Ambient air quality limit values for various pollutants defined in above-mentioned legislations are presented in Table V.6.

Table V.6 Ambient Air Quality Limit Values – Turkish Regulations

Parameter	Duration	Limit Value* (µg/m^3)
SO_2	Hourly (cannot be exceeded more than 24 times a year)	350
	24 hours	125
	Long term limit	60
	Annual and winter season (October 1 - March 31)	20
NO_2	Hourly (cannot be exceeded more than 18 times a year)	200
	Annual	40
Particulate Matter (PM 10)	24 hours (cannot be exceeded more than 35 times a year)	50
	Annual	40
CO	8 hours daily maximum	10.000
O_3	8 hours daily maximum	120
VOC**	Hourly	280
	24-hours	70

** Regulation on Assessment and Management of Air Quality*
*** Industrial Air Pollution Control Regulation*

In addition to Table V.6, the IAPCR defines limit values for the calculation of contribution to air pollution resulting from stack and non-stack sources. According to the provisions of the regulation, the amount of contribution to air pollution should be calculated to determine if the amount of emission exceeds these limits. These values are provided in Table V.7.

Table V.7 Emission Limits for Stack and Non-Stack Sources

Parameter	Mass Flow (kg/hour)	
	Stack	Non-Stack
Carbon monoxide (CO)	500	50
Nitrogen oxide (NO_x)	40	4
Sulphur Dioxide (SO_2)	60	6
Dust	10	1

In this context, amounts of emissions released as a result of the activities conducted in scope of the Project will be calculated and compared with the values provided above. If the calculated emissions exceed the limits defined in the regulation, air quality dispersion modelling studies need to be conducted and contribution of the emission to air pollution will be estimated.

WBG General EHS Guidelines

In addition to the Turkish legislations, the ambient air quality limit values stipulated in the WBG General EHS Guidelines shall be complied. National legislation will be followed as WBG General EHS Guidelines – Environmental Air Emissions and Ambient Air Quality states that national legislation should be considered. Therefore, the national legislated standards will be followed. For $PM_{2.5}$, guideline values presented in Table 1.1.1 of General EHS Guideline will be complied. The guideline value is 50 µg/m^3 for 24-hr, and 20 µg/m^3 for 1-year.

Within the scope of the construction activities, dust is expected to be generated. With proper control measures such as dust suppression, the generated dust amount is expected to be reduced effectively.

Construction Phase Impacts

The major impacts on air quality during the construction phase of this Project will be impacts due to material handling, vehicle movement and emission from heavy construction machinery (trucks, excavators, etc.). Air pollution will be mainly dust emissions and exhaust emissions as well as GHG emissions. The sensitive receptors that will be exposed to these air emissions will be the local population who lives near the Project area.

During the construction phase of the Project, there will be vehicle movement for transportation of various construction materials to the project site. Impacts on air quality will be mainly due to dust emissions caused by the vehicle movement on unpaved roads and earthworks to be performed within the Project Area. In addition to the dust emissions, exhaust emissions will originate from vehicles used in construction activities. In order to determine dust and exhaust emissions during the construction phase, the amountof machinery and equipment to be used for the construction should be known. The machinery requirement of the Project is not determined by KOSKI yet and therefore, the construction machinery and equipment to be used during the construction phase is assumed based on the procedures to be followed during construction and engineering estimates and presented in Table V.8.

Table V.8 Indicative Construction Machinery and Equipment List

Construction Machinery/Equipment	Number
Dump Truck	6
Excavator	2
Loader	2
Mini Loader	3
Mobile Crane	2
Sprinkler	1
Grader	1

The amount of dust emission generated during the construction phase of the Project is calculated with the emission factors defined in Table 12.6 in Appendix-12 of IAPCR. The emission factors are presented in Table V.9. While uncontrolled emission term expresses the fugitive emission, controlled emission term means non-fugitive emissions.

Table V.9 Dust Emission Factor

Sources	Emission Factors		Unit
	Uncontrolled	Controlled	
Dismantling/Excavation	0.025	0.0125	kg/ton
Loading	0.010	0.0050	
Unloading	0.010	0.0050	
Storage	5.800	2.9000	
Transportation (total distance of round trip)	0.700	0.3500	kg/km- vehicle

Source: Industrial Air Pollution Control Regulation, Appendix 12.

According to the Project schedule, the construction activities are planned to last for 12 months (approximately 300 workdays) and daily shifts will last for 8 hours. Construction works will start with earthworks, which will last for 150 days. Earthworks consist of levelling, excavation, temporary storage, loading and transportation of excavated material. The total amount of excavated material that will be generated as a result of construction activities is 277.25 m^3 (see Table V.10). 83,175 m^3 of the extracted material will be temporarily stored in the Project site for backfilling. Excavation is planned to be conducted step by step. However, the worst-case scenario is assumed in the calculations and all the activities are assumed to be conducted simultaneously.

Table V.10 Excavation Amounts

Unit	Footprint (m^2)	Excavation Depth (m)	Excavation Amount (m^3)
Intake Structure	7.26	3.40	24.68
Bio-P Pool	42.77	1.87	79.98
Administrative Building	27.84	0.64	17.82
Sludge Dewatering Building	17.18	0.70	12.03
Air Pressure Tank	21.00	0.70	14.70
Settling Tank	58.00	0.18	10.44
Aeration Tank	294.00	0.40	117.60
Total Excavation	-	-	**277.25**

The amount of dust emission expected as a result of the construction activities of the Project have been calculated and presented in detail below.

Total Excavation Volume	: 277.25 m^3
Density of Excavation Material	: 1.8 ton/m^3
Total Amount of Excavation	: 499.05 ton
Total Volume of Excavation Material will be Reused	: 83.175 m^3
Total Volume of Excavation Material will be sent to Disposal	: 194.075 m^3
Total Amount of Excavation Material will be sent to Disposal	: 349.335 ton
Distance within the Plant (unpaved roads)	: 0.01 km
Truck Capacity	: 26 ton
Total Number of Trips	: 349.335 ton / (26 ton/truck)
	: 14 trips
Number of Trucks	: 6
Number of Trips per Truck	: 3 trips/truck
Total Distance to be travelled	: 320 km
Excavation Duration	: 150 days
Working Hours per Day	: 8
Hourly Excavated Material Amount	: 0.29 ton/hour

Uncontrolled Dust Emissions:

Emission from excavation:

Excavation emission factor (uncontrolled): 0.025 kg/ton
Amount of PM_{10} emissions: 0.29 ton/hour * 0.025 kg/ton = **0.0072 kg/hour**

Loading emission factor (uncontrolled): 0.010 kg/ton
Amount of PM_{10} emissions: 0.29 ton/hour * 0.010 kg/ton = **0.0029 kg/hour**

Emission from transportation activities

Transportation emission factor (uncontrolled): 0.700 kg/km-vehicle
Amount of PM_{10} emissions: 320 km x 0.700 kg/km-vehicle x (1/150 days) x (1/8 hours)
= **0.187 kg/hour**

Emission from storage

83,175 m^3 of excavated soil will be stored for reuse in the WWTP Area. The storage height will be 3 m. Thus, the required storage area is 27.725 m^2, which is 0.0027 ha.

Storage emission factor (uncontrolled): 5.8 kg/ha
Amount of PM_{10} emissions: 0.0027 ha x 5.8 kg/ha x (1/24 hours) = **0.00065 kg/hour**

Total uncontrolled PM10 emissions

Total: 0.0072+0.0029+0.187+0.00065= 0.19775 kg/hour

Controlled Dust Emissions:

Emission from excavation:

Excavation emission factor (controlled): 0.0125 kg/ton
Amount of PM_{10} emissions: 0.29 ton/hour * 0.0125 kg/ton = **0.003625 kg/hour**

Loading emission factor (controlled): 0.005 kg/ton
Amount of PM_{10} emissions: 0.29 ton/hour * 0.005 kg/ton = **0.00145 kg/hour**

Emission from transportation activities

Transportation emission factor (controlled): 0.350 kg/km-vehicle
Amount of PM_{10} emissions: 320 km x 0.35 kg/km-vehicle x (1/150 days) x (1/8 hours)
= **0.0933 kg/hour**

Emission from storage

Storage emission factor (controlled): 2.9 kg/ha
Amount of PM_{10} emissions: 0.0027 ha x 2.9 kg/ha x (1/24 hours) = **0.000326 kg/hour**

Total controlled PM10 emissions

Total: 0.003625+0.00145+0.0933+0.000326= 0.0987 kg/hour

According to the calculations, the total amount of uncontrolled and controlled PM_{10} emissions are expected as 0.19775 kg/hour and 0.0987 kg/hour, respectively. As stated above, these emission rates are calculated based on the worst-case scenario. It is found that the emission rate for uncontrolled and controlled activities are lower than the limit value defined for non-stack sources in IAPCR, which is 1 kg/hour. Therefore, impacts related to dust emissions are of low significance. Although no significant exhaust emission is expected during the construction phase, a set of mitigation measures that are presented in Section VI.1 will be implemented for further reduction of any related impacts on air environment.

In addition, if coincides with moderate winds, increase in dust generation can be observed and it can cause some off-site elevated levels of PM. For these cases, more real-time dust monitoring program to ensure a rapid response would be developed considering weather conditions. The monitoring would include the identified receptors and on site workers.

In addition to the dust emissions, there will be exhaust emissions of heavy construction machinery. Primary emissions from exhaust gases of vehicles are NO_2, CO, HC, SO_2 and PM. Emission characteristics depend on parameters such as; age of the vehicle, engine speed, working temperature, ambient temperature and pressure, type and quality of fuel. Emission factors developed by United States Environmental Protection Agency (USEPA) for gasoline and diesel fueled vehicles are presented in Table V.11.

Table V.11 Emission Factors (USEPA)

POLLUTANTS	EMISSIONS (g/km/vehicle)	
	Gasoline	Diesel Fuel
Nitrogen oxides (NO_x)	1.20	9.00
Carbon monoxide(CO)	39.0	15.0
Sulphur dioxide(SO_2)	0.08	1.50
Hydrocarbons (HC)	2.60	2.90
Particulate Matter (PM)	0.40	0.80

The indicative list of construction machinery to be used for the construction activities was previously presented in Table V.8. Exhaust emissions of the machinery with the IAPCR limit values are presented in Table V.12.

Table V.12 Expected Amounts of Exhaust Emissions (kg/h)

Parameter	IAPCR Limit Values (kg/h)		Expected Amounts of Exhaust Emissions (kg/h)
	Stack	Non-Stack	
Carbon monoxide (CO)	500	50	0.255
Nitrogen oxide (NO_x)	40	4	0.153
Sulphur Dioxide (SO_2)	60	6	0.026
Hydrocarbons (HC)	-	-	0.049
PM	10	1	0.014

According to the calculations made, exhaust emissions are quite below the USEPA and IAPCR limit values for all parameters. Although no significant exhaust emission is expected during the construction phase, a set of mitigation measures that are presented in Section VI.1 will be implemented for further reduction of any related impacts on air environment.

There is no need for a temporary cement/concrete unit on site. Therefore, there will be no effect on air quality originating from the storage area.

Operation Phase Impacts

The major significant impact on air quality is the possibility of odor formation during the operation of the WWTP. The prevailing average hourly wind direction in the Derebucak region varies throughout the year. The wind generally blows from the north from May 22 to October 5, and from the south from October 5 to May 22.

During the operation phase, odor is generally generated in physical treatment and sludge units of WWTPs. Screens, aeration tanks, sedimentation tanks, sludge dewatering units and operations performed within these units can result in generation of odor, which may result in disruptive impacts around the treatment plant.

Wastewater influent contains high amounts of organic material. Organic materials are decomposed into odorous compounds by bacteria in biological treatment process. Activated sludge contains high amounts of bacteria and organic matter, which can be decomposed by bacteria in a short amount of time. Odor is generated as a result of compounds generated during this process.

Wastewater treatment operations may emit hydrogen sulfide, methane, gaseous or volatile chemicals used for disinfection processes, and bio aerosols. Among those, hydrogen sulfide and methane gases are the most significant odorous gases. During sludge treatment in the WWTP, ammonia, sulphur compounds, fatty acids, aromatic compounds and some hydrocarbons can also cause odor. Petroleum and organic solvents are also sources of disruptive odor.

Specific land uses and human receptors within reasonable distance of potential odor impacts from the WWTP construction and operation can be affected by odor. The area of influence of the project and the sensitive receptors are shown in Chapter V.3.

Therefore, odor impacts will be observed during the operation phase of the Project. However, this impact will be low when the appropriate mitigation measures (Section VI.1) are taken. After all, if unwanted odor will be still generated, additional measures (second level measures) will also be taken.

The release of chlorine gas into the atmosphere poses a threat to all living beings. Chlorine gas released into the atmosphere by the ventilation system applied in the building, especially in the case of a gas leakage in the facilities close to the residential areas, poses a serious risk for human health. For this reason, chlorine gas leakage detectors will be applied to these facilities in order to prevent the problems that may arise.

Even though there is a disinfection unit within the scope of the Project, due to its location, no air quality related impacts are expected during the usage and storage of the chlorine.

V.4.2. Soil and Contaminated Land

Construction Phase

The construction activities of WWTP will have some minor impacts on the soil environment. However, these impacts are localized and restricted to the construction sites. The potential impacts will consist of:

- Disturbance of the natural soil and land structure as a result of soil stripping, levelling excavation and filling activities, work of construction machinery,
- Mixing of soil layers as a result of excavation and filling activities;
- Soil contamination risk due to leakage and spill of fuels, paints and oils that will be used for the construction machinery and equipment;
- Soil pollution which may occur in case of uncontrolled storage or disposal of solid and/or liquid wastes to be generated within the scope of the Project; and
- Improper replacement of soil to its original position.

These impacts can be easily managed and mitigated to low in significance with the implementation of the mitigation measures given in Section VI.1.

Operation Phase

In the operation phase of the Project, the activities will have a limited physical interaction with the environment. In the operation phase of the Project, no additional significant direct impacts on topography, soil and land use are anticipated under the normal operating conditions. Impacts of operation phase of the Project are related with the risks that arise during repair and maintenance works, such as spillage/leakage of wastewater, oil, and chemicals to soil. The extent of these negative impacts will be limited with the Project's footprint, the significance of the impacts on soil environment would be considered as low if mitigation measures will not be applied accordingly. With the implementation of mitigation measures, the residual impacts will be negligible in significance. The defined mitigation measures are presented in Section VI.1.

V.4.3. Water Resources

Water Supply during Construction Phase

During the construction phase, employees' needs and dust suppression will create water supply requirement. The water used for dust suppression and utility water will be supplied from the municipal network and/or by tankers. The total amount of daily water requirement is calculated based on the multiplication of the number of employees that will be working at the peak time of the phase and the daily water requirement for a person, which is 0.23 m^3 (TurkStat, 2018). Although the number of personnel required is not yet determined, it is assumed as 100. Therefore, the daily water requirement of employees during the construction phase will be;

100 employee x 0.23 m^3/employee/day=23 m^3/day

Together with the amount of water required for dust suppression, which is predicted to be 10 m^3/ day, the total water requirement during the construction phase will be 33 m^3/day.

Bottled water will be used for the drinking water needs of the personnel. The quality of drinking water that will be supplied to the Project shall be in compliance with the Regulation Concerning the Water Intended for Human Consumption together with the internationally accepted standards, such as WHO and WBG's General EHS Guidelines.

Water Supply during Operation Phase

During the operation phase of the Project, a part of the water supply requirement will arise due to employee needs. The total amount of water required by employees is calculated as in the previous section. Although the number of personnel required is not determined yet, it is assumed as 10. Therefore, the daily water requirement of employees during the operation phase will be;

10 employee x 0.23 m^3/employee/.day=2.30 m^3/day

In addition to the daily needs of the personnel, there will be operational water requirements, and these are presented together with the Project's water requirement according to its phases in Table V.13.

Table V.13 Water Requirement of the Project

Project Phase	Intended Use	Water Requirement		
		m^3/h	m^3/day	$m^3/year$
Construction	Drinking water / Tap water	0.96	23.00	8,395
Construction	Dust Suppression	1.25	10.00	3,650
Operation	Drinking water / Tap water	0.10	2.30	840

Construction Phase Impacts

During the construction phase, employees' needs and dust suppression will create water supply requirement. The drinking water needs of employees will be met by bottled water to be purchased from the local market.

Water to be used in dust suppression during the construction phase of the Project will be absorbed by soil or lost by evaporation. Therefore, there will not be any surface runoff formation or wastewater generation due to watering for dust suppression.

For the employees, portable toilets will be installed at the construction site. The wastewater will be collected with the help of septic trucks and sent to the Beyşehir Wastewater Treatment Plant. The distance to the facility is 46 km and necessary permits have been obtained.

On the other hand, construction activities may hold the potential for accidental release/leakages of petroleum-based products, such as lubricants, hydraulic fluids, or fuels during their storage, transfer, or use in equipment. All chemical storage containers, including diesel fuel, and hazardous liquid waste drums/containers should be placed so as to minimize the risk of soil and groundwater contamination during the construction.

Since there is no permanent flow in Kocadere River, no impact on surface water is expected. Therefore, in the construction phase of the Project only the impacts on the groundwater are expected and these impacts will be direct and negative with short - term duration and low in significance. These impacts will be mitigated by the implementation of the mitigation measures given in Section VI.1.

Operation Phase Impacts

During the operation phase of WWTP, the facilities will use and store some chemicals such as acids and bases for pH control and chlorine for disinfection. In addition, maintenance chemicals will be used at the facility during the maintenance of the machines, engines and pumps. All storage tanks and drums will be placed in concrete areas with proper secondary containments. When necessary, spill kits, absorbent pads or materials and absorbent sands will be provided near the chemical storage areas at all times.

Currently, untreated wastewater is being discharged into the Kocadere River without any treatment. On the other hand, in the operation phase, generated wastewater will be given to the influent of the WWTP. Additionally, the WWTP discharge will comply with the discharge standards defined in WBG EHS Guidelines and Water Pollution Control Regulation of Türkiye. However, during the longer shutdowns or failures, KOSKI will inform Provincial Directorate of Environment, Urbanization and Climate Change regarding the situation. With these measures, potential releases to the environment, an adverse impact to soil, surface water, and groundwater will be prevented.

Necessary mitigation measures (see Table VI.2) will be taken in case of any breakdown or natural disaster that may occur during the operation phase. KOSKI will ensure that the contractor will prepare an Emergency Preparedness Plan for the impacts resulting from such problems. In the event of a possible breakdown, the impact will be eliminated in a short time. For example, wastewater will be bypassed. In addition, it will be ensured that the facility is designed to be resistant to natural disasters.

In the operation phase, the major impact on groundwater may be caused by accidental oil leakages in the areas where the maintenance of WWTP equipment is carried out as well as improper disposal of waste. This may affect the groundwater quality in the project area, in case necessary mitigation measures are not taken. However, it can be concluded that the impacts will be low in significant upon implementation of the mitigation measures and adherence to good engineering methods.

To conclude, the operation phase impacts of the Project are generally found to be positive on water resources. However, measures should be taken to prevent any unexpected deterioration in the receiving water quality. During the operation phase of the Project, the impact will be direct and positive with long-term duration.

V.4.4. Noise and Vibration

Construction Phase Impacts

The project activities within the construction phase are associated with a range of activities that generate noise. The noise would be potentially generated by transportation vehicles, machinery and outdoor equipment to be used for the preparation of the site and the construction activities.

The indicative list of machinery and equipment, which will be used during the construction phase and are likely to cause noise, and their number and noise intensity levels are presented in Table V.14.The noise level of the equipment and machinery will be kept at a minimum with proper mitigation measures such as the use of silencers and with regular maintenance.

Table V.14. Machinery and Equipment and their Noise Intensity Levels (L_w)

Machinery and Equipment	Number	Noise Intensity Level* (dBA)
Truck	6	85
Excavator	2	115
Loader	2	115
Mini Loader	3	115
Crane	2	105
Sprinkler	1	85
Grader	1	111

Source: Industrial Noise Control and Environmental Noise, Ozguven H.N.

In order to assess the noise impacts of the activities that will be conducted during phase, the total noise generations should be calculated for the worst-case scenario and should be compared with the national legislative and WBG EHS Guidelines requirements. To satisfy this need, noise generation calculation is performed below with the assumption of worst-case scenario. The worst-case scenario assumes that all machines and equipment operate simultaneously at maximum noise intensity levels at the same location in the project area.

The formulas given below were used for the calculation of noise levels regarding land preparation and construction phase of the project. Formula (1) is used to calculate total noise level at the source according to noise intensity level of each equipment, Formula (2) is used to calculate the noise level that reaches a definite distance (L_{pt}), and Formula (3) used to include topographical absorption effect into consideration.

L_{wt} = 10 log $\sum_{i=1}^{n} 10L^{wi/10}$ (1)

L_{pt} = L_{wt} + 10log ($Q/4\pi r^2$) (2)

C1 = 5xlog(d_o/d) (3)

L_{wt} : Noise level at the source
L_{pt} : Noise level that reaches a defined distance
Q : Orientation coefficient/atmospheric reduction factor (assumed as 1)
r : Distance from the source
C1 : Topographical noise absorption
d : Distance

As mentioned before, in the equations given above, it is accepted that construction equipment and machinery are used at the same physical location, non-stop at maximum noise intensity levels (worst case scenario). Therefore, it is expected that in reality noise level caused by construction activities will be much smaller than the worst-case scenario calculation result.

L_{wt} = 10 log $\sum_{i=1}^{n} 10L^{wi/10}$

= 10 log ($6x10^{8.5}+2x10^{11.5}+2x10^{11.5}+3x10^{11.5}+2x10^{10.5}+1x10^{8.5}+1x10^{11.1}$)

L_{wt} = 123.8 dBA

The calculation of noise level that reaches to the nearest residential building (which is 970 m away from the border of the WWTP area) is as follows:

L_{pt} = L_{wt} + log ($Q/4\pi r^2$)

$L_{pt\ (970m)}$ = 123.8+10 log($1/4x3.14x970^2$)

$L_{pt\ (970m)}$= 53 dBA

Topographical absorption for 970 m:

C1 = 5xlog(d_o/d)

C1 = 5xlog(1/970)

C1 =-14.93 dBA

L_{pt} at 970 m by taking the topographical absorption into consideration

$L_{pt\ (970m)\ total}$= $L_{pt\ (570m)}$ + C1

$L_{pt\ (970m)\ total}$= 53 dBA -14.93 dBA

$L_{pt\ (970m)\ total}$= 38.07dBA

The distribution of noise generated with respect to distance from the source is presented in tabular format in Table V.15 and graphically in Table V.4. Environmental noise level decreases below the regulatory limit value defined for construction activities (70 dBA) at a distance of about 138 m from the source.

Table V.15 Distribution of Noise Generated Relative to Distance

Distance (m)	L_{pt} (dBA)	L_{pt} with topographical absorption (dBA)	Distance (m)	L_{pt} (dBA)	L_{pt} with topographical absorption (dBA)
15	89.3	83.4	500	58.8	45.3
50	78.8	70.3	600	57.3	43.4
100	72.8	62.8	700	55.9	41.7
150	69.3	58.4	800	54.8	40.2
200	66.8	55.3	900	53.7	39.0
250	64.9	52.9	970	53.0	38.0
300	63.3	50.9	1000	52.8	37.8
400	60.8	47.8	1500	49.3	33.4

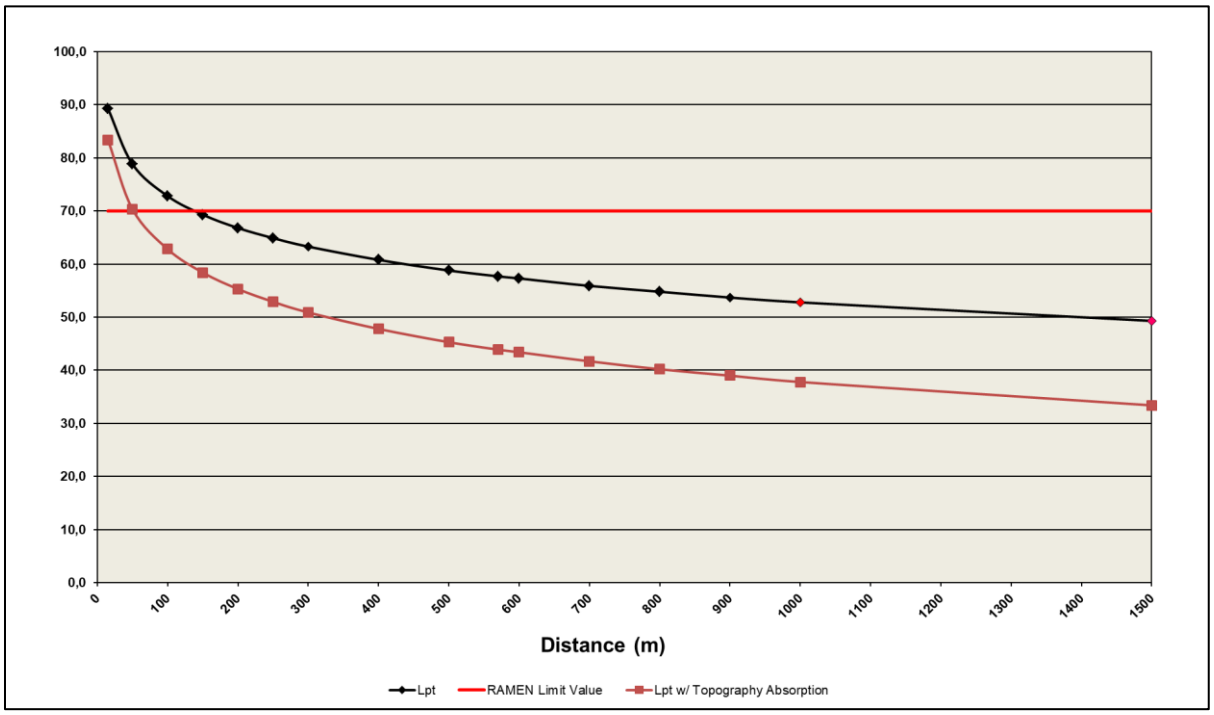


Figure V.4 Distribution of Noise Generated in the Project Area with respect to Distance

As seen from the above, under worst-case conditions, noise level near the closest building to the border of the WWTP Area caused by the construction phase of the Project is below the regulatory limit values. In addition, the noise that will be generated at the site will cause a cumulative impact on the background noise level by reaching the nearest building at different levels. In this context, the cumulative noise level expected at the building is calculated numerically by logarithmically adding the noise resulting from the construction activities to the background noise level measured at the settlement. The cumulative noise at the receptor is given in Table V.16.

Table V.16 Estimated Noise Level around the Nearest Residential Building

Measurement Location	Background Noise Level (dBA)				Calculated Construction Noise Level at 970 m (dBA)	Cumulative Noise Level (dBA)		RENC Noise Limit (dBA)	WBG Residential Noise Limit (dBA)
	RENC Periods		WBG Periods			RENC	WBG		
AML (970 m southeast of the border of the WWTP Area)	**Daytime (07-19)**	60.8	**Daytime (07-22)**	60.3	38.0	61.0	60,4	65	55
	Evening (19-23)	56.4	**Night (22-07)**	49.8		56.6	49.8	60	45
	Night (23-07)	48.0				48.1		55	

As seen from the Table V.16, background noise levels are below the limit values defined in RENC for daytime, evening and night. However, the noise level day-time and night-time are above the defined limit values for WBG General EHS Guidelines: Environmental Noise. Based on that, background noise levels should not exceed 3 dB at the nearest receptor location off-site during the construction and operation phases of the Project.

Within this regard, as seen from Table V.16, cumulative noise levels do not exceed background noise levels above 3 dB. Additionally, it is unlikely in reality that all construction machinery and equipment are used at the same physical location and non-stop at maximum noise intensity levels (worst-case scenario). In addition, as the construction activities will occur outdoors, it is expected that there will be a decrease in noise level depending on the distance due to the atmospheric reduction in real conditions. Similarly, vegetation cover is among the factors that could reduce the impact during the spread of noise. However, since calculations are based on the worst-case approach, factors such as effect of location, atmospheric reduction, vegetation cover, etc. have not been taken into consideration. According to all these evaluations, it is expected that in real terms the noise level at the nearest building will be lower than the calculated value during construction activities of the Project.

As a precaution, the noise level of the equipment and machinery will be kept at a minimum with proper mitigation measures such as the use of silencers and with regular maintenance. Vibration that will affect humans or the structures in the vicinity is not expected to occur as there will be no blasting activity within the project.

Operation Phase Impacts

During the operation phase of the Project, the noise will be generated from WWTP equipment such as engines, compressors, pumps and blowers. The level of noise generated from the equipment is expected to be constant as all equipment will be in operation during the plant operation hours (24 hours).

Equipment generating noise during the operation of the plant will be located in isolated closed buildings and some of them will be submerged in wastewater. So, no significant noise is expected to be generated during the operation of the WWTP.

As a good practice, during the procurement of equipment and machinery, sound levels given in the technical specifications/data sheet will be taken into consideration. In all works during the operations, relevant provisions and limit values of national legislations and WBG General EHS Guidelines and Sectoral Guidelines will be complied.

V.4.5. Biological Environment

The potential impacts of the proposed construction activities for the Project on the biological environment are considered. These impacts could be in effect during both the construction and operation phases of the Project. Potential impacts will affect terrestrial and aquatic flora-fauna directly or indirectly. Therefore, impacts of the project activities can be further divided into the target group of biological elements as terrestrial and aquatic.

The potential impacts are assessed for flora and fauna. Mitigation measures are to be taken in order to minimize these impact are presented in Section VI.1.

The impact of project activities on ecological components is related to the magnitude of the impact and the vulnerability of the recipient. The sensitivity of terrestrial flora-fauna species was determined according to the matrix given in Table V.17. It is known that the features of each step in the systematic classification of species are different from each other. Accordingly, the effect levels will differ from species to species. The flora and fauna species determined within the project area are explained in detail in Section IV.2 Ecology and Biodiversity. Criteria for significance for ecological components are explained in the following topic.

In summary, no threatened or endangered species have been identified in the proposed WWTP site (including the discharge site (canal)). There is no Legally Protected and Internationally Recognized Areas of High Biodiversity Value in the Project Area andthe discharge area. It has been determined that the project area is not a critical habitat as a result of field and desk studies.

Impact Assessment Criteria

The impact assessment criteria for the impacts on ecology and biodiversity were determined as high, moderate, or low, based on evaluating the magnitude of impact and sensitivity/value of the receptors/resources. WB OP 4.04 definitions are used in habitat and species assessments. These definitions are explained step-by-step.

According to WB OP 4.04, Annex A, Natural Habitats, Critical Natural habitats, Significance conversion and Degradation defined as:

"*Natural habitats are land and water areas where (i) the ecosystems' biological communities are formed largely by native plant and animal species, and (ii) human activity has not essentially modified the Area's primary ecological functions. All natural habitats have important biological, social, economic, and existence value. Important natural habitats may occur in tropical humid, dry, and cloud forests; temperate and boreal forests; Mediterranean-type shrub lands; natural arid and semi-arid lands; mangrove swamps, coastal marshes, and other wetlands; estuaries; sea grass beds; coral reefs; freshwater lakes and rivers; alpine and sub alpine environments, including herb fields, grasslands, and paramos; and tropical and temperate grasslands.* "

"Critical Natural habitats: (i) existing protected areas and areas officially proposed by governments as protected areas (e.g., reserves that meet the criteria of the World Conservation Union [IUCN] classifications), areas initially recognized as protected by traditional local communities (e.g., sacred groves), and sites that maintain conditions vital for the viability of these protected areas (as determined by the environmental assessment process); or (ii) sites identified on supplementary lists prepared by the Bank or an authoritative source determined by the Regional Environment Sector Unit (RESU). "

Significance conversion: Such sites may include areas recognized by traditional local communities (e.g., sacred groves); areas with known high suitability for biodiversity conservation; and sites that are critical for rare, vulnerable, migratory, or endangered species.

Listings are based on systematic evaluations of such factors as species richness; the degree of endemism, rarity, and vulnerability of component species; representativeness; and integrity of ecosystem processes.

Significant conversion may include, for example, land clearing; replacement of natural vegetation (e.g., by crops or tree plantations); permanent flooding (e.g., by a reservoir); drainage, dredging, filling, or channelization of wetlands; or surface mining. In both terrestrial and aquatic ecosystems, conversion of natural habitats can occur as the result of severe pollution.

Conversion can result directly from the action of a project or through an indirect mechanism (e.g., through induced settlement along a road).

Degradation is modification of a critical or other natural habitat that substantially reduces the habitat's ability to maintain viable populations of its native species."

Based on these criteria, sensitivity criteria for ecological components within the scope of the Project have been determined as given in Table V.17.

Table V.17 Criteria for Sensitivity/Value of Resource

Ecosystem Component	Sensitivity/Value Level		
	High	**Medium**	**Low**
Designed Areas	Internationally Recognized Areas (e.g. UNESCO Natural World Heritage Sites, UNESCO Man and the Biosphere Reserves, KBA, and wetlands designated under the Convention on Wetlands of International Importance (the Ramsar Convention))	Nationally designated areas.	N/A
Habitats	Habitats are natural or critical natural habitat under the WB OP 4.04 definitions and or Habitats that trigger critical habitat under the following WBG/IFC PS6 Criteria: • Criterion 4: Highly threatened and/or unique; and/or ecosystems • Criterion 5: Key evolutionary processes • Habitats that support species of High sensitivity	Areas of habitat that represent >1% distribution within Türkiye or are threatened at a national level. Habitats that support species of Medium sensitivity.	Natural habitats that do not meet the criteria for either medium or high sensitivity. Habitats that support species of Low sensitivity.
Species	Species populations that trigger critical habitat under the following WBG/IFC PS6 Criteria: • Criterion 1: Critically Endangered (CR) and/or Endangered (EN) species; • Criterion 2: Endemic and/or restricted-range species; and/or • Criterion 3: Migratory and/or congregator species.	Nationally/regionally important concentrations of a Vulnerable (VU) species, or locally important concentrations of Critically Endangered (CR) and/or Endangered (EN) species. Locally important populations of endemic/range restricted species. Populations of migratory species that represent >1 % of the national (Turkish) population.	Locally important populations of Near Threatened (NT) or Vulnerable (VU) species, or locally important populations of species listed on Annexes to the Bern Convention.

Construction Phase Impacts on Ecology

In the construction phase of the Project, some direct or indirect impacts are expected to occur. The loss of habitat and biodiversity might concern the project area. However, the Project will be realized in an already modified area. There is no critical natural vegetation that harbors wildlife, so it is not expected that there will be any sensitive habitat and vegetation loss during the construction activities of the Project.

Another direct impact of the construction phase will be the vehicle traffic. The fauna species, which have limited mobility, will be prone to fauna mortality.

Indirect impacts of construction include disturbance in terms of noise and visual nuisance, and pollution. Some of the secondary impacts have been identified as changes in soil and water quality composition, air quality (dust generation, etc.), waste generated due to project activities, and noise pollution that might impact species' behavior, especially fauna elements.

Internationally and National Recognized Areas

Section II.2 of this ESMP mentions that the Project Area is between the Mediterranean and Irano-Turanian Phytogeographical Region. Since the whole district does not have a particular climate type and topographic structure, the vegetation varies.

The Akseki and Ibradi Forest KBA/IBA is the closest recognized area, 440 m south of the Project Area. The Planned Project Area consists of degraded vegetation.

The closest Alliance for Zero Extinction (AZE) to the Project Area is the Gulluk Mountains, with approximately 90.2 km. Since Gulluk Mountains AZE is quite far from the Project Area, it will not be affected by the project activities.

The project's scope is to treat the wastewater, discharge it into the stream and reduce the environmental pollution in the stream.

As a result, the impact on the internationally recognized areas is assessed as negligible. Dust and noise formation due to construction activities may also have a negative impact on fauna species. All these effects can be eliminated by taking mitigation measures (see Table VI.1). A significant indirect positive impact is expected on this zone.

Construction Phase Impacts on Biodiversity

Terrestrial Flora

The significant impacts of the construction phase on the terrestrial flora would be habitat and vegetation loss or damage. The project area has ruderal vegetation. Since no sensitive habitat or flora species are found in the Area, no significant impact is expected. The Project will be realized in an already modified area.

The impacts of the construction activities on the terrestrial environment will include dust, but this impact will be short-term. When necessary measures are taken, and after the construction activity is over, it is expected that the composition of the plant species will return to its original state in time.

According to the WB OP 4.04 "Natural habitat" definition, the project area does not have any sensitive natural habitat and wildlife. The impact on the biological environment during construction will

be limited. Therefore, it is considered that all the impacts will be minimized or eliminated; if necessary, precautions are taken. The impact on the flora species is assessed as low in significance.

Terrestrial Fauna

Due to the anthropogenic effects in and around the project area, it is determined that large mammal species do not use the project area for nesting. In addition, the project area is not located on bird migration routes. Some minor impacts resulting from the construction activities can be seen on fauna species. These effects will mainly consist of secondary effects. Due to the construction activities, mortalities may be observed due to potential disturbance on the fauna species and increase in traffic. At the same time, dust and noise formation due to construction activities may also have a negative impact on fauna species. All these effects can be eliminated by taking appropriate measures. The impact on the fauna species is assessed as low in significance.

According to the evaluations given in Table V.17 , there are no sensitive flora and fauna species in and around the project area. In Table V.18 the impact of the project on terrestrial flora and fauna species is evaluated.

Table V.18. Assessment of Impacts on Terrestrial Habitats and Flora/Fauna

Affected Ecosystem Component	Source of Impact	Project Phase	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation
Terrestrial Habitats and Flora/Fauna	There will be a risk of damage to the fauna by the traffic Changes in the composition of soil and air (dust generation, etc.) quality Solid and hazardous wastes to be generated due to project activities Noise pollution that might impact species' behavior, especially that of fauna elements	Construction	Disturbance of fauna species in the vicinity of the Project area Loss of flora populations in the vicinity of the Project area	Negative	Low

Aquatic Environment

There are anthropogenic effects in the Kocadere River, where the treated water will be discharged. The river was dry at the time of the site visit and the species were identified thru desktop studies. There are no endemic or endangered species among the aquatic species detected. Wastewater is given directly to Kocadere River without treatment at the present state and together with the planned WWTP; the treated water will be discharged to the creek.

The Planned WWTP is expected to affect aquatic and terrestrial biodiversity positively. The discharge will be made from the existing sewer line, and there will be no construction.

Any change in the aquatic environment will inevitably affect biodiversity. These impacts are considered negligible. The measures that need to be taken against the impacts are presented in Section VI.1.

Operation Phase Impacts on Ecology and Biodiversity

The negative impact of the Project's operational activities on terrestrial and aquatic flora and fauna is not expected. When necessary preventive measures are taken, natural life will continue in its former state after the construction activities are over. The impact of the operation phase of the project on ecology and biodiversity has been determined as negligible.

In addition, currently untreated wastewater is being discharged untreated; however, wastewater will be treated during the operation phase and then discharged to the Kocadere River. That will be an essential step towards conserving biodiversity and improving the water quality of the receiving bodies. That is considered as the most significant positive impact of the Project on the biological environment.

V.4.6. Landscape and Visual (Aesthetics)

Construction Phase

During the construction phase of the project, the operation of construction machinery and equipment may disturb the landscape of the project area. The removal of vegetation, excavation and temporary storage of soil, trenching, etc. can cause landscape and visual effects.

The impact is assessed as direct and negative with short-term duration, local and low significance.

Operational Phase

In the operational phase, no impacts on the landscape other than the WWTP area are expected. The possible impacts during the operation phase will be the maintenance periods of the equipment in WWTP. During the maintenance works, as the works will be done in a limited area, the landscape of the site will not be affected in a significant way. However, during maintenance works, the work area will be determined and limited to that area to minimize impacts on the landscape.

V.4.7. Resources and Waste

As a result of the use of resources, construction and operation/maintenance activities as well as domestic requirements of the personnel, different types of waste will be generated throughout the lifetime of the Project.

All the waste to be generated during the land preparation and construction and operation phases of the Project are required to be properly managed in line with the requirements of national waste management legislation and international good practice in order to avoid impacts on soils, nearby water resources and flora and fauna elements. This section identifies the waste to be generated in this context and assesses the impacts associated with waste generation.

The types of waste are listed below:

- Municipal solid waste
- Packaging waste such as wood, paper, cardboard, and plastic etc.
- Hazardous and special waste that may be generated within the scope of the land preparation and construction and operation phases of the Project can be listed as

contaminated vessels, cloths and overheads, waste batteries and accumulators, waste oils etc.
- Excavation and construction waste
- Final sludge

Waste to be generated in the scope of the project activities will be managed in accordance with the waste management hierarchy as given in Figure V.5. In this respect, waste generation will be avoided/prevented at the source. In cases where prevention is not possible at the source, respectively; minimization of waste generation, selection of materials that will not cause generation of hazardous waste as much as possible, separate collection of waste according to their type (hazardous, non-hazardous, recyclable, etc.), reuse of generated waste at the site as much as possible, assessment of alternatives such as recycling and energy recovery for waste (where reuse is not possible) will be considered. The final step in the hierarchy of waste management involves the final disposal of waste in accordance with relevant regulations, where reuse, recycling and energy recovery options are not possible.

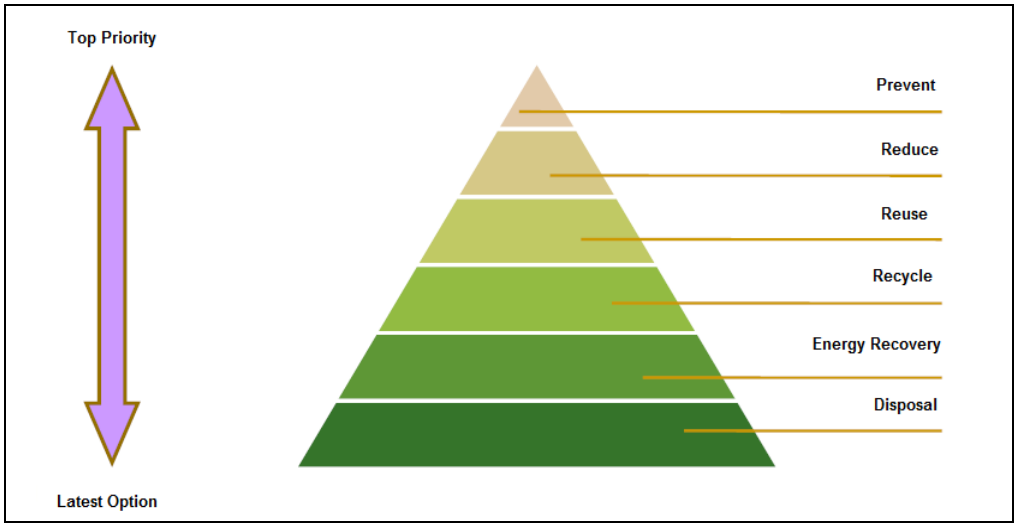


Figure V.5 Waste Management Hierarchy

Construction Phase

In construction phase of the Project, ready-mixed concrete will be purchased from the producers and brought to the project area. Therefore, there will be no cement/concrete units in the project area.

During the construction phase of the Project, activities such as vegetation clearance, levelling, construction and installation of the main operation and auxiliary units, procurement of ready mixed concrete and other materials transportation and assembly of units and equipment will be carried out. Solid waste types expected to be generated within the scope of these activities are; municipal wastes, packaging wastes of system equipment (e.g., wood, cardboard, plastic, etc.), hazardous wastes, special wastes, excavation and construction wastes (e.g., scrap metal, wood, concrete waste, etc.), and waste system equipment (panels, cables, electronic components). Hazardous and special wastes might contain chemical substances (e.g., paint, solvent) or packaging materials and cloths contaminated with oils, waste oils resulting from operation and maintenance of machinery and vehicles, solvents, accumulators, batteries, filters, machine parts.

Waste to be generated during the construction phase of the Project will be managed in accordance with the waste management hierarchy (avoidance, re-use, recycling and disposal). Contractors will take mitigation measures described in Section VI.1.

All the wastes to be generated during the land preparation and construction phases of the Project are required to be properly managed in line with the requirements of national waste management legislation and international good practice in order to avoid impacts on soils, nearby water resources and flora and fauna elements.

These kinds of waste will be stored in special compartments in the Temporary Storage Area allocated for this purpose, in containers, separated from the non-hazardous waste. This area will have an impermeable base/ground and will be protected from the surface flows and rain. Additionally, necessary drainage for the area will be provided. Hazardous waste will be collected in the impermeable Hazardous Waste Temporary Storage Area and delivered to the companies licensed by the Ministry of Environment, Urbanization and Climate Change. The temporary waste storage area will be within the boundaries of the Project area.

Table V.19 lists the types of waste that can be generated during the construction phase of the Project and their waste codes according to the waste lists given in the annexes of the Waste Management Regulation

Table V.19 List of Possible Waste Types to be generated during Land Preparation and Construction Phase of the Project

Waste Code	Definition of Waste Code
13	**Oil Wastes and Liquid Fuel Wastes (Excluding Edible Oils, 05 and 12)**
13 02	Waste Engine, Transmission and Lubrication Oils
15	**Waste Packages, Unspecified Absorbents, Wipes, Filter Materials and Protective Clothing**
15 01	Packaging Wastes (Including Packaging Wastes Separately Collected by the Municipality)
15 02	Absorbents, Filter Materials, Cleaning Cloths and Protective Clothing
16	**Wastes Not Specified Otherwise in the List**
16 06	Batteries and Accumulators
17	**Construction and Demolition Wastes (Including Excavations from Contaminated Sites)**
17 01	Concrete, Brick, Tile and Ceramic
17 02	Wood, Glass and Plastic
17 04	Metals (Including Alloys)
17 05	Soil (Including Excavations from Contaminated Sites), Stones and Dredging Sludge
17 09	Other Construction and Demolition Wastes
20	**Municipal Wastes Including Separately Collected Fractions (Domestic and Similar Commercial, Industrial and Institutional Wastes)**
20 01	Separately Collected Fractions (Except 15 01)
20 03	Other Municipal Wastes

Source: Annex-4 of Waste Management Regulation

Municipal wastes within the scope of the Waste Management Regulation are referred to as domestic wastes or commercial, industrial and institutional wastes similar to domestic wastes in terms of its content or structure, which are defined with waste code of 20, in the Waste List given in Annex-4 of the Regulation and of whose management responsibility belongs to the Municipality. Therefore, these types of wastes will be stored separately from hazardous wastes and recyclable wastes and will be collected regularly by Derebucak Municipality. Municipal wastes will be transferred to Konya Solid

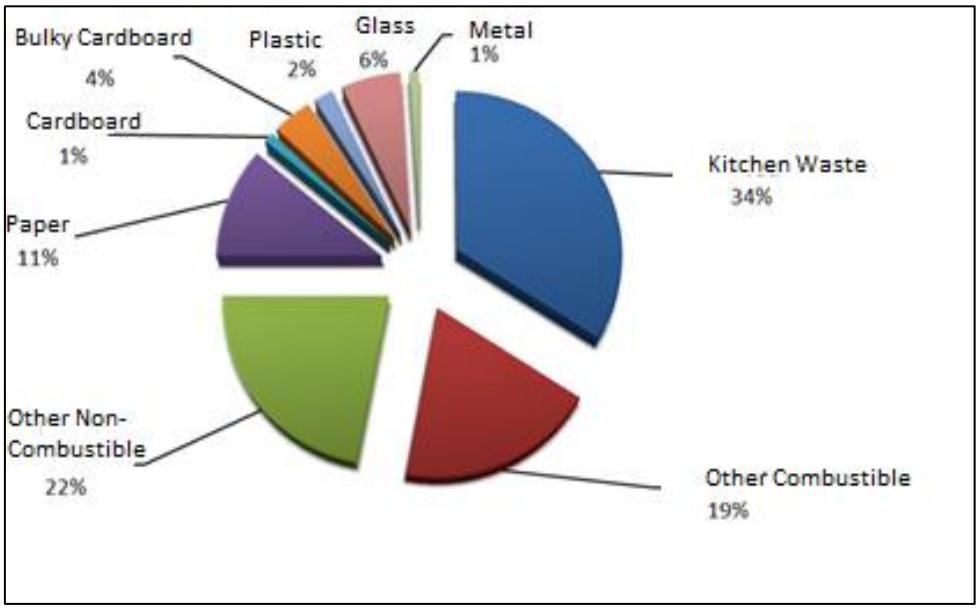
Waste Landfill Facility of Konya Metropolitan Municipality that is located in the Central District. The infrastructure of the facility is sufficient for managing the waste produced on the project site and the facility has environmental permit. The wastes will be disposed of by the landfilling method.

In order to determine the amount of municipal waste to be generated at site, the average daily municipal waste per person is taken as 1.08 kg according to the municipal waste statistics of TurkStatin year 2014 (TurkStat, 2014). The estimated amount of municipal waste to be generated during the construction phase of the Project, based on the number of people working, is given below. This amount includes also separately collected fractions such as paper, cardboard, glass, metal, plastic, etc. together with biodegradable waste:

- 100-persons x 1.08 kg/person/day=108 kg/day

There will be no cafeteria in the construction site. Thus, there will be no food preparation related waste generation within the context of the Project. The food will be supplied through catering services.

The general composition of the municipal waste in Türkiye is as demonstrated in Figure V.6 according to the results of the solid waste composition determination study made within the scope of the Solid Waste Master Plan Project. 34% of municipal waste consists of kitchen waste. Separately collectable and recyclable fractions such as paper, cardboard, bulk cardboard, plastic, glass and metal constitute 25% of municipal waste.



Source: Former Ministry of Science, Industry and Technology, 2014

Figure V.6 Composition of Municipal Waste

Considering the information provided in Figure V.6, it is also valid for the municipal wastes to be generated within the scope of the Project. The only difference will be the kitchen waste percentages since there will be no kitchen/cafeteria in the Project. By reflecting this and the assumption of only 5% food waste, the composition of the municipal waste will be as follows:

- Food Waste : 5%
- Other Combustible : 27%
- Other Non-combustible : 31%
- Paper : 16%
- Cardboard : 2%
- Bulky Cardboard : 6%
- Plastic : 3%
- Glass : 8%
- Metal : 2%

Now, it can be said that approximately 5.4 kg of food waste and 40 kg of separately collectable and recyclable waste will be generated daily during the construction phase of the Project.

Waste vegetable oil will not be generated at the site during the construction activities as meals for the staff will be provided by catering companies. End-of-life tire generation and storage will not take place due to the fact that the tire changes of the construction machines and other vehicles to be used at this phase will be carried out at the facilities in the region providing service for this purpose. Besides, there will not be any significant amount of medical waste generation at site within the scope of the Project, as there will be no infirmary at the project site and Derebucak District State Hospital will be used for possible medical interventions in case of an incident during the activities. The negligible amount of medical waste generation might happen as a result of the first-aid applications and masks used within the scope of COVID-19 measures.

Vegetation clearing and levelling works will be carried out at certain locations in order to flatten the area during the construction phase of the Project. For all activities regarding excavation storage, transport and reuse; provisions of Regulation on the Control of Excavation, Construction and Demolition Wastes will be complied with.

The construction machinery will require oil changes during the land preparation and construction phase of the Project, at least once in every two-month period of the phase. Oil changes of the construction machinery will be carried out at services licensed for the maintenance of the machinery. Thus, there will be no waste oil generation in the land preparation and construction phase of the Project.

The annual amount of waste battery per person in Türkiye is six and this value corresponds to 140 grams (*Ministry of Environment and Forestry, General Directorate of Environmental Management, 2009*). According to this, the annual waste battery production of 100 people to be employed during the construction phase of the Project is calculated as 14 kg.

No significant impact resulting from waste generation is expected due to the nature and scale of the Project, as explained above. Therefore, the impact is assessed as direct and negative with short-term duration, local and low significance. However, mitigation measures proposed in Section VI.1 in order to prevent and/or minimize likely impacts will be implemented.

Operation Phase

In the operation phase, there might be waste generation resulting from damaged, malfunctioned or end-of-life equipment and material that could be replaced or controlled during maintenance and repair activities to be performed periodically or in case of a breakdown. Also, procurement of new equipment, pieces and others will also result in the generation of packaging

waste. Besides, personal protective equipment, clothes and rags used during maintenance and repair activities might result in a limited amount of waste generation. Konya Solid Waste Landfill Facility of Konya Metropolitan Municipality is located in the Central District. The infrastructure of the facility is sufficient for managing the waste produced at the Project site. Generated wastes during operation phase will be collected by Derebucak Municipality and transferred to Konya Solid Waste Landfill Facility of Konya Metropolitan Municipality that is located in Central District.

10 workers are expected to be employed in the Project's operation phase. Therefore, municipal waste generation will be 13.5 kg/day and using the same approach as in land preparation and construction, the recyclable portion of the municipal waste and the amount of food waste will be 10 kg/day and 1.35 kg/day, respectively. Moreover, in addition to recycling municipal waste, recyclable waste such as packaging waste, paper, cardboard, plastic and scrap metals are expected to be taken into account.

In the operation phase of the Project, due to the oil change needs of equipment such as blowers, there will be limited amount of waste oil generation.

Table V.20 lists the waste types and waste codes that may occur during the operational phase of the Project, according to the waste lists given in Annex-4 of Waste Management Regulation. The wastes generated during the operation phase will be stored in a temporary waste storage area. This area will be used in accordance with the Waste Management Regulation. The temporary waste storage area will be within the boundaries of the Project area.

Table V.20 List of Possible Waste Types to be generated during Operation Phase

Waste Code	Definition of Waste Code
13	**Oil Wastes and Liquid Fuel Wastes (Excluding Edible Oils, 05 and 12)**
13 02	Waste Engine, Transmission and Lubrication Oils
13 03	Waste Insulation and Heat Conduction Oils
15	**Waste Packages, Unspecified Absorbents, Wipes, Filter Materials and Protective Clothing**
15 01	Packaging Wastes (Including Packaging Wastes Separately Collected by the Municipality)
15 02	Absorbents, Filter Materials, Cleaning Cloths and Protective Clothing
16	**Wastes Not Specified Otherwise in the List**
16 02	Electrical and Electronic Equipment Waste
16 06	Batteries and Accumulators
19	Waste from Waste Management Facilities, Offsite Wastewater Treatment Plants and Water Preparation Facilities for Human Consumption and Industrial Use
19 08	Wastewater Treatment Plant Wastes Not Described otherwise
20	**Municipal Wastes Including Separately Collected Fractions (Domestic and Similar Commercial, Industrial and Institutional Wastes)**
20 01	Separately Collected Fractions (Except 15 01)
20 03	Other Municipal Wastes

The most important waste that will be generated as a result of the activities of the WWTP is sludge together with the screenings. The solid content of the sludge that will be generated will be increased through the sludge dewatering unit. The water that will be extracted from the sludge cake will be sent back to the inlet of the WWTP. After dewatering, the sludge cake will be transferred to a covered and appropriate container through the conveyor belt .During the operation phase of the

project, an application will be made within the scope of the Regulation on the Use of Domestic and Urban Treatment Sludge in Soil for the use of sludge for agricultural purposes. If the application is accepted, the sludge will be used in agricultural activities. Otherwise, the sludge will be disposed of in the Thermal Incineration Facility in the Konya Solid Waste Landfill Facility and electrical energy will be generated Konya Solid Waste Landfill Facility that has environmental permit and operated by Konya Metropolitan Municipality. Since the treatment sludge originates from domestic wastewater, it is suitable to be sent to the landfill facility, therefore no analysis will be required before its transportation.The sludge will be transported by competent and licensed firms to the landfill and it will be stored in the landfill..

The impact is assessed as direct and negative with long-term duration, local and low in significance. However, mitigation measures proposed in Section VI.1 in order to prevent and/or minimize likely impacts will be implemented.

V.4.8. Climate Change

According to IPCC (Intergovernmental Panel on Climate Change) Guideline for National Greenhouse Gas Inventories, the waste sector includes the following components:

- Solid waste disposal (4A)
- Biological treatment of solid waste (4B)
- Incineration and open burning of waste (4C)
- Wastewater treatment and discharge (4D)
- Other (4E) (IPCC, 2006)

In the scope of this report, components 4A and 4B and partly components 4C, 4D and 4E are investigated. According to 2007 data, waste sector is the second highest source of greenhouse gas emissions in Türkiye. However, there is no inventory on greenhouse gas emissions from the generation and disposal of WWTP sludge.

In addition, activities which are subject to greenhouse gas monitoring, reporting and verification are presented under heading “Activities subject to monitoring, reporting and verification of greenhouse gas emissions” in Annex-1 of the Regulation on Monitoring Greenhouse Gas Emissions, and any of the components of this Project are not listed in Annex-1 of the Regulation.

Within the scope of the feasibility studies for the project, the amount of greenhouse gas originating from wastewater treatment and discharge was calculated for the cases with and without the project, and the emissions due to the project were determined in terms of equivalent CO_2. In addition, the total energy consumption was determined for the cases with and without the project, and the amount of CO_2 resulting from the energy consumed due to the project was determined. According to the European Environment Agency, 319.95 grams of CO_2 emissions are generated for electrical energy per kWh produced in Türkiye. Using this conversion factor, annual net equivalent CO_2 emissions were calculated from the project-sourced net energy consumption. Equivalent CO_2 emissions found by the difference between scenarios with and without a project are given in Table V.21.

Table V.21 Greenhouse Gas Emissions Resulted from the Project

	Unit	2021	2022	2025	2030	2035	2040	2045	2050	2055
CO_2 Emission	ton/year	0.00	26.38	27.31	28.60	29.89	31.19	32.58	34.02	35.47
CH_4 Emission	ton/year	0.00	-30.18	-31.20	-32.75	-34.33	-35.96	-37.67	-39.46	-40.94
N_2O Emission	ton/year	-29,81	-60,87	-63,01	-65,95	-68,84	-71.75	-74.86	-78.08	-80.33
Total CO_2e Emission	**ton/year**	**-0.10**	**24.97**	**25.85**	**27.07**	**28.29**	**29.51**	**30.82**	**32.18**	**33.56**

Calculations were made by taking the Global Warming Potential (GWP) value of 1 for CO_2, 25 for CH_4 and 298 for N_2O.
Source: Derebucak Wastewater Treatment Plant, Feasibility Report, 2020.

Construction Phase Impacts

The Project's contribution to climate change during the construction phase will be due to the emission of GHG. The majority of greenhouse gas emissions will be due to construction machinery/equipment usage. The major greenhouse gas emission will be CO_2 emissions resulting from the combustion of petroleum-based products, like gasoline, in internal combustion engines. Relatively small amounts of methane and nitrous oxide will also be emitted during fuel combustion. Therefore, these emissions will contribute to climate change.

The project's contribution toclimate change through GHG emissions is assessed as a negative and direct impact. The impact's extent will be regional and duration will be short-term. Although the sensitivity of the receptor is considered as medium, due to the usage of small number of construction machinery/equipment, the significance of the impact is considered as low. With the realization of proper mitigation measures proposed in Section VI.1 in Table VI.1, GHG emissions can be minimized.

Operation Phase Impacts

The project's contribution to climate change during the operation phase will be similar to the contribution explained for the construction phase and the significance of the impact will be low. In the operation phase, most of the GHG generation is due to energy requirements of the WWTP. According to that, usage of fossil fuel burning equipment/machinery (including procurement of materials) usage will be limited.

GHG emissions generated operation phase of the Project can be considered as relatively short-term emissions. With the realization of proper mitigation measures proposed in Section VI.1 in Table VI.1, GHG emissions can be minimized.

V.4.9. Natural Disasters

The Project is not expected to have any impact on natural hazards like flood and seismicity during both construction and operation phases. The construction of the WWTP will be constructed in compliance with the building Earthquake Regulation. The detailed baseline information of natural disasters is provided in Section IV.1.10.

V.5. Impacts on Socioeconomic Environment

Infrastructure projects have both negative and positive impacts from a socioec-onomic perspective. Increase in traffic due to construction works, operation of construction machinery, waste generation, and noise and dust emission generated by construction activities can be characterized as negative impacts; while employment and procurement opportunities can be described as positive impacts. Both positive and negative impacts are explained separately for construction and operation phases under this section.

During the construction phase, potential exposures may be result to the disadvantaged/ vulnerable individuals/groups and/or refugees within the project area are direct stakeholders who are sensitive to the environmental and social impacts of the project and are expected to be more affected by these impacts. People living in the immediate vicinity of the project, businesses, vulnerable groups and refugees are the people who come to the project area daily for various reasons and who live in the vicinity of the area where the project will be implemented, may experience complaints such as dust, noise and traffic that may occur during different project phases.

For the operation phase of the Project, positive impacts will be on vulnerable/disadvantaged groups because the odor related grievances and health problems within the neighborhood due to the lack of a WWTP would be solved. No additional mitigation and/or monitoring is required for this issue.

V.5.1. Employment and Procurement Opportunities Created by the Project

Construction Phase Impacts

The workforce needed during the construction phase of the Project (100 employees) will be sourced locally, regionally and nationally. Due to the technical nature of the Project, unskilled labor is expected to be provided locally and skilled labor is expected to be provided non-locally. The general approach of construction companies operating in Türkiye is to employ labor from the local communities, primarily to reduce costs associated with travel and accommodation.

Employment of locals will provide significant benefits ton those who are employed; however, this will be a minor portion of the entire population. The employment of individuals from local communities will however be beneficial as it is expected to lead to improved relationships between the Project and local communities.

Another benefit of the Project will be indirect employment opportunities and these will be associated with the Project supply chain (goods and services) and spending of Project employees in local communities.

Employment of non-locals, as well as the increase in incomes of local employees, may also bring in some minor benefits for local communities, associated with increased spending in the Project area. Due to the fact that Derebucak is a small scale residential area, this positive impact is anticipated to be somewhat significant.

In addition to the employment opportunities, the Project will require certain services and goods. If it is possible and feasible to do so, the selection of local procurement options will create minor positive impacts at regional level.

The construction contractor and their subcontractors will provide clear information on the recruitment process, with particular emphasis on informing local communities of employment opportunities through different channels such as mukhtars and local associations.

Operation Phase Impacts

In the operation phase of the Project, 10 employees are expected to be employed. In order to avoid the negative impacts of the workforce influx, KOSKI will give priority to the local people.

KOSKI will take all necessary actions and measures for labor and employment to be in compliance with Turkish legislation and international standards. KOSKI will aim at employing local workers to the extent possible, in order to increase the Project's local benefits. The recruitment processes will be transparent, public and non-discriminatory, providing equal opportunities with respect to ethnicity, religion, language, gender and sexuality.

V.5.2. Infrastructure and Services

Construction Phase Impacts

As a result of Project construction activities, the need to transport material and products will lead to increased traffic, mainly heavy vehicles on the existing road network. The additional traffic can lead to delays in travel times and increased congestion, particularly in critical locations that are already subject to intense traffic. Construction traffic, particularly heavy vehicles, can also contribute to the deterioration of existing roads, especially unpaved roads and roads that are already in bad condition.

Construction activities will be performed within the borders of WWTP site, and therefore no impacts on underground utility networks are foreseen. An ETL (Energy Transmission Line) will also be made as a project requirement. The permission related to ETL has been obtained from Meram Electricity Distribution Inc. (MEDAS). The length of the ETL will be 70 meters and will have no impact. A concrete plant will not be built because concrete will be purchased from the local market.

The construction works and sludge and waste disposal during the operation phase of the Project will be performed by contractors. Therefore, any damage to infrastructure will be repaired or compensated by contractors promptly in accordance with the responsible authority, such as General Directorate of Highways (KGM) or Konya Metropolitan Municipality (KMM).

During the course of construction phase, grievance redress mechanism, which is detailed in Section VII.2.1, will be in effect to receive local community's nuisance and disturbance.

Operation Phase Impacts

During the operation phase of the Project, the need for sludge disposal will lead to increased traffic. Similar to the impacts anticipated during construction phase, movement of heavy vehicles can contribute to deterioration of existing roads.

V.5.3. Ecosystem Services

Construction Phase Impacts

Project's interaction with Kocadere River during the construction phase is limited. The Project, during its construction phase, might still create direct and indirect negative impacts on the water quality of Kocadere River. Although there is no permanent flow in Kocadere River, such impacts might occur due to spillage/leakage of chemicals and hazardous materials. These issues might create negative impacts on ecosystem services from low significance to high significance considering the magnitude (amount of spillage, toxicity level of spilled chemical, etc.) of the impact.

Operation Phase Impacts

In the operation phase, impacts of the Project will be positive since the surface water quality of the Kocadere River will be improved.

V.5.4. Archaeological and Cultural Heritage

Construction phase

No significant impacts on archaeological and cultural heritage are expected during the construction phase of the Project.

As required by Article 4 of Law on the Conservation of Cultural and Natural Properties (Law No.2863), chance finds procedure in Annex-6 will be implemented during land preparation and construction works. In this context, related Conservation Board or Museum Directorate will be informed latest in three (3) days in case of finding any movable or immovable cultural asset by chance during construction works. Construction works will be stopped immediately, and the related site will be secured by the Contractor and works will not proceed until official information is received. In case of result of any damage on protected areas or cultural assets due to the Project during the construction phase, the damage will be compensated by the Contractor.

The impact is assessed as direct and negative with short-term duration, on-site and low significance.

Operation phase

No significant impacts on archaeological and cultural heritage are expected in the operation phase as there is no activity other than the maintenance/repair works, which will be limited.

V.6. Labor and Working Conditions

Although the number of personnel to be recruited has not yet been decided, it is estimated 100 workers will be employed during the construction and 10 personnel will be employed for the operation phases of the Project. During the recruitment process, priority will be given to local people by KOSKI and contractors.

Overall, labor and working conditions for the construction and operation phase include the issues listed below:

- Protecting the Work Force
- Occupational Health and Safety
- Workers Engaged by Third Parties and the Supply Chain
- Labor Influx

Workforce will be provided with written contracts specifying working hours and other work conditions, be recruited with no discrimination based on gender/religion and ethnicity. In addition, workforce will be paid wages at least national minimum level.

Commitments on labor and working conditions are concluded with a range of mitigation measures for managing labor-related risks and impacts in Section VI.1.

V.6.1. Protecting the Work Force

KOSKI will ensure measures to prohibit child labor and forced labor. In this respect, children under 18 years of age will not be employed during the construction and operation phases. The contractors will develop an age verification system to ensure no one under 18 years old is involved in project activities.

All Turkish Laws and International Labor Organization Conventions (ILO) related to child labor, forced labor, discrimination, freedom of association and collective bargaining will be complied with.

Türkiye is party to a multitude of ILO conventions, including but not limited to conventions on: equal treatment of employees, gender equality, child labor, forced labor, Occupational Health and Safety (OHS), right of association and minimum wage.

Stipulations of Ministry Circular on COVID-19 Measures to be taken at Construction Sites will be followed during all phases of the Project as long as the COVID-19 pandemic outbreak prevails.

V.6.2. Occupational Health and Safety and Working Conditions

The construction phase of the Project includes excavation, backfilling and the use of heavy-duty vehicles. As described in the WBG EHS Guidelines for Water and Sanitation, work at sanitation facilities is often physically demanding and may involve hazards such as open water, trenches, slippery walkways, working at heights and in confined spaces, energized circuits, and heavy equipment. Vehicular movements can cause accidents resulting in injuries and death. In addition, working at height can result in physical injury in case of a possible fall; while, working in confined spaces can lead to various damages due to oxygen deficiency and risk of explosion. Work at water and sanitation facilities may also involve entry into confined spaces, which will expose workers to occupational safety risks and accidents. Relevant precautions in case of exposure to hazardous chemicals are described in Table VI.2.

Occupational Health and Safety (OHS) risk might arise due to risk of pollution, emission of dust and generation of noise during the site preparation and construction works as well. In addition, risks of GBV and sexual abuse, exploitation and harassment might arise. Training of the labour force regarding these subjects will be conducted. In addition, training of employees in the Code of Conduct (see Annex 5) will be conducted.

OHS risks and impacts should also be managed and mitigated by OHS Management Plan and Risk Assessment (including Emergency Plans) to be prepared by the Contractor during construction and by the Project Owner during operation.

Within this regard, workers' exposure to work-related occupational health and safety risks is assessed as direct and negative with short-term duration, local and high in significance. However, with the implementation of mitigation measures proposed in Section VI.1, these impacts/risks will be reduced to low in significance.

V.6.3. Workers Engaged by Third Parties and the Supply Chain

KOSKI has an adequate ability and capacity to manage the implementation of the project and in particular the E&S. In addition, ESMS of KOSKI has available staff and capacity to ensure ESMP implementation.

KOSKI will ensure that contractors are reputable and legitimate enterprises and have an appropriate ESMS that will allow them to operate in a manner consistent with the labor conditions provided by KOSKI.

KOSKI will monitor the performance of contractors such that the human rights policy and labor rights of all workers are exercised properly and include suitable non-compliance measures in their contracts.

KOSKI will ensure that workers of contractors have access to the overall grievance redress mechanism to be established for the laborers in the scope of the Project.

KOSKI will monitor its primary supply chain for safety issues related to supply chain workers, and where necessary KOSKI will introduce procedures and mitigation measures to ensure that suppliers are taking steps to prevent or to correct life-threatening situations.

In order to realize those, KOSKI will prepare a Contractor Management Plan before the construction phase and ensure its implementation.

V.6.4. Labor Influx

In case personnel, material, or services required for the works to be carried out in a construction project cannot be sourced from local sources, technical personnel with adequate capacity or materials that meet international standards must be brought from outside the project area. In such case, suppliers, potential suppliers and potential job seekers might move to the close vicinity of the project area to provide goods and services to the Project and create an influx in the region. Such a situation of workforce influx, people who will work on the project or provide goods and services to the project would be assisted to quickly accommodate in campsite. In such a case, those people may have a negative impact on the local population (especially if the area is rural, remote and small).

As mentioned earlier, 100 employees in the construction phase and 10 employees in the operation phase are expected to be employed. Due to the technical nature of the Project, unskilled labor is expected to be provided locally and skilled labor is expected to be provided non-locally. In order to avoid the negative impacts of the workforce influx, KOSKI will give priority to the local people in recruitment and this will be added to the terms of the contracts of the Contractor and possible

subcontractors in order to ensure this. In contract process, KOSKI will request the contractor to plan the workforce and request from the contractor to prepare a Workforce Management Plan before recruitment process if the requirement for a workforce other than the one specified in this ESMP is seen. KOSKI will evaluate and submit this plan to ILBANK for approval. With these measures, the impact of (a possible) labour influx will be lowered from low to negligible.

KOSKI and the Contractor shall ensure that code of conduct and public communication trainings are given to all employees as an orientation training to prevent a possible future dispute, unacceptable behaviour within the workplace (i.e., gender based violence (GBV), sexual harassment, sexual abuse etc.) and in relation to local communities.

V.7. Community Health, Safety and Security

Construction Phase Impacts

The community health, safety and security impacts of the Project are mostly limited to the construction phase. In the construction phase, emissions of gaseous pollutants and fugitive dust from equipment and machinery used, noise generation, poor handling of wastes to be generated, requirement to shut down the entire plant and/or specific units for construction works and risks associated with community encroachment/trespassing might create negative impacts on community health, safety and security. Impacts associated with emissions, noise and waste generation will be managed with the proper implementation of mitigation measures mentioned in Section VI.1.

Construction works will involve increased traffic of heavy vehicles and equipment at local level and traffic interruptions. Accidents and incidents leading to fatalities could result from traffic operations while transporting equipment and materials to the construction sites as well as from truck and vehicle movements. The significance of the impact is considered low.

Moreover, the construction activities may prevent pedestrians from crossing through road closures. As a mitigation measure, the pedestrian crossings will be built on the most crowded streets. The significance of the impact is considered as medium before the implementation of the mitigation measures and it will decrease to low significance level.

The road closures and deterioration in the road structure may serve as a barrier to the daily activities of persons with disabilities and vulnerable/disadvantaged individuals/groups. The information about these people in project area is given in Section VI.1. Also, construction works not properly managed pose a hazard for many disabled people and particularly blind and partially sighted pedestrians. Impacts on disabled people and vulnerable groups will be managed with the proper implementation of mitigation measures mentioned in Section VI.1.

The construction wastes will be managed as defined in the Resources and Wastes section in order to minimize the negative effects on community health, safety and security.

In addition, it will be ensured that situations such as water and energy cuts do not occur during the construction period. However, in the event of a possible occurrence, necessary mitigation methods will be applied to minimize the impact.

Other risks would be community encroachment to the WWTP site, active worksites and the general construction related impacts on community (e.g., damage of utilities in the working area). The risks associated with these issues would be easily mitigated to negligible significance through implementation of mitigation measures presented in Section VI.1.

Operation Phase Impacts

Similar to the impacts during the construction phase, improper handling of waste would create negative impacts on community health, safety and security. Differently from the construction phase, sludge will be generated as a result of the operation of the WWTP. In case that the final sludge is not be handled properly and/or disposed of in an uncontrolled manner, the magnitude of its impact on community health, safety and security would be somewhat significant.

There will be an increase in the traffic load between the WWTP site and sludge disposal sites in the operation phase. This increase will be lower than the one anticipated to happen during the construction phase since material transport during the operation phase will be limited with the disposal of waste and sludge generated. The significance of the impact would be low. In the operation phase of the WWTP, there would be times that the entire plant or specific units need shutdown due to excessive precipitation, planned or unplanned maintenance requirements, or any other foreseen or unforeseen challenges. A shutdown has major consequences for wastewater treatment, especially biological wastewater treatment. Stopping a physical-chemical treatment generally does not present many problems; however, turning down of biological treatment units has major impact on the speed of the start-up process, which directly affects effluent quality. The significance of the shutdown or failure related impacts on community health, safety and security would be high without proper implementation of mitigation measures.

Similar to the construction phase, trespassing into the active worksites is also a risk in operation phase. The risks associated with this issue would be easily mitigated to negligible significance through implementation of mitigation measures presented in Section VI.1.

Additionally, electrocution through the energy transmission line is a risk in the operation phase. The risks associated with this issue would be easily mitigated to low significance through implementation of mitigation measures presented in Section VI.1.

VI. MITIGATION AND MONITORING PLANS

The purpose of the Mitigation and Monitoring Plans is to apply mitigation measures to reduce the impacts of the Project, describe the roles of the participating parties and key personnel responsible for the implementation of the mitigation measures, and identify procedures to ensure that the mitigation measures are implemented adequately during all phases of the Project through the monitoring plan.

In the following sections, the potential project impacts and associated management and/or mitigation measures are described and the key monitoring requirements and responsibilities for implementation are given in detail.

VI.1. Mitigation Plan

Impact mitigation measures and activities are developed for all phases of the Project below in compliance with the national legislation as well as international standards. The most stringent among national legislation and WB standards and the most up-to-date legislation will be complied. Impact mitigation plan is presented in Table VI.1 and Table VI.2 for land preparation and construction, and operation phases, respectively.

Table VI.1 Mitigation Plan for the Land Preparation and Construction Phase of the Project

Issue	Potential Impact	Type of Impact	Impact Significance Before Mitigation	Mitigation Measures	Cost	Responsible Party
Physical Environment						
Soil and Contaminated Land	Topsoil loss	Adverse	Medium	• KOSKI will ensure that the contractor will prepare and implement a Soil Management Plan that is in line with the WB OP 4.01 and WBG General EHS Guidelines (both general and sector specific). The Soil Management Plan will be prepared by the Contractor 30 days prior to commencement of the work and the employees will be trained on the Plan; • Topsoil will be stripped to a sufficient depth (minimum 30 cm) prior to the start of the construction activities. To avoid soil compaction, stripping operation will not be done when soil is wet. The average height of top soil stacks will be 1.5 meters. The side slope of these stacks will not exceed 3:1 (h: v); • Stripping of topsoil will not be conducted earlier than required to prevent the erosion of soil (wind and water); • At the end of the construction phase, the stored topsoil will be used for landscaping; • The stripped topsoil will not be used for agribusiness; and • The provisions of the Regulation on the Control of Excavation Materials, Construction and Demolition Wastes shall be complied during land preparation and construction phase of the Project and excess excavation material will be re-used as appropriate or disposed of in existing licensed excavation waste storage sites. • The contractor will take additional mitigation measures, such as soil sampling, in case of a requirement revealed by the monitoring and/or any complaint.	Included in construction costs	Contractor KOSKI/ Project Implementation Unit (PIU) Supervision Consultant
Soils and Contaminated Land	Soil contamination	Adverse	Medium	• The impacts on soil environment will be most visible at the WWTP site. However, the following measures should be taken at all areas of the Project, not limited to the WWTP site. • A Soil Management Plan that is in line with the WB OP 4.01 and WBG EHS General Guidelines (both general and sector specific) will be prepared prior to the construction and the employees will be trained on the Soil Management Plan; • KOSKI will ensure that the contractor will prepare and implement Oil and Chemical Spill Contingency Management Plan that is in line with the WB OP 4.01 and WBG EHS Guidelines (both general and sector specific). The Oil and Chemical Spill Contingency Management Plan will be prepared by the Contractor 30 days prior to commencement of the work and employees will be trained on the Oil and Chemical Contingency Management Plan; • In order to minimize the impacts on soil environment, the amount of soil that could be subject to compaction and contamination/pollution will be minimized by ensuring the use of only the designated work sites and routes for the construction machinery and equipment and field personnel; • The fuel required for the construction equipment and vehicles to be used within the site during construction phase will be supplied primarily from the nearest station; if deemed necessary, fuels that may possibly be stored at site will be stored in the areas where necessary impermeability precautions (including secondary containment) are taken; • Machinery and equipment will be checked regularly for leaking oil and fuel; • The provisions of the Regulation on the Control of Excavation Soil, Construction and Demolition Wastes shall be complied with during land preparation and construction phase of the Project; • Provisions of the Regulation on the Control of Soil Pollution and Sites Contaminated by Point Sources shall be complied with within the scope of the Project; • Wastes and wastewater to be generated during the land preparation and construction phases of the Project will be stored and disposed in a controlled manner in accordance with the Waste Management Regulation and Regulation on the Control of Excavation, Construction and Demolition Wastes, WB OP 4.01, WBG General EHS Guidelines and in line with the management practices described in this report; • According to requirements specified in the Regulation on the Control Soil Pollution and Sites Contaminated by the Point Source, in terms of a possible soil contamination in the area, including the river bed to which untreated wastewater has been discharged, KOSKI is obliged to notify the MoEUCC on possible soil pollution in the project area according to the procedure defined in the regulation. Based on the inspections that will be carried out by the MoEUCC, if the site will be defined as a contaminated site that needs to be cleaned up, the site will be cleaned up by firms authorized by the MoEUCC and KOSKI will be the responsible entity to ensure clean-up. Within the scope of cleanup activities, the following measures will be taken for the contaminated areas during the construction phase: - Vehicles containing any excavated soil will be suitably covered to limit potential dust emissions, and truck bodies and tailgates will be sealed to prevent any discharge during transport; - Only licensed waste haulers will be used to collect and transport contaminated soil to an appropriate treatment/disposal site and illegal disposal of the soil will be prohibited; - Speed control for the trucks carrying contaminated soil will be enforced; and - The use of contaminated soil for landscaping will be prohibited.	Included in construction costs	Contractor KOSKI/PIU Supervision Consultant
Soils and Contaminated Land	Erosion potential	Adverse	Low	• By establishing a suitable drainage system in the field, the potential impact of surface runoff will be minimized. In this context, drainage channels will be constructed in accordance with the topographical conditions of the site; • Construction activities (especially excavation works) will be undertaken in the dry weather condition as much as possible; • Stripping of topsoil will not be conducted earlier than required to prevent the erosion of soil (wind and water); • The disturbed areas and soil stock piles will be kept moist to avoid wind erosion of soil and the pile height will not be higher than 2 m; and • Topography will be restored to provide stabilization immediately after the completion of construction at each location.	Included in construction costs	Contractor KOSKI/PIU Supervision Consultant

Issue	Potential Impact	Type of Impact	Impact Significance Before Mitigation	Mitigation Measures	Cost	Responsible Party
Air Quality	Dust emissions	Adverse	Low	KOSKI will ensure that the contractor will prepare and implement a Dust Management Plan that is in line with the WB OP 4.01 and WBG EHS Guidelines (both general and sector specific). The Dust Management Plan will be prepared by the Contractor 30 days prior to commencement of the works to ensure: • The employees will be trained on the Dust Management Plan; • Dust will be minimized from open area sources, including storage piles, by using control measures such as installing enclosures and covers, and increasing the moisture content; • Speed limitations will be defined and obeyed for construction vehicles; • The drop height of potentially dust generating materials will be kept as low as possible; • Dust suppression methods will be applied at construction sites to mitigate Project-related dust emissions. In this respect, the upper layers of the work sites/materials will be kept at a humidity level of about 10%. Watering will be applied at any time necessary including night time, weekends or off-days by using pressurized distribution or spraying systems that would ensure even distribution of water; • If there is traffic flow on the existing roads near the work sites, dust suppression measures will be continuously applied to ensure traffic safety. If there is no traffic existing in the local roads, dust suppression measures will be applied only at local residential areas; • All vehicles to be used in transportation activities will obey the speed limits set out in the Regulation on Highway Traffic. Vehicle speeds are proposed to be limited to 30 km/h on unpaved surfaces; • Loading and unloading operations will be performed without throwing/scattering; • During transportation, excavated materials will be covered with nylon canvas or materials with grain size larger than 10 mm; • Wind shields/barriers will be placed at work sites such as material storage areas to prevent dust dispersion where necessary; • Solid screens or barriers that are at least as high as any stockpiles on site will be erected at the boundaries of the construction site; • For the owners of adjacent agricultural lands, special attention will be given for their grievances and related measures will be taken immediately; • Any damage caused by insufficient or lack of dust suppression (transportation of dust to a residential area, wind borne dust deposits etc.) measures will be compensated by the contractor; • The asphalt roads will be used as much as possible; • Compliance with the air emission limit values stipulated in national legislation and WBG General EHS Guidelines will be ensured; • Dust measurements will be conducted if any grievance regarding dust generation is received and mitigation measures will be enhanced in this respect such as increasing wet suppression/watering activities, further reducing speed/traffic, etc., if deemed necessary, considering both national and WBG EHS Guidelines limit values.	Included in construction costs	Contractor KOSKI/PIU Supervision Consultant
Air Quality	SO_2 PM, NO_x and exhaust emissions	Adverse	Low	• Well and adequately maintained vehicles will be used. Regular maintenance of machinery and equipment will be ensured; • Exhaust systems of the vehicles (daily and periodically) will be controlled regularly; • All vehicles to be used in transportation activities will be issued an emission control stamp; • Modern equipment and tools that can provide relevant emission standards will be selected for the construction activities; • Construction vehicles will not be permitted to keep engines running while waiting to enter the site or waiting on-site; and • Relevant provisions of the Regulation on Air Pollution Control Sourced from Industry, the Regulation on Exhaust Gas Emission Control and Regulation on the Assessment and Management of Air Quality will be complied with to minimize air emissions sourced from construction machinery and trucks.	Included in construction costs	Contractor KOSKI/PIU Supervision Consultant
Air Quality	Impact on human health	Adverse	Low	The Dust Management Plan will be prepared by the Contractor 30 days prior to commencement of the works that is in line with the WB OP 4.01 and WBG EHS Guidelines (both general and sector specific) to ensure: • Regular watering of the work area will be carried out, particularly in spring and summer, to reduce the impacts of dust-causing activities such as excavation and backfilling of trenches; • When there will be windy weather conditions (speed is above 30 km/hour) in the Project Area, the digging and excavation will not be carried out or only small areas through the construction site will be excavated and covered and compacted immediately after work is completed or additional measures such as use of dust curtains will be taken; • Inner roads will be covered with materials to prevent dust and these roads will be kept clean; • All vehicles to be used in transportation activities will obey the speed limits set out in the Regulation on Highway Traffic. Vehicle speeds are proposed to be limited to 30 km/h on unpaved surfaces; • Daily backfilling, bedding and covering materials will be stored at temporary storage areas. In order to prevent the materials moving with the help of wind moistening and compacting of the materials will be carried out; • Loading/unloading will be carried out carefully without scattering; • Proper covering of trucks will be done that carry dusty materials; • Excavated materials will be covered with nylon canvas, etc. during transportation; • The drop height of potentially dust generating materials will be kept as low as possible; • If there is traffic flow on the existing roads near the work sites, dust suppression measures will be continuously applied to ensure traffic safety. If there is no traffic existing in the local roads, dust suppression measures will be applied only at local residential areas; and • Any damage caused by insufficient or lack of dust suppression (transportation of dust to agricultural lands, wind borne dust deposits etc.) measures will be compensated by the contractor.	Included in construction costs	Contractor KOSKI/PIU Supervision Consultant

Issue	Potential Impact	Type of Impact	Impact Significance Before Mitigation	Mitigation Measures	Cost	Responsible Party
Water Resources	Change in groundwater and surface water quality	Adverse	Low (for groundwater) Negligible/None (for surface water)	• KOSKI will ensure that the contractor will prepare and implement a Water Resources Management Plan that is in line with the WB OP 4.01 and WBG EHS Guidelines (both general and sector specific). The Water Resources Management Plan will be prepared by the Contractor 30 days prior to commencement of the works; • The employees will be trained on the Water Resources Management Plan; • Surface runoff resulted from rain/storm water or wastewater generation due to dust suppression activities will be prevented; • The water to be used for dust suppression will be followed in m^3; • Stripping of topsoil will not be conducted earlier than required to prevent the erosion of soil (wind and water); • The limited amount of domestic wastewater generated at site will be sent to a temporary isolated impermeable septic tank, then it will be sent to the nearest licensed WWTPs after pumped-out from septic tanks by licensed sewer trucks; • Discharge of wastewater, residues or other waste into groundwater or into surface water will be avoided. Portable toilets will be supplied for the workers at the construction sites. The wastewater generated in the construction sites will be connected to the existing sewage network or where the connection is not possible it will be collected into the impervious septic tanks and then discharged into the nearest sewage network by vacuum trucks; • The units of the Project that are in touch with water, wastewater and chemicals will be constructed using concrete with appropriate cement ratio and durability in order to provide basement impermeability. Thus, no leakages to soil and groundwater will occur during the operation phase of the Project; • Construction activities may pose the potential for accidental release/leakages of petroleum-based products, such as lubricants, hydraulic fluids, or fuels during their storage, transfer, or use in equipment. All chemical storage containers, including diesel fuel, and hazardous liquid waste drums/containers should be placed in secondary containment in temporary storage area so as to minimize the risk of soil, surface water and groundwater contamination during construction; • KOSKI will ensure that the contractor will prepare and implement a Pollution Prevention Plan that is in line with OP 4.01 and WBG EHS Guidelines (both general and sectorial) and the employees will be trained on the plan; • For a case of possible breakdown and natural disaster situation, KOSKI will ensure that that contractor will prepare, implement and monitor an Emergency Preparedness Plan and the employees will be trained on the plan; • In the event of a possible breakdown, the impact will be eliminated in a short time bypassing of wastewater; and • It will be ensured that the facility is designed to be resistant to natural disasters.	Included in construction costs	Contractor KOSKI/PIU Supervision Consultant
Noise and Vibration	Increased level of noise and vibration	Adverse	Low	• KOSKI will ensure that the contractor will prepare and implement a Noise Management Plan that is in line with the WB OP 4.01 and WBG EHS Guidelines (both general and sector specific). The Noise Management Plan will be prepared by the Contractor 30 days prior to commencement of the works and the employees will be trained on the Plan. • The machinery and equipment to be used during the land preparation and construction activities will not be operated at the same point/location but homogeneously distributed in the site; • Within the scope of the project, attention is given to the selection of equipment with a low noise level; • The maintenance of the construction machinery and equipment will be carried out regularly and periodically. Daily maintenance will be carried out in each shift; and the working time of each vehicle will be registered by the operator in order to follow the total working hours for periodic maintenance. Periodic maintenance will be conducted at every 50, 250, 500, 1000, 2000 working hours. Maintenance forms will be filled out regularly; • All vehicles to be used in transportation activities will obey the speed limits set out in the Regulation on Highway Traffic; • Noise measurements will be conducted by an authorized environmental laboratory in case of any grievance and mitigation measures will be enhanced in this respect such as use of noise barriers; • Construction works will be performed between 07:00 - 19:00 hours. Unless absolutely necessary, no construction activities will be done at night. In case night operations are deemed necessary and the noise levels high, the public will be informed 1 week in advance; • All construction activities will be carried out in compliance with the noise limits set out in the Regulation on Environmental Noise Control (RENC) and WBG EHS Guidelines and the contractor will take additional mitigation measures in case of a requirement revealed by the monitoring; and • A grievance redress mechanism will be established to manage noise related grievances as well.	Included in construction costs	Contractor KOSKI/PIU Supervision Consultant

Issue	Potential Impact	Type of Impact	Impact Significance Before Mitigation	Mitigation Measures	Cost	Responsible Party
Resources and Waste	Waste generation	Adverse	Low	KOSKI will ensure that the contractor will prepare and implement a Waste Management Plan that is in line with the WB OP 4.01 and WBG EHS Guidelines (both general and sector specific). The Waste Management Plan will be prepared by the Contractor 30 days prior to commencement of the works; • The employees will be trained on the Plan; • Waste to be generated within the scope of the Project will be managed in accordance with the waste management hierarchy; • Waste will be separated (i.e., hazardous / non-hazardous, recyclable / non-recyclable) and stored in designated temporary storage areas; • All kinds of implementations that may threaten personnel or public health will be avoided in all activities involving collection, temporary storage, transport and disposal of waste throughout the Project; • Waste recycling, transport and disposal will be carried out by means of licensed companies and/or Derebucak Municipality; • Incineration or burying of waste by any means at site and/or dumping of waste to nearby roads or water resources will absolutely not be in question; • Waste to be temporarily stored on site will be delivered to licensed transport vehicles appropriate to the type of waste for disposal. Information related to the operations in this context will be recorded and the records will be kept in the administrative building; • Removal of the excavated material, which will not be used for backfilling, from the site will be performed at regular intervals without waiting. These materials will be transferred to licensed Konya Solid Waste Landfill Facility by licensed transportation companies; • Waste oils originating from machinery and vehicles will be stored in impervious tanks and containers that would be situated on impervious foundation in accordance with the "Regulation on Control of Waste Oils". Tanks and containers will be equipped with apparatus that would prevent over filling and will be filled till the designated level mark. Tanks and containers will have a red color and must be labeled as "waste oil". Disposal of waste oils will be controlled by the KOSKI; • Waste batteries from the construction site and accumulators from vehicles will be disposed of in compliance with the consumer responsibilities specified in Article 13 of the "Regulation on Control of Used Batteries and Accumulators". Accordingly, used batteries will be collected separately (from municipal wastes) and transferred to the TAP battery collection center, • All other hazardous materials will be disposed of in accordance with the Waste Management Regulation; • Hazardous waste to be temporarily stored on site will be delivered to licensed transport vehicles appropriate to the type of waste for disposal. Information related to the operations in this context will be recorded and the records will be kept in the administrative building; • Hazardous or non-hazardous inscription, waste code, stored waste amount and storage date will be indicated/labelled on waste temporarily stored by classifying according to their properties. The reaction of waste with each other will be prevented by the measures taken in the Temporary Storage Area, which will have impermeable ground, proper drainage for accidental leaks/spills, top cover and designated rooms for different types of wastes, etc. The permit for the temporary waste storage area will be taken from the Provincial Directorate of Environment, Urbanization and Climate Change; • Spill kits will be available at the Temporary Storage Area and necessary precautions will be taken against possible fires such as provision of appropriate firefighting equipment; • Construction activities may pose the potential for accidental release/leakages of petroleum-based products, such as lubricants, hydraulic fluids, or fuels during their storage, transfer, or use in equipment. All chemical storage containers, including diesel fuel, and hazardous liquid waste drums/containers should be placed in secondary containment so as to minimize the risk of soil, surface water and groundwater contamination during construction.	Included in construction costs	Contractor KOSKI/PIU Supervision Consultant
	Resources used during works	Adverse	Low	• KOSKI will supervise the construction contractor through the supervision consultant to select the most appropriate raw materials by evaluating clean production options.	Included in construction costs	Contractor KOSKI/PIU Supervision Consultant
Climate Change	Green gas emissions	Adverse	Low	• Optimal utilization of the available construction equipment and materials in such a way that reduces greenhouse gas emissions; • During the management of the GHG emission effects, Regulation on Monitoring Greenhouse Gas Emissions will be complied with; • Speed restrictions will be adopted by construction vehicles and equipment to optimize fuel efficiency; • Regular maintenance of construction vehicles and equipment will be applied; • Energy uses associated with construction vehicles and equipment will be monitored; and • Training will be performed for project personnel regarding energy efficiency.	Included in construction costs	Contractor KOSKI/PIU Supervision Consultant
Biological Environment						
Biological Environment	Disturbance on flora and fauna species	Adverse	Low	• No protected and sensitive ecosystems or species are foreseen to exist within the project area. However, prior to the land preparation phase, definite working areas will be set up where activities (e.g., vegetation clearing, vegetation removal, leveling and construction) and permanent structures (units) will be established; • Vegetation clearing within the site boundary will be avoided unless it is absolutely necessary; and • Revegetation of cleared areas will be ensured where possible. • The camps will be located at a sufficient distance from the KBA/IPA limits.	Included in construction costs	Contractor KOSKI/PIU Supervision Consultant
Socio-Economic Environment						
Socio-economic Environment	Employment and Procurement Opportunities	Positive	-	To avoid negative impacts: • KOSKI will take all necessary actions and measures for labor and employment to be in compliance with relevant Turkish legislation and international standards given in Table IV.1 of ESMP. KOSKI will aim at employing local workers to the extent possible, in order to increase the Project's local benefits. The recruitment processes will be transparent, public and non-discriminatory, providing equal opportunities with respect to ethnicity, religion, language, gender and sexuality. • The construction contractor and their subcontractors will provide clear information on the recruitment process, with particular emphasis on informing local communities, especially Sarayönü Neighborhood, of employment opportunities through different channels such as mukhtars and local associations.	Included in construction costs	Contractor KOSKI/PIU Supervision Consultant
Socio-economic Environment	Infrastructure Damage	Adverse	Low	• The construction works during the construction phase and waste disposal during the construction phase of the Project will be performed by contractors. Therefore, any damage to infrastructure will be repaired or compensated by contractors promptly in accordance with the responsible authority, such as KGM or KMM. KOSKI will closely monitor such issues.	Included in construction costs	Contractor KOSKI/PIU Supervision Consultant

Issue	Potential Impact	Type of Impact	Impact Significance Before Mitigation	Mitigation Measures	Cost	Responsible Party
Community Health, Safety and Security	Increased Traffic	Adverse	Low	• A Traffic Management Plan (TMP) that is in line with the WB OP 4.01 and WBG EHS Guidelines (both general and sector specific) will be developed to minimize potential traffic related impacts on the residential areas located in close vicinity of the wastewater treatment plant. TMP will be prepared by the Contractor 30 days prior to commencement of the works. The employees will be trained on the Plan. The TMP should include details about the following; ○ construction plan by phases, ○ beginning and duration of work, ○ overview of the existing conditions near the construction sites, ○ identification of affected areas, ○ mitigation measures, ○ traffic diversion plans, including zones of entry and exit, routes for towing of material, turnaround points, parking areas, zones of interlocking with other traffic roads etc., ○ routes/temporary passages for pedestrians and vehicles, ○ traffic controls for each expected intervention, including illustrations of barriers, paths, signalization plan, warning signs etc., ○ requirements for special vehicles, for example, those of large dimensions, ○ construction works paths (access, ramps, loading, unloading), ○ connection roads for supply vehicles and storage of material, ○ expected interaction of pedestrians and vehicles, ○ roles and responsibilities of persons on construction site regarding traffic management, and ○ instructions on the procedures regarding traffic control, including urgent situations. • The appropriate signage will be determined based on the Regulations on Traffic Signs. Prior to construction activities, the Contractor will install all signs, barriers and control devices needed to ensure the safe use of the roads by traffic and pedestrians; • Traffic has to be regulated in a way that will guarantee traffic safety and minimum traffic flow disruptions. When road closures and traffic diversions are necessary, official permits will be obtained from the Konya Provincial Police Department Traffic Control Branch Office and the route & duration of disruption will be determined. Advance notification will be provided at least three days in advance to local people to be affected by blockages and diversions; • Alternative routes will be determined and transportation will be programmed according to the intensity of traffic; • All vehicles to be used in transportation activities will obey the speed limits set out in the Regulation on Highway Traffic; • Safe driving by Project personnel will be ensured through training; • Buses will be organized for worker transportation where possible to avoid additional traffic pressure; • Storage of construction materials, equipment and machinery on traffic lanes will be prevented; and • Traffic activities will be scheduled to avoid peak hours on local roads if feasible.	Included in construction costs	Contractor KOSKI/PIU Supervision Consultant
Community Health, Safety and Security	Trespassing	Adverse	Low	• Security Management Plan that is in line with the WB OP 4.01 and WBG EHS Guidelines (both general and sector specific) will be developed by KOSKI or security services provider before the construction phase. KOSKI and contractor will ensure that the plan is actively implemented and the employees will be trained on the plan; • Active closed-circuit television (CCTV) system will be installed • Persons and/or organizations with the necessary permits will be assigned to ensure the security of the project area (e.g., private security companies/officials). These persons and/or organizations shall regularly monitor the facility and its surroundings. The special security applications and officials' authorities within the scope of the project shall comply with the provisions of the Regulation on the Implementation of the Law on Private Security Services and the Law on Private Security Services; • In addition to safety personnel, monitoring of the project site for security purposes will be provided by a closed-circuit camera system which will be installed at appropriate distances on the site boundary (e.g., 30-40 meters) to provide daytime and night-time monitoring of the whole area; and • Entry of staff and third parties into the working site will be carried out in a controlled manner from the doors at which authorized security personnel will work.	Included in construction costs	Contractor KOSKI/PIU Supervision Consultant
Community Health, Safety and Security	General construction related impacts on community	Adverse	Low	• A Community Health, Safety, and Security Management Plan that is in line with WB OP 4.01 and WBG EHS Guidelines (both general and sector specific) will be developed by the construction contractor 30 days prior to commencement of the works and the employees will be trained on the Plan; • Plans from the Municipality showing the location of underground service utilities (power, telecom, other) will be obtained and residents and/or landowners will be consulted on the relocation of utilities prior to commencing excavation activities; • The relevant permits and protocols will be granted for other 3rd party crossings such as underground electricity cables etc. during construction phase; • The construction activities will be performed in a way not to cause any damage to the utilities located in the working area; and • All types of waste shall be transferred to a licensed disposal facility via licensed waste transportation companies following the relevant legislation on waste.	Included in construction costs	Contractor
Community Health, Safety and Security	Gender Based Violence (GBV), Sexual Exploitation Abuse / Sexual Harassment (SEA/SH)	Adverse	Medium	• The Contractor Code of Conduct developed, incorporated into workers' contracts, and training and socialization on it provided to workers • Mandatory and regular training for workers on required lawful conduct in local community and legal consequences for failure to comply with laws; • Commitment / policy to cooperate with law enforcement agencies investigating perpetrators of gender-based violence; • Creation of partnership with local civil society organization to report workers' misconduct and complaints/reports on gender-based violence or harassment through the GM; • Provision of opportunities for workers to regularly return to their families; • Provision of opportunities for workers to take advantage of entertainment opportunities away from rural local communities	Included in construction costs	Contractor KOSKI/PIU Supervision Consultant
Landscape and Visual (Aesthetics)	Nuisance for the People	Adverse	Low	• The construction works will be limited to day time only; and • The construction schedule will be disclosed to the public via website of KOSKI.	No costs involved	Contractor KOSKI/PIU Supervision Consultant
Archaeological and Cultural Heritage	Chance Finds	Adverse	Low	• As required by Article 4 of Law on the Conservation of Cultural and Natural Properties (Law No. 2863), chance finds procedure (see Annex-6) will be implemented during land preparation and construction works. In this content: ○ Construction works will be stopped immediately in case of finding any movable or immovable cultural asset by chance. ○ Related Conservation Board or Museum Directorate will be informed latest in three days and the site will be secured by the Contractor. ○ Works will not proceed until official notification is received • Training will be performed for project personnel regarding chance finds procedure.	No costs involved	Contractor

Issue	Potential Impact	Type of Impact	Impact Significance Before Mitigation	Mitigation Measures	Cost	Responsible Party
Labour and Working Conditions						
Labor Force	Working Conditions	Adverse	Medium	• Construction contractors of the Project will prepare a contractor-level Workforce Management Plan and code of conduct, which includes the main provision in the Project-level, and the employees will be trained on this management plan. The Workforce Management Plan will be developed covering the subjects; fair treatment; non-discrimination and equal opportunities of workers; establishing, maintaining and improving a sound worker-management relationship; compliance with national labor and employment laws; code of conduct; protecting and promoting the safety and health of workers, especially by promoting safe and healthy working conditions; preventing the use of forced labor and child labour (as defined by the WB and Turkish legislation); HSE, induction training for employees by PIU regarding to code of conduct and WB requirements etc., and Grievance Redress Mechanism (GRM) for workers; • Workers will be provided with written contracts documented information that is clear and understandable, regarding their rights under national labor law; including collective agreements, their rights related to hours of work, wages, overtime, compensation, and benefits as of startup of working relationship and when any material changes occur; • Workers will be issued written contracts detailing job description, working hours, wages, rights and duties, code of conduct etc; • Workers will not be discouraged from electing worker representatives, forming or joining workers' organizations of their choosing, or from bargaining collectively, and will not discriminate or retaliate against workers who participate, or seek to participate, in such organizations and collective bargaining; • Particular concern will be paid to principles of non-discrimination and equal opportunity. In this respect, employment decisions (i.e. recruitment and hiring, compensation, wages and benefits, working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices) will not be made on the basis of personal characteristics unrelated to job requirements. Wages, work hours and other benefits will be per the Turkish Labor Law; • A grievance redress mechanism as defined in the project specific SEP will be implemented to raise workplace concerns. The workers will be informed about the worker grievance redress mechanism at the time of recruitment and make it easily accessible to them; and • If an employee faces Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH) issue s/he can either apply to a higher level superior or directly go to police station, as stipulated in the national referral system of the country for dealing such cases. The content and procedures of the project's GRM will also have a reporting line on such cases in regard to SEA/SH issues and will be handled under full confidentiality. The GRM focal point receiving the SEA/SH related grievance should direct this to national referral systems immediately and record that this has been directed, as set out in the GRM Procedure of ILBANK. All details of the complainant of the sensitive case will be kept strictly confidential.	Included in construction costs	Contractor KOSKI/PIU Supervision Consultant
Labor Force	Protecting the Workforce	Adverse	Low	• Employment of child labor and forced labor will be prohibited; • Contractors will be required to have age verification system, ensuring no one under 18 years old is involved in project activities; and • Stipulations of Ministry Circular on Covid-19 Measures to be taken at Construction Sites will be followed.	Included in construction costs	Contractor KOSKI/PIU Supervision Consultant
Labor Force	Workers Engaged by Third Parties and the Supply Chain	Adverse	Low	• KOSKI will prepare a Subcontractor Management Plan before involvement of contractors and ensure its implementation; • Contractors will be reputable and legitimate enterprises and have an appropriate ESMS that will allow them to operate in a manner consistent with the labor conditions requirements; • KOSKI will monitor its primary supply chain for safety issues related to supply chain workers, and where necessary KOSKI will introduce procedures and mitigation measures to ensure that suppliers are taking steps to prevent or to correct life-threatening situations; • The performance of subcontractors will be monitored such that human rights policy and labor rights of all workers are exercised properly and non-compliance measures will be included in their contracts; and • The workers of subcontractors will have access to the overall grievance redress mechanism to be established for the Project.	Included in construction costs	Contractor KOSKI/PIU Supervision Consultant

Issue	Potential Impact	Type of Impact	Impact Significance Before Mitigation	Mitigation Measures	Cost	Responsible Party
Occupational Health and Safety (OHS)	Workers' exposure to work-related occupational health and safety risks	Adverse	High	• KOSKI will ensure that contractor will prepare and implement a Project and site-specific OHS Management Plan based on construction site OHS risk assessment and that will cover measures to address COVID-19 and/or any other pandemic/communicable disease risk, which will be in line with the WBG EHS Guidelines (both general and sector specific). The OHS Management Plan will be prepared by the Contractor 30 days prior to commencement of the works; • KOSKI will ensure that the contractor will prepare and implement an Emergency Preparedness and Response Plan based on construction site OHS risk assessment and covering also the issues about the contagious diseases as well as COVID-19 pandemic; • Before the construction works start, a Risk Assessment study will be implemented for all works to be carried out. Relevant procedures and plans (including "Emergency Plans") will be put in place. Both the Risk assessment and Emergency Response Plans will take into consideration the COVID-19 risks and other communicable disease risks, as relevant; • Guidance, directives and recommendations of Ministry of Health, Ministry of Family, Labor and Social Services, World Health Organization and the WB shall be followed and all relevant necessary measures shall be taken, both for OHS of employees and for workplaces, in case of an outbreak of any other pandemic/communicable disease including COVID-19; • OHS training and toolbox talks will be provided to the employees including the code of conduct indicating the possible risks regarding the work site and works to be carried out. These will include regular training of workers in COVID-19 symptoms, how to be protected and what to do when symptoms appear; • Both trainings and incidents (fatalities, lost time incidents, any significant events including spills, fire, outbreak of pandemic or communicable diseases, social unrest, etc.) will be recorded and evaluation activities will be carried out after the trainings; • Appropriate signposting of the sites will be provided and then workers will be informed of key rules and regulations to follow; • The Contractor will assign full-time personnel with relevant certification and experience in charge of OHS and s/he shall monitor the site implementations; • Relevant procedures such as confined space entry procedure, working at height procedure, etc. will be prepared in accordance with applicable national requirements and internationally accepted standards; • In order to minimize the risks and hazards that may arise (e.g., natural disasters, accidents, equipment malfunctions etc.) on human health and safety, safe working environments in the working sites will be established and physical hazards and risks will be prevented; • The relevant plans and procedures required by Turkish legislation will be prepared and the Contractor will comply with these OHS measures and practices; • Employees will be informed about the hazards that may caused by their work and thus a safer work environment will be created; • The Contractor will formally agree that all work will be carried out in a safe and disciplined manner and is designed to minimize risks on neighboring residents and environment; • The Contractor will ensure a safe working environment for the workers and supply appropriate personal protective equipment (PPE) in line with international best practice and Turkish Legislation including the health and safety measures related to COVID-19 provided by the Ministry of Health and Ministry of Family, Labor and Social Services (always hardhats, as needed masks and safety glasses, harnesses and safety boots, etc.), • The Contractor formally agrees that all work will be carried out in a safe and disciplined manner and is designed to minimize risks on neighbouring residents and environment; • OHS training will be given to employees by OHS Experts before the construction starts. In this context, a training program will be prepared, training records will be kept and evaluation activities will be carried out after the trainings; • Personal protective equipment (PPE) will be provided to all employees and necessary training will be given for their use; • Work areas will be equipped with warning signs in accordance with the quality and potential risks of the work to be performed in that area; • Smoking in areas where there is a risk of fire will be prohibited. All employees must have knowledge of what to do in the event of a fire; • Project staff will include first aid trained personnel. In case of emergency where an intervention is required, personnel will be sent to the nearest health center by appropriate means; • The Contractor will apply the sufficiency of the technical requirement of the machinery, equipment, and tools to be used in the activities; • Moving parts of machinery and equipment will be equipped with appropriate protective systems (e.g., metal shields etc.), minimizing the risk of injury or damage to the person using the machine or equipment; • Personal factors that may create and control risks during activities (e.g., long hair, jewelry and accessory use, clothing etc.) will be removed from the site by the rules brought by the contractor. Project staff will be informed about the relevant regulations within the scope of the training program; • Drivers and operators will be trained to comply with traffic rules and to control the vehicles and equipment they use against risks and hazards originating from vehicle traffic. Required traffic signs will be placed in the Project Site and its surroundings. Machine operators and other employees will be informed and alerted about the relevant signs; • Areas where excavation work is to be carried out will not be accessible other than the authorized personnel. The loading and unloading activities shall be carried out together with the persons to oversee the personnel to carry out the activity; • Access of the visitors, local people and animals to the area will be controlled; • Since the works will be performed at areas close to the public, public access to these areas shall be restricted by any means. If a trench need to be left open during night time, sufficient illumination of the area shall be ensured by the Contractor and necessary signs shall be placed and the area shall be enclosed with barriers; • An adequate OHS organizational structure will be defined, as defined by the local legislation and for 100 workers the necessary number of OHS officers should be assigned to be at the site during working hours. WWTPs are classified as "highly hazardous" workplaces according to Communiqué on Occupational Health and Safety Hazard Classes List and therefore, at least 67 hour/month supervision is mandatory for 100 workers. The contractor will assign at least one A-Class OHS Expert to the Project and the expert(s) will be supervised by KOSKI's OHS Experts; • A risk assessment will be done before commencement of the work and personnel will be trained regarding the risks; • OHS Personnel will inspect the site daily and if any additional risk is observed relevant plans and training will be renewed; • In case of any significant environmental or social incident (e.g., lost time incidents, fatalities, environmental spills etc.), the Contractor will notify KOSKI about the occurrence of the incident in 3 business days and KOSKI will immediately inform ILBANK and the World Bank. A detailed incident investigation report, including the root-cause analysis, precautions and compensation measures taken will be submitted to KOSKI, ILBANK and the WB in 30 business days after the incident; • Equipment that meets international standards in terms of performance and safety will be used; • Relevant procedures such as Confined Space Entry Procedure, Working at Height Procedure, etc. will be prepared in accordance with applicable national requirements and internationally accepted standards.	Included in construction costs	Contractor KOSKI/PIU Supervision Consultant

Table VI.2 Operation Phase Impact Mitigation Plan for the Operation Phase of the Project

Issue	Potential Impact	Type of Impact	Impact Significance Before Mitigation	Mitigation Measures	Cost	Responsible Party
Physical Environment						
Air Quality	Odorous gas emission	Adverse	Medium	KOSKI will prepare and implement an Odor Management Plan that is in line with the WB OP 4.01 and WBG General EHS Guidelines (both general and sector specific) and the employees will be trained on the plan. The first level measures: • Prevention of wastewater influents which exceed treatment plant capacity; • Reduction of solid waste and activated sludge amounts; • Increasing disposal frequency of screenings; • Proper and timely disposal of sludge in order to prevent flies and odor; • Increasing aeration rate in biological treatment process; • Addition of lime to activated sludge; • Keeping water level under control in order to prevent turbulence as a result of instant decrease of water. If odor nuisance prevails after the proper implementation of first level measures, the second level measures shall be taken. These are: • Addition of oxidizing material (such as hydrogen peroxide, sodium hypochlorite) (oxidizing materials, prevent generation of especially hydrogen sulfide). Addition of sodium hydroxide can also be considered. Sodium hydroxide will dissolve hydrogen sulphur gas in water. • Preventing anaerobic bacteria with control of pH levels or disinfection. • Oxidizing odorous compounds by the help of chemicals. • Planting trees in the Project Area and the buffer zone around the treatment plant for the prevention of odor distribution. If nuisance still prevails after implementation of first and second measures, the final measure shall be determined as: • Enclosing the Preliminary Treatment Units and Bio-P Pool As a general measure: an operating grievance redress mechanism will be established to manage odor related grievances.	Included in the operation costs	KOSKI/PIU
Soils, and Contaminated Land	Soil contamination	Adverse	Low	• The staff will be trained in proper management of liquid waste to avoid soil contamination during maintenance and repair works; • The amount of soil that could be subject to contamination will be minimized by ensuring the use of only the designated worksites and routes for the machinery and equipment and field personnel during maintenance and repair works; • Machinery and equipment will be checked regularly for leaking oil and fuel; • In the event of an accident, leak or spill, necessary repair works and/or replacement of parts will be performed promptly in accordance with the standards; • Provisions of the Regulation on the Control of Soil Pollution and Sites Contaminated by Point Sources will be complied with; and • After dewatering, the sludge cake will be transferred to a covered and appropriate container through the conveyor belt. After that, the excess sludge will be sent to Konya Solid Waste Landfill Facility operated by Konya Metropolitan Municipality and disposed of in accordance with the provisions of Urban Wastewater Treatment Regulation and other relevant legislation. Since the treatment sludge originates from domestic wastewater, it is suitable to be sent to the landfill facility; therefore, no analysis will be required before its transportation. The sludge will be transported by competent and licensed firms to the landfill and it will be stored in the landfill	Included in the operation costs	KOSKI/PIU
Water Resources	Change in overall physicochemical water quality of Kocadere River	Positive	-	• The effluent water quality of the WWTP will be consistent with the limit values stipulated in the Urban Wastewater Treatment Regulation, at minimum. • If the water lines will be periodically flushed to remove accumulated sediments or other impurities that have accumulated in the pipe, for the discharge of this water, the following shall be considered: o Discharge the flush water into the municipal sewerage system with adequate capacity; o Discharge the flush water into a separate storm sewer system with storm water management measures such as a detention pond, where solids can settle and residual chlorine consumed before the water is discharged; o Minimize erosion during flushing, for example by avoiding discharge areas that are susceptible to erosion and spreading the flow to reduce flow velocities.	Included in the operation costs	KOSKI/PIU
Water Resources	Wastewater generation	Adverse	Low	• KOSKI will prepare and implement a Water Resources and Effluent Management Plan that is in line with WB OP 4.01 and WBG EHS Guidelines (both general and sector specific) and the employees will be trained on the plan prior to the operation phase to ensure that: • The limited amount of domestic wastewater generated at the WWTP will be sent to the WWTP's own inlet.. The inlet structure of the plant should allow wastewater to enter the WWTP or bypass wastewater overflow caused by rainy weather, directly to the receiving water body. In addition, for the impact of failure to operation, the wastewater will be bypassed in case of excessive loads as regarding Community Health, Safety and Security Recycle filter backwash into the process if possible; • KOSKI will aim to have no direct bypasses of the treatment system; • The effluent water quality of the WWTP will be consistent with Water Pollution Control Regulation and Urban Wastewater Treatment Regulation requirements or internationally accepted standards; • System overflows will be prevented as much as possible by using level-meters; • Since the water system leaks and loss of pressure is rather significant for the operation phase of WWTP, o It should be ensured that the construction meets applicable standards and industry practices; o Regular inspection and maintenance should be conducted; o A leak detection and repair program should be implemented (including records of past leaks and unaccounted-for water to identify potential problem areas); o Consider replacing mains with a history of leaks or with a greater risk of leaks because of their location, pressure stresses, and other risk factors.	Included in the operation costs	KOSKI/PIU

Issue	Potential Impact	Type of Impact	Impact Significance Before Mitigation	Mitigation Measures	Cost	Responsible Party
	Changes in surface water and groundwater quality	Adverse	Low	• Machinery and equipment will be checked regularly for leaking oil and fuel to prevent pollution of near surface water and groundwater resources during operation and maintenance activities.	Included in the operation costs	KOSKI/PIU
Noise	Increase in noise levels	Adverse	Low	• During the procurement of equipment and machinery, sound levels given in the technical specifications/data sheet will be taken into consideration; • Relevant provisions and limit values of Regulation on the Environmental Noise Emissions Caused by Equipment Used Outdoors and Regulation on the Assessment and Management of Environmental Noise and World Bank Group's General EHS Guidelines and Sectorial Guidelines will be complied with during the operation phase; and • Equipment generating noise during the operation of the plant will be located in isolated closed buildings and some of them will be submerged in wastewater, if necessary.	Included in the operation costs	KOSKI/PIU
Resources and Waste	Waste Generation	Adverse	Low	• The Waste Management Plan will be updated by KOSKI to reflect the operation phase conditions before commencement of the operation phase. Relevant measures defined for the construction phase also apply to operation phase. The updated plan will provide procedures for the management of waste other than sludge; • Waste to be generated within the scope of the Project will be managed in accordance with the waste management hierarchy; • Waste recycling, transport, and disposal will be carried out by means of licensed companies and/or Derebucak Municipality; • Incineration or burying of waste by any means on site and/or dumping of waste along nearby roadsor water resources will be prohibited.; • All kinds of implementations that may threaten personnel or public health will be avoided in all activities involving collection, temporary storage, transport and disposal of waste throughout the Project; • Waste to be temporarily stored on site will be delivered to licensed transport vehicles appropriate to the type of waste for disposal. Information related to the operations in this context will be recorded and the records will be kept in the administrative building; • Waste will be separated (i.e., hazardous / non-hazardous, recyclable / non-recyclable) and stored in designated temporary storage areas; • Impermeability will be provided on the floors of the Temporary Storage Area and a suitable drainage system will be installed. Spill kits will be available at the Temporary Storage Area and necessary precautions will be taken against possible fires such as provision of appropriate firefighting equipment; and • Temporary storage of waste will be labelled with an indication of hazardous or non-hazardous inscription, waste code, stored waste amount and storage date and classification according to their properties. The reaction of wastes with each other will be prevented by the measures taken in the Temporary Storage Area. • Hazardous wastes will be stored in designated impermeable waste storage areas.	Included in the operation costs	KOSKI/PIU
Resources and Wastes	Sludge Generation	Adverse	Medium	• KOSKI will prepare and implement a Sludge Management Plan in line with WB OP 4.01 and WBG EHS Guidelines (both general and sector specific) and the employees will be trained on the plan; • Sludge Management Plan will determine more sustainable alternatives than landfilling. If there is no option other than final disposal, the procedure to be followed for disposal should be defined within the scope of the management plan; • Final sludge will be stored in special containers designated for this purpose only; and • Dried sludge will be sent to Konya Solid Waste Landfill Facility with licensed trucks.	Included in the operation costs	KOSKI/PIU
Resources and Waste	Resource Consumption	Adverse	Low	• Starting from the operation phase, KOSKI will seek assistance from ILBANK and/or technical consultants to reduce energy consumption and related costs through optimization of the following: ○ Energy conservation ○ Process efficiency ○ Aeration devices and oxygen transfer ○ Process flow configuration ○ Biogas quantities ○ Biogas utilization ○ Time of day consumption of energy	Included in the operation costs	KOSKI/PIU
Resources and Waste	Handling of chlorine	Adverse	Medium	• Install alarm and safety systems, including automatic shutoff valves, that are automatically activated when a chlorine release is detected; • Install containment and scrubber systems to capture and neutralize chlorine should a leak occur; • Use corrosion-resistant piping, valves, metering equipment, and any other equipment coming in contact with gaseous or liquid chlorine, and keep this equipment free from contaminants, including oil and grease; • Store chlorine away from all sources of organic chemicals, and protect from sunlight, moisture, and high temperatures; and • Store sodium hypochlorite in cool, dry, and dark conditions for no more than one month, and use equipment constructed of corrosion-resistant materials. • Store calcium hypochlorite away from any organic materials and protect from moisture; fully empty or re-seal shipping containers to exclude moisture. Calcium hypochlorite can be stored for up to one year; • Isolate ammonia storage and feed areas from chlorine and hypochlorite storage and feed areas; • Minimize the amount of chlorination chemicals stored on site while maintaining a sufficient inventory to cover intermittent disruptions in supply; • Develop and implement a prevention program that includes identification of potential hazards, written operating procedures, training, maintenance, and accident investigation procedures; • Develop and implement a plan for responding to accidental releases.	Included in the operation costs	KOSKI/PIU
Climate Change	Greenhouse gas emissions	Adverse	Low	• Optimal utilization of the available equipment and materials during maintenance activities in such a way that reduces greenhouse gas emissions; • Regular maintenance of vehicles and equipment will be applied; • Energy uses associated with vehicles and equipment will be monitored; and • Training will be performed for project personnel regarding energy efficiency.	Included in operation costs	KOSKI/PIU
Socio-Economic Environment						

Issue	Potential Impact	Type of Impact	Impact Significance Before Mitigation	Mitigation Measures	Cost	Responsible Party
Socio-economic Environment	Employment and Procurement Opportunities	Positive	-	To avoid negative impacts: • KOSKI will take all necessary actions and measures for labor and employment to be in compliance with relevant Turkish legislation and international standards. KOSKI will aim at employing local workers to the extent possible, in order to increase the Project's local benefits. The recruitment processes will be transparent, public and non-discriminatory, providing equal opportunities with respect to ethnicity, religion, language, gender and sexuality.	Included in the operation costs	KOSKI/PIU
Socio-economic Environment	Infrastructure Damage	Adverse	Low	• Sludge and waste disposal during the operation phase of the Project will be performed by contractors. Therefore, any damage to infrastructure will be repaired or compensated by contractors promptly in accordance with the responsible authority, such as KGM or KMM. KOSKI will closely monitor such issues.	Included in the operation costs	KOSKI/PIU
Community Health, Safety and Security	Community's exposure to disease due to improper handling of wastes, including sludge	Adverse	Low	• Generated waste will be managed as described in the Waste Management Plan. Uncontrolled disposal of waste is forbidden and all waste will be sent to final disposal and/or recycle by licensed companies; and • Generated sludge will be collected in impermeable containers and will be sent to Konya Solid Waste Landfill Facility in accordance with the Sludge Management Plan. Uncontrolled sludge disposal will be forbidden.	Included in the operation costs	KOSKI/PIU
Community Health, Safety and Security	Increased traffic	Adverse	Low	• Traffic Management Plan developed by the contractor for the construction phase will be updated by KOSKI before the commencement of operation phase to describe mitigation strategies for the management of operation phase impacts.	Included in the operation costs	KOSKI/PIU
Community Health, Safety and Security	Failure of operation	Adverse	High	• In major shutdowns of the plant or biological treatment units that require longer times, nutrition levels will be maintained at the biological treatment units, aeration will be stopped after one day for aerobic processes. Recirculation will be turned down for anaerobic processes, and pH regulation and nutrient dosing will be conducted only when the gas production is less than 10% of the original gas production; • During the longer shutdowns or failures, KOSKI will inform Provincial Directorate of Environment, Urbanization and Climate Change regarding the situation; • During excessive loads that the WWTP cannot handle, the wastewater will be bypassed; and • In case of direct discharge of untreated wastewater to Kocadere River due to the failures and/or shutdowns, the plant operator will immediately inform Sarayönü's mukhtar to request farmers, if there is any, to halt irrigation water drawing from Kocadere River.	Included in the operation costs	KOSKI/PIU
Community Health, Safety and Security	Community tresspassing	Adverse	Low	• Security Management Plan that is in line with WB OP 4.01 and WBG EHS Guidelines (both general and sector specific) will be developed by KOSKI or security services provider before the commencement of operation phase. KOSKI will ensure that the plan is actively implemented; • Persons and/or organizations with the necessary permits will be assigned to ensure the security of the project area (e.g., private security companies/officials). These persons and/or organizations shall regularly monitor the facility and its surroundings. The special security applications and officials' authorities within the scope of the project shall comply with the provisions of the Regulation on the Implementation of the Law on Private Security Services and the Law on Private Security Services; • Restrict access to waste management facilities by implementing security procedures, such as perimeter fencing of adequate height and suitable material, with lockable site access gate; security cameras at key access points, and security alarms fitted to buildings and storage areas; and use of a site visitor register; and • Sufficient lighting of the WWTP will be ensured.	Included in the operation costs	KOSKI/PIU
Community Health, Safety and Security	Gender Based Violence (GBV), Sexual Exploitation Abuse / Sexual Harassment (SEA/SH)	Adverse	Medium	• Contractor Code of Conduct developed, incorporated into workers' contracts, and training and socialization on it provided to workers • Mandatory and regular training for workers on required lawful conduct in local community and legal consequences for failure to comply with laws; • Commitment / policy to cooperate with law enforcement agencies investigating perpetrators of gender-based violence; • Creation of partnership with local civil society organization to report workers' misconduct and complaints/reports on gender-based violence or harassment through the GM; • Provision of opportunities for workers to regularly return to their families; • Provision of opportunities for workers to take advantage of entertainment opportunities away from rural local communities	Included in construction costs	KOSKI/PIU
Landscape and Visual (Aesthetics)	Existence of the WWTP	Adverse	Low	• It is recommended KOSKI to plant trees at the borders of the WWTP; and • KOSKI should paint the visible buildings in colours that suit to the background.	Included in the operation costs	KOSKI/PIU
Labor and Working Conditions						
Labor Force	Working Conditions	Adverse	Low	• Workers will be provided with documented information that is clear and understandable, regarding their rights under national labor law; including collective agreements, their rights related to hours of work, wages, overtime, compensation, and benefits as of startup of working relationship and when any material changes occur; • Workers will be issued written contracts detailing job description, working hours, wages, rights and duties, code of conduct etc.; • Workers will not be discouraged from electing worker representatives, forming or joining workers' organizations of their choosing, or from bargaining collectively, and will not discriminate or retaliate against workers who participate, or seek to participate, in such organizations and collective bargaining; • Particular concern will be paid to principles of non-discrimination and equal opportunity. In this respect, employment decisions (i.e.,, recruitment and hiring, compensation, wages and benefits, working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices) will not be made on the basis of personal characteristics unrelated to job requirements. Wages, work hours and other benefits will be per the Turkish Labor Law; • A grievance redress mechanism for workers will be provided to raise workplace concerns. The workers will be informed about the grievance redress mechanism at the time of recruitment and make it easily accessible to them; • A Code of Conduct will be prepared by KOSKI and implemented for all employees; and • If an employee faces Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH) issue s/he can either apply to a higher level superior or directly go to police station, as stipulated in the national referral system of the country for dealing such cases. The content and procedures of the project's GRM will also have a reporting line on such cases in regard to SEA/SH issues and will be handled under full confidentiality. The GRM focal point receiving the SEA/SH related grievance should direct this to national referral systems immediately and record that this has been directed, as set out in the GRM Procedure of ILBANK. All details of the complainant of the sensitive case will be kept strictly confidential.	Included in the operation costs	KOSKI/PIU

Issue	Potential Impact	Type of Impact	Impact Significance Before Mitigation	Mitigation Measures	Cost	Responsible Party
Labor Force	Protecting the Workforce	Adverse	Low	• Employment of child labor and forced labor will be prohibited. • KOSKI will be required to have age verification system, ensuring no one under 18 years old is involved in project activities. • Stipulations of Ministry Circular on Covid-19 Measures to be taken at Construction Sites will be followed.	Included in the operation costs	KOSKI/PIU
Labor Force	Workers Engaged by Third Parties and the Supply Chain	Adverse	Low	• If any, Contractors (food, security, maintenance, etc.) will be reputable and legitimate enterprises and have an appropriate ESMS that will allow them to operate in a manner consistent with the labor conditions requirements; • The performance of Contractors will be monitored such that human rights policy and labor rights of all workers are exercised properly, and non-compliance measures will be included in their contracts; and • The workers of Contractors will have access to the overall grievance redress mechanism to be established for the Project.	Included in the operation costs	KOSKI/PIU
Occupational Health and Safety	Workers' exposure to work-related occupational health and safety risks	Adverse	High	• KOSKI will comply with the Occupational Health and Safety Management Plan (including relevant procedures) based on OHS risk assessment and adherence to all requirements of the Plan will be ensured; • The whole area will be fenced; the access of local people and wildlife will be controlled and encroachment will be prevented. The entry of personnel and third parties into the facility will be carried out in a controlled manner; • Private security officers will be hired to provide the security of the working area. The private security applications within the scope of the project and the competent authorities shall be in compliance with the provisions of the Law on Private Security Services and the Implementation of the Law on Private Security Services. The employment of security personnel will be guided by the principle of proportionality and GIIP, and applicable laws, in relation to hiring, equipping, and monitoring of security personnel. No sanction of use of force by direct or contracted workers in providing security except for preventative and defensive purposes; • Personal Protective Equipment will be provided for the workers according to the nature of the work to be performed. The necessary training will be carried out for their use; • Smoking will be prohibited where the risk of fire is high. All the workers will be informed about the action plan in a case of fire; • All equipment will be operated in proper working order; • Procedures approved by the KOSKI in the maintenance and repair activities and the requirements of the technical specifications of the supplier companies will be complied with; • The necessary health and safety signs and traffic signs will be placed around the project site. Employees will be informed and alerted about the subject matter markings; • Trainings will be given to employees and operational and maintenance personnel within the scope of the Regulation on Procedures and Principles of OHS Trainings and measurement and evaluation activities will be carried out after the trainings; • Equipment that meets international standards in terms of performance and safety will be used at the plant; • After the plant is completed, necessary electrical tests will be carried out to check that the electrical connections and other related equipment are made properly before the plant is taken into operation; • Upon completion of the WWTP, KOSKI will prepare a new EPR Plan for a possible accident and emergency and emergency teams will be established, and drills and training will be carried out in line with the emergency scenarios; • Automatic cleaning screens will be used instead of manually cleaning screens to prevent entrance of cleaning workers into the channels; • Appropriate ventilation systems will be installed to avoid accumulation of excess gases in enclosed processing areas for protecting employee health and preventing explosion risk; • Air quality in work areas will be monitored continuously and also periodically for hazardous conditions; • Railings will be installed around all tanks and pits; • Personal flotation device will be used when working near waterways; • Fall protection equipment will be used when working at height; • Work areas will be maintained to minimize slipping and tripping hazards; • Fire and explosion prevention measures will be implemented; • When installing or repairing mains adjacent to roadways, implement procedures and traffic controls, such as o Establishment of work zones so as to separate workers from traffic and from equipment as much as possible o Reduction of allowed vehicle speeds in work zones; o Use of high-visibility safety apparel for workers in the vicinity of traffic o For night work, provision of proper illumination for the work space, while controlling glare so as not to blind workers and passing motorists • Escape plans from areas where there might be a chlorine or ammonia emission will be prepared; • KOSKI will prepare a Confined Space Entry Procedure that is consistent with applicable national requirements and internationally accepted standards; • KOSKI will conduct training for operators who work with chemicals regarding safe handling practices and emergency response procedures; • KOSKI will distribute sufficient number of appropriate personal protective equipment (including, for example, self-contained breathing apparatus, personal gas detection equipment regarding chemical exposure and hazardous atmospheres, rubber gloves and waterproof shoes for field workers) and training on proper use and maintenance; • KOSKI will Install safety showers and eye wash stations near the chlorine and ammonia equipment and other areas where hazardous chemicals are stored or used; and also provide areas for all workers to shower and change clothes before leaving works; • KOSKI will advise individuals with asthma, diabetes, or suppressed immune systems not to work at the treatment plant due to greater risk of infection; • KOSKI will ensure the compliance of all the activities within the treatment plant with national standards indicated in Water Pollution Control Regulation, Urban Wastewater Treatment Regulation and WBG General EHS Guidelines; • Both training and incidents (fatalities, lost time incidents, any significant events including spills, fire, outbreak of pandemic or communicable diseases, social unrest, etc.) will be recorded; and • In case of any significant environmental or social incident (e.g., lost time incidents, fatalities, environmental spills etc.) KOSKI will immediately inform ILBANK and the WB. A detailed incident investigation report, including the root-cause analysis, precautions and compensation measures taken will be submitted to ILBANK and the WB within 30 business days after the incident.	Included in the operation costs	KOSKI/PIU

VI.2. Monitoring Plan

In order to ensure the continuity and effectiveness of the implementation of mitigation management strategies defined, monitoring plays a key role. The main objective of the Monitoring Plan is to monitor the implementation of the prescribed risk prevention and mitigation measures and requirements of this ESMP.

Information collected with the monitoring can be used to improve management plans during all phases of the Project. While impact assessment attempts to encompass all relevant potential impacts to identify their significance and include appropriate responses for these impacts, unanticipated impacts may still arise, which can be managed or mitigated before they become a problem using the information obtained through monitoring. Therefore, monitoring will ensure the successful implementation of the mitigation/management plans and optimize environmental protection through good practice at each and every phase of the Project.

Consequently, monitoring studies will provide implementation of impact mitigation measures and optimization of environmental protection by using best practices during all phases of the Project.

Some of the monitoring parameters are determined in the scope of engineering design studies. Monitoring studies will ensure the accordance with the relevant legislation, contract necessities and implementation of impact mitigation measures.

Monitoring activities are submitted in tabular form in Table VI.3and Table VI.4 for land preparation and construction and operation phases, respectively.

Table VI.3 Monitoring Plan for the Land Preparation and Construction Phase of the Project

CONSTRUCTION PHASE									
Issue	**Monitoring Location**	**Timing/Frequency of Monitoring**	**Parameters Monitored**	**Monitoring Method**	**Target/Treshold Values**	**Legal Requirements for Monitoring**	**Key Performance Indicators**	**Cost**	**Responsible Party**
Physical Environment									
Soil contamination	At WWTP site	Prior to the initialization of construction phase	Soil quality, including, pH, heavy metals, phosphorus, nitrogen, Na, Ca, salts, PAHs	Sampling and analysis by an authorized environmental laboratory	No soil contamination resulting from Project Activities	Regulation on the Control of Soil Pollution and Sites Contaminated by the Point Source WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Number of spill response Soil analysis results Contaminated soil amount Contaminated soil treatment/disposal methodology Stripped/stored/ reused topsoil amount Environmental spill/leak incident records/report Excavation amount Reused excavation amount Amount of excavated material that is sent to final disposal ESMR findings	215 € for one analysis 1000€ for one day site visit personnel expenses	Contractor KOSKI/PIU Supervision Consultant
	Entire Project Area	Monthly starting from the construction phase	Number of oil/fuel and chemical leakages/spills	Environmental incident registry					
		After each incident	Amount of contaminated soil						
		Daily	Soil stripping, excavation and backfilling activities	Visual observation	No loss of topsoil				
Storage and usage of chemicals	Entire Project site and chemical storage locations	Once a week starting from the initialization of construction phase	Conditions of the storage area Number of leaks, spills, etc.	Visual observation Site inspections Environmental incident registry	No chemical spill incident	Regulation on Safety Data Sheets Regarding Harmful Substances and Mixtures Regulation on the Preparing and Distributing Safety Data Sheets Regarding Dangerous Materials and Preparations WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Hazardous materials and chemicals inventory Number of reported leakages and spills Storage conditions of chemicals and hazardous material Floors of the chemicals and hazardous material listed in inventory Material Safety Data Sheets (MSDSs) of all chemicals listed in the inventory Written training records covering the chemicals and hazardous materials management issues Labels of the hazardous materials	Included in construction cost	Contractor KOSKI/PIU Supervision Consultant

CONSTRUCTION PHASE									
Issue	**Monitoring Location**	**Timing/Frequency of Monitoring**	**Parameters Monitored**	**Monitoring Method**	**Target/Treshold Values**	**Legal Requirements for Monitoring**	**Key Performance Indicators**	**Cost**	**Responsible Party**
Storage and usage of excavation waste	Construction site and storage areas	Once a week starting from the initialization of construction phase	Amount of refilled, stored, and disposed of excavation materials Amount of stripped and reused topsoil by indicating reuse locations Storage conditions of topsoil (humidity and pile height)	Visual observation Records	Proper management of excavation waste No loss of topsoil	Regulation of the Control of Excavation Soil and Construction and Demolition Waste WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Excavation amount Reused excavation amount Amount of excavated material that is sent to final disposal and disposal mechanism ESMR findings	Included in construction cost	Contractor KOSKI/PIU Supervision Consultant
Air Quality	Health Center located 853m northeast of the plant site (Coordinates: UTMWGS84X: 367521,0805; UTMWGS84Y: 4139242,989)	Monthly starting from the initialization of construction phase Upon grievance	Settled dust, PM_{10} and $PM_{2.5}$	Sampling/analysis via an authorized environmental laboratory Visually, on the basis of irritation of the respiratory system	Below the regulatory limit values defined in Industrial Air Pollution Control Regulation No air quality related grievance received	Regulation on the Assessment and Management of Air Quality Industrial Air Pollution Control Regulation WBG General EHS Guidelines WB OP 4.01	Visual observations ESMR Findings Air quality grievance records Air quality (PM_{10}/$PM_{2.5}$) measurement results	100 € for one measurement 1000€ for one day site visit personnel expenses	Contractor KOSKI/PIU Supervision Consultant
	Administration office of Contractor for the follow-up of records		SO_2 PM, NO_x						
	Administration office for the follow-up of records	Quarterly during construction phase	Maintenance and exhaust decal records of all machinery and equipment	Maintenance records	Below the regulatory limit values defined in Industrial Air Pollution Control Regulation		Exhaust emission decal follow-up		
Water Resources	At the upstream and downstream of Kocadere Creek At related water resources (wells, fountains, etc.)	In case of a major spill In case of a leak/spill reaching water bodies	Surface water / groundwater quality analysis and measurements that include spill-related pollutants including the parameters of pH, BOD_5, COD, TSS, TDS, TP, TKN, NO_3-N, NO_2-N, TN, Salinity, Cl, SAR, Cl, SO_4^{2-}, Electrical Conductivity, B, Cd, Cr, Fe, Pb, Ni, Zn, Total Coliform, Fecal Coliform, *E.coli*	Sampling and in situ / laboratory measurements via an authorized environmental laboratory Spill notices/correspondences to authorities in case of major spills	Prevention of water quality deterioration compared to current surface water and groundwater quality	Water Pollution Control Regulation Surface Water Quality Regulation Regulation on the Protection of Groundwater Against Pollution and Degradation WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Visual observations Amount of wastewater generated ESMR findings Laboratory analysis	340 € for one analysis 1000€ for one day site visit personnel expenses	Contractor KOSKI/PIU Supervision Consultant

CONSTRUCTION PHASE									
Issue	**Monitoring Location**	**Timing/Frequency of Monitoring**	**Parameters Monitored**	**Monitoring Method**	**Target/Treshold Values**	**Legal Requirements for Monitoring**	**Key Performance Indicators**	**Cost**	**Responsible Party**
Noise and Vibration	Health Center located 853m northeast of the plant site (Coordinates: UTMWGS84X: 367521,0805; UTMWGS84Y: 4139242,989)	Monthly starting from the initialization of construction phase Upon grievance	Noise levels Number of complaints	At least 24-hr noise measurements via an authorized environmental laboratory Grievance Registration	Not exceeding the limit values defined in Regulation on the Assessment and Management of Environmental Noise No noise related grievance received	Regulation on the Environmental Noise Control WBG General EHS Guidelines WB OP 4.01	Noise level measurement results Construction machinery and equipment maintenance log Noise grievance records ESMR Findings	85 € for one measurement 1000€ for one day site visit personnel expenses	Contractor KOSKI/PIU Supervision Consultant
Waste	Treatment plant site, storage areas, and administration office	Once a month starting from the initialization of the construction phase	Amount of waste generated per type including sludge	Visual observation Waste records Site inspections Disposal truck register Visual inspection regarding proper collection and temporary storage of waste and records kept regarding their coordinated recycle / disposal via licensed firms	Minimizing the amount of waste to be sent for disposal and implementing waste management hierarchy	Waste Management Regulation Zero Waste Regulation WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Waste segregation practices (amount of waste per type) Temporary waste storage records Waste Disposal Agreements and Records Waste Grievance Records ESMR Findings	Included in construction cost	Contractor KOSKI/PIU Supervision Consultant
Resources	Administration office	Quarterly during the construction phase Quarterly starting from the initialization of the construction phase	Types and amounts of materials/resources used Annual GHG emission contribution of the Project	Material/resource procurement / consumption records GHG emission estimation calculations	Use of recycled materials whenever possible Not exceeding 1,000 t CO_2 eq.	WB Safeguard Policies WB OP 4.01 WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation	Types and amounts of materials used Annual GHG emission contribution of the Project	Included in construction cost	Contractor KOSKI/PIU Supervision Consultant
Biological Environment									
Biological Environment	Project site and access road	Monthly starting from the commencement of the construction phase	Number of incidents with fauna mortality	Incident records	No incidents involving fauna species	WB Safeguard Policies WB OP 4.01 WB OP 4.04 WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation	Site Inspections ESMR Findings	Included in construction cost	Contractor KOSKI/PIU Supervision Consultant
Socio-Economic Environment									

CONSTRUCTION PHASE									
Issue	**Monitoring Location**	**Timing/Frequency of Monitoring**	**Parameters Monitored**	**Monitoring Method**	**Target/Treshold Values**	**Legal Requirements for Monitoring**	**Key Performance Indicators**	**Cost**	**Responsible Party**
Job Creation	Administration office	Quarterly during the construction phase	Number of employed persons from the local community	Employment records	Meeting 100% of the unskilled workforce need from the local population	Labor Law WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Information disclosure records Stakeholder engagement records Employee records Local employment/ procurement ratio	Included in construction cost	Contractor KOSKI/PIU Supervision Consultant
Infrastructure Damage	Administration office	Monthly during the construction phase	Number of and nature of cases and amount of compensation paid	Incident records Receipts of compensation payments	No infrastructure cases	Criminal Law WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Grievance Records Official correspondence ESMR Findings	Included in construction cost	Contractor KOSKI/PIU Supervision Consultant
Traffic	Administration office	Monthly during the construction phase	Number of grievances	Grievance records	A limited number of complaints are resolved adequately, quickly and to the satisfaction of the complainants.	Highway Traffic Law WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Number of reported traffic accidents Vehicle maintenance log Condition of traffic signs Training records Grievance records	Included in construction cost	Contractor KOSKI/PIU Supervision Consultant
			Number of road traffic accidents	Accident records	No accidents occurred				
			Number of drivers trained	Training records	100% of the drivers are trained				
Trespassing	Administration office	Weekly during the construction phase	Trespassing cases	Security reports Visitor logs	No Trespassing	Law on Private Security Services WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Active closed-circuit television (CCTV) system Security reports Visitor logs	Included in construction cost	Contractor KOSKI/PIU Supervision Consultant
		Daily during the construction phase	Condition of CCTV system	System checks					
External and Internal Grievances (Grievances from public and workers will be recorded separately)	Administration office	Upon grievances and events starting from the initialization of the Project	Number and nature of received grievances Number of open and closed grievances Average grievance response and closure time Identification of grievance channels	Grievance records (grievance log, received grievance forms, etc.)	Complaints resolved within the current service standards to ensure the general satisfaction of the complainant	WB Safeguard Policies WB OP 4.01 WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation	Grievance records Records of verbal or written complaints to the mukhtar ESMR findings Social security records	Included in construction cost	Contractor KOSKI/PIU Supervision Consultant

CONSTRUCTION PHASE									
Issue	**Monitoring Location**	**Timing/Frequency of Monitoring**	**Parameters Monitored**	**Monitoring Method**	**Target/Treshold Values**	**Legal Requirements for Monitoring**	**Key Performance Indicators**	**Cost**	**Responsible Party**
			Number of complaints related to project staff or security personnel	Grievance records Conflicts with security personnel and workers of the Project	A limited number of grievances, resolved adequately, fast and to the satisfaction of the complainants.	Law on Private Security Services WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Security reports Grievance records CCTV system	Included in construction cost	Contractor KOSKI/PIU Supervision Consultant
			Number of grievances	Grievance records Conflicts with security personnel and workers of the Project	A limited number of grievances, resolved adequately, fast and to the satisfaction of the complainants	Law on Private Security Services WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Security reports Grievance records CCTV system	Included in construction cost	Contractor KOSKI/PIU Supervision Consultant
Community Health, Safety and Security	Project area	Daily basis Upon grievance	Health and safety signs and traffic signs placed in appropriate locations	Visual observation Site inspection	All cases that would cause health and safety problems to be prevented	Regulations on Traffic Signs WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Incident records Condition of traffic signs Grievance records	Included in construction cost	Contractor KOSKI/PIU Supervision Consultant
Chance Finds	On and around the working location	Daily basis starting from the commencement of the construction phase	Number of chance finds	Visual observation Official notification to authorities	No adverse impact on cultural heritage	Law on the Conservation of Cultural and Natural Properties Chance Finds Procedure WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01 WB OP 4.11	Visual observation Official notification to authorities Number of chance finds ESMR Findings	Included in construction cost	Contractor KOSKI/PIU Supervision Consultant
Labor and Working Conditions									

CONSTRUCTION PHASE									
Issue	**Monitoring Location**	**Timing/Frequency of Monitoring**	**Parameters Monitored**	**Monitoring Method**	**Target/Treshold Values**	**Legal Requirements for Monitoring**	**Key Performance Indicators**	**Cost**	**Responsible Party**
Working Conditions	Administration office	Weekly during construction phase	Workers' grievances	Grievance records	Managing provisions given in ESMP properly.	WB Safeguard Policies WB OP 4.01 WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation	Workers' Grievance Records Presence of union or workers' representative ESMR Findings Labor/social security records	Included in construction cost	Contractor KOSKI/PIU Supervision Consultant
Occupational Health and Safety	Construction site	Daily basis starting from the initialization of construction phase	Number of incidents	Incident records	No OHS incidents occurred	Occupational Health and Safety Law WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Incident Records Number of nonconformities Training records, training materials (participant list, presentation, etc.) Work Permits ESMR Findings H&S reports H&S meetings Emergency drills OHS Implementations (internal & external audits) OHS Practices (Use of PPE, etc.)	Included in construction cost	Contractor KOSKI/PIU Supervision Consultant
			Incident investigation	Incident investigation records					
			Period of disease occurrence	Disease follow-up register	No infectious disease recorded				
		Monthly during the construction phase	Number of personnel who are infected with an infectious disease	Training records	No infectious disease occurred				
		Annually during the construction phase	Training requirements	Annual Environmental, Social Health, and Safety (ESHS) training plan	Every training defined in the Annual ESHS is completed				
		Quarterly during the construction phase	Number and subject of emergency drills	Drill records	Drills are conducted quarterly				
		Quarterly during the construction phase	Adequate OHS organizational structure	Site implementation Site inspection	There will always be an adequate OHS organizational structure on site.				
Protecting the Workforce	Administration office	Before each recruitment	Age of candidate employee	Age verification with National ID	Prohibition of child labor	Labor Law WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	No child and forced labor	Included in construction cost	Contractor KOSKI/PIU Supervision Consultant
Workers Engaged by Third Parties and the Supply Chain	Administration office	Before each agreement made	Contractor and sub-contractor agreements	Contract reviews by ESHS expert(s)	No nonconformity is observed with the ESMP	WB Safeguard Policies WB OP 4.01 WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation	Contractor / Sub-contractor Agreements Grievance Records ESMR Findings	Included in construction cost	Contractor KOSKI/PIU Supervision Consultant

CONSTRUCTION PHASE									
Issue	**Monitoring Location**	**Timing/Frequency of Monitoring**	**Parameters Monitored**	**Monitoring Method**	**Target/Treshold Values**	**Legal Requirements for Monitoring**	**Key Performance Indicators**	**Cost**	**Responsible Party**
Gender Based Violence (GBV), Sexual Exploitation Abuse / Sexual Harassment (SEA/SH)	Administration office	Quarterly	GBV and SEA/SH related incidents	Document review Review of grievance logs	No GBV related issues.	Labor Law WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Document review Review of grievance logs GBV incidents	Included in construction cost	Contractor KOSKI/PIU

Table VI.4 Monitoring Plan for the Operation Phase of the Project

OPERATION PHASE									
Issue	**Monitoring Location**	**Timing / Frequency of Monitoring**	**Parameters Monitored**	**Monitoring Method**	**Target/ threshold values**	**Legal Requirements for monitoring**	**Key Performance Indicators**	**Cost**	**Responsible Party**
Physical Environment									
Odor	Location of Grievance	Upon grievance	Odor level	Grievance records Measurement via an authorized environmental laboratory	A limited number of grievances, resolved adequately, fast and to the satisfaction of the complainants.	Regulation on Control of Odour-Creating Emissions WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Grievance records Odor measurement results ESMR findings	Included in operation cost	KOSKI/PIU
Soil Contamination	Entire site	Monthly during the operation phase After each incident Sampling and analysis upon grievance	Number of spills/leaks Amount of contaminated soil	Environmental incident reports	No soil contamination resulting from Project Activities	Regulation on the Control Soil Pollution and Sites Contaminated by the Point Source WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Number of spill response Contaminated soil amount Contaminated soil treatment/disposal methodology Environmental spill/leak incident records/report ESMR findings	Included in operation cost	KOSKI/PIU
Storage and usage of chemicals	Storage areas	Daily basis during the operation phase	Conditions of the chemical and disinfectant storage area Maintenance records of chemical dosing system Number of leaks, spills, etc.	Visual observation Chemical dosing system checks	No chemical spill incident	Regulation on Safety Data Sheets Regarding Harmful Substances and Mixtures Regulation on the Preparing and Distributing Safety Data Sheets Regarding Dangerous Materials and Preparations WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Hazardous materials and chemicals inventory Number of reported leakages and spills Storage conditions of chemicals and hazardous material Floors of the chemicals and hazardous material listed in inventory MSDSs of all chemicals listed in the inventory Written training records covering the chemicals and hazardous materials management issues Labels of the hazardous materials	Included in operation cost	KOSKI/PIU

OPERATION PHASE									
Issue	**Monitoring Location**	**Timing / Frequency of Monitoring**	**Parameters Monitored**	**Monitoring Method**	**Target/ threshold values**	**Legal Requirements for monitoring**	**Key Performance Indicators**	**Cost**	**Responsible Party**
Effluent water quality Sludge generation	Discharge location	Continuous monitoring for the detectable by automatic measurement devices Twice a month for the others (at minimum 24 samplings in a year)	pH, BOD_5, COD, TSS, TDS, TP, TKN, NO_3-N, NO_2-N, TN, Salinity, Cl, SAR, Cl, SO_4^{2-}, Electrical Conductivity, B, Cd, Cr, Fe, Pb, Ni, Zn, Fecal Coliforms	Automatic measurement for relevant parameters, and laboratory analysis for others via an authorized environmental laboratory	Effluent discharge compliant with the discharge standards	Urban Wastewater Treatment Regulation WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Bypass records Water quality measurements ESMR findings	Included in operation cost	KOSKI/PIU
Water quality of the receiving environment	Kocadere River (at least three locations – prior to discharge, discharge location, after discharge)	Quarterly during the operation phase	pH, BOD_5, COD, TSS, TDS, TP, TKN, NO_3-N, NO_2-N, TN, Salinity, Cl, SAR, Cl, SO_4^{2-}, Electrical Conductivity, B, Cd, Cr, Fe, Pb, Ni, Zn, Total Coliform, Fecal Coliform, *E.coli*	In-situ measurements and laboratory measurements and analysis via an authorized environmental laboratory Spill notices/correspondences to authorities in case of major spills	Prevention of water quality deterioration compared to current surface water and groundwater quality	Water Pollution Control Regulation Surface Water Quality Regulation Regulation on the Protection of Groundwater Against Pollution and Degradation WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Water quality measurements ESMR findings	170 € for one analysis 1000€ for one day site visit personnel expenses	KOSKI/PIU
Noise	Health Center located 853m northeast of the plant site (Coordinates: UTMWGS84X: 367521,0805; UTMWGS84Y: 4139242,989)	Once a year Upon grievance	Noise level	At least 24-hr noise measurements via an authorized environmental laboratory	Not exceeding the limit values defined in Regulation on the Assessment and Management of Environmental Noise No noise related grievance received	Regulation on the Environmental Noise Control WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Noise Measurement Results Grievance Records ESMR Findings	85 € for one measurement 1000€ for one day site visit personnel expenses	KOSKI/PIU

OPERATION PHASE									
Issue	**Monitoring Location**	**Timing / Frequency of Monitoring**	**Parameters Monitored**	**Monitoring Method**	**Target/ threshold values**	**Legal Requirements for monitoring**	**Key Performance Indicators**	**Cost**	**Responsible Party**
Wastes	Treatment plant site, storage areas, and administration office	Weekly basis starting from the initialization of the operation phase of the Project	Type and amount of waste generated including sludge	Visual observation Waste Records Site inspections Disposal truck register	Minimizing the amount of waste to be sent for disposal and implementing waste management hierarchy	Waste Management Regulation Zero Waste Regulation WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Proper waste segregation Proper temporary waste storage on site Waste disposal agreements and records Waste grievance records ESMR findings Amount of generated sludge Amount of sludge disposed Receipts given for each disposal	Included in operation cost	KOSKI/PIU
Resources	Administration office	Annually starting from the initialization of operation phase	Energy efficiency	Energy efficiency assessment	Reducing energy consumption by 10% by the end of the first year of operation phase	WB Safeguard Policies WB OP 4.01 WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation	Annual energy consumption Annual GHG contribution of the plant	Included in operation cost	KOSKI/PIU
			GHG emission contribution	GHG emission estimation calculations	Achieving neutral carbon emission levels within the Project's lifetime				
Socio-Economic Environment									
Local Employment	Administration office	Annually during the operation phase	Number of employed persons from the local community	Employment records	50% of the employees are composed of local people	Labor Law WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Information disclosure records Stakeholder engagement records Employee records Local employment/ procurement ratio	Included in operation cost	KOSKI/PIU
Infrastructure Damage	Administration office	Monthly during the operation phase	Number of cases and amount of compensation paid	Incident records Receipts of compensation payments	No infrastructure cases	Criminal Law WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Grievance records Official correspondences ESMR findings	Included in operation cost	KOSKI/PIU

OPERATION PHASE									
Issue	**Monitoring Location**	**Timing / Frequency of Monitoring**	**Parameters Monitored**	**Monitoring Method**	**Target/ threshold values**	**Legal Requirements for monitoring**	**Key Performance Indicators**	**Cost**	**Responsible Party**
Community Health, Safety and Security	Project area	Daily basis Upon grievance	Health and safety signs and traffic signs placed in appropriate locations	Visual observation Site inspection	All cases that would cause health and safety problems to be prevented	Regulations on Traffic Signs WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Incident records Condition of traffic signs Grievance records	Included in operation cost	KOSKI/PIU
Failure of operation	Administration office	Weekly during the operation phase	Number and duration of unit/plant shutdowns	Shutdown/failure reports	Managing provisions given in ESMP properly No operational failure occurred	Urban Wastewater Treatment Regulation WB Safeguard Policies WB OP 4.01 WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation	Number and duration of unit shutdowns/failure Number and duration of plant shutdowns/failure Amount of discharge during shutdown/failure Engagement records Correspondences	Included in operation cost	KOSKI/PIU
		During each shutdown/failure	Amount of discharge during shutdown/failure	Measurements					
		Before each shutdown/failure	Engagement records with Sarayönü's mukhtar on direct discharge due to shutdown/failure	Engagement records					
Trespassing	Administration office	Weekly during the operation phase	Community encroachment cases	Security reports Visitor logs	No trespassing	Law on Private Security Services WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Active CCTV system Security reports Visitor logs	Included in operation cost	KOSKI/PIU
		Daily during the operation phase	Condition of CCTV system	System checks					
External and Internal Grievances (Grievances from public and workers will be recorded separately)	Administration office	Upon grievance	Number of grievances	Grievance records Security reports	Complaints resolved within the current service standards to ensure the general satisfaction of the complainant	Law on Private Security Services WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Security reports Grievance records CCTV System	Included in operation cost	KOSKI/PIU
		Monthly during the operation phase	Number and nature of received grievances Number of open and closed grievances Average grievance response and closure time Identification of grievance channels	Grievance records (grievance log, received grievance forms, etc.)		WB Safeguard Policies WB OP 4.01 WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation	Grievance records Records of verbal or written complaints to the mukhtar ESMR Findings Labor/Social security records	Included in operation cost	KOSKI/PIU
Labor and Working Conditions									

OPERATION PHASE									
Issue	**Monitoring Location**	**Timing / Frequency of Monitoring**	**Parameters Monitored**	**Monitoring Method**	**Target/ threshold values**	**Legal Requirements for monitoring**	**Key Performance Indicators**	**Cost**	**Responsible Party**
Working Conditions	Administration office	Weekly during the operation phase	Workers' grievances	Grievance records (number and nature of grievances)	Managing provisions given in ESMP properly.	WB Safeguard Policies WB OP 4.01 WBG General EHS Guidelines	Workers' grievance records Presence of union or workers' representative ESMR Findings Labor/social security records	Included in operation cost	KOSKI/PIU
Occupational Health and Safety	Administration office	Daily basis starting from the initialization of the operation phase	Number of incidents	Incident records	No OHS incidents occurred	Occupational Health and Safety Law WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Incident records Number of nonconformities Training records Work permits ESMR findings H&S reports H&S meetings Emergency drills Grievances recorded	Included in operation cost	KOSKI/PIU
			Incident investigation	Incident investigation records					
			Period of disease occurrence	Disease follow-up register	No infectious disease is recorded				
		Monthly during the operation phase	Number of personnel who are infected with an infectious disease	Training records	No infectious disease is occurred				
		Annually during the operation phase	Training requirements	Annual ESHS training plan	Every training defined in the Annual ESHS is completed				
		Quarterly during the operation phase	Number and subject of emergency drills	Drill records	Drills are conducted quarterly				
Protecting the Workforce	Administration office	Before each recruitment	Age of candidate employee	Age verification with National ID	Prohibition of child labor	Labor Law WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	No child and forced labor	Included in operation cost	KOSKI/PIU
Workers Engaged by Third Parties and the Supply Chain	Administration office	Before each agreement made	Contractor agreements	Contract reviews by ESHS expert(s)	No nonconformity is observed with the ESMP	WB Safeguard Policies WB OP 4.01 WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation	Sub-contractor Agreements Grievance records ESMR findings	Included in operation cost	KOSKI/PIU
Gender Based Violence (GBV), Sexual Exploitation Abuse / Sexual Harassment (SEA/SH)	Administration office	Quarterly	GBV and SEA/SH related incidents	Document review Review of grievance logs	No GBV related issues.	Labor Law WBG General EHS Guidelines WBG EHS Guideline for Water and Sanitation WB OP 4.01	Document review Review of grievance logs GBV incidents	Included in construction cost	KOSKI/PIU

VII. INSTITUTIONAL ARRANGEMENTS AND CAPACITY BUILDING

The main responsible organization for the implementation of this ESMP is KOSKI. KOSKI has the adequate ability and capacity to manage the implementation of the project and in particular the E&S. Environmental and Social Management System (ESMS) of KOSKI covering all phases of the Project and consisting of management plans on different subjects has available staff and capacity to ensure ESMP implementation. Besides, on different phases of the Project, various parties (contractors, Construction Supervision Team, ILBANK, etc.) will take responsibility for various works in the scope of the ESMP. All mentioned works will be coordinated by the KOSKI. Mitigation and monitoring tables, which are given in this ESMP, summarize the relevant responsibilities.

In that scope, it is suggested to add below mentioned liabilities to tender documents of any possible contractor(s):

- Technical characteristics of the ESMP,
- Environmental, social, and health and safety liabilities,
- Other environmental and social issues that may show-up.

VII.1. Environmental and Social Management Structure

As the potential impacts and impact levels of the Project vary according to different phases of the Project (land preparation, construction and operation) environmental and social management of the Project are assessed separately. ESMP consists of three main components in that scope, which are as follows:

- Mitigation Plan,
- Monitoring Plan,
- Monitoring Report.

A graphical representation of the environmental and social management structure is given in Figure VII.1 below.

Figure VII.1 Environmental and Social Management Structure

VII.2. Roles and Responsibilities

The entire Project will be financed by the WB. WB is the financing institution and its monitoring is part of WB's internal control system, not a part of the project implementation. ILBANK is the Borrower of the loan and the project implementing agency, serving as a Financial Intermediary to KOSKI. KOSKI will be responsible for the implementation of the Project at the local level.

WB will review the incoming reports to observe the Bank standards are in progress. WB will visit project sites on occasion, and as required, as part of project supervision, controlling whether the necessary training are given to the personnel who will work during the construction phase. WB will audit the Project Owner's compliance with the provisions set out in the ESMP/SEP managed by the Project Owner during the construction and operation phase via the ESMRs to be submitted by ILBANK every six months.

Implementing of an appropriate application of the environmental and social safeguard policies during whole process is supervised and monitored by ILBANK.

The final ESMP will be made available to public in both KOSKI's and ILBANK's web site prior to any activity on site. ILBANK Project Management Unit (PMU) will include an environmental specialist and a social specialist to supervise the implementation of the ESMP. The specialist will supervise the implementation of the ESMP by KOSKI and document performance, recommendations and any further actions required. He/she will provide guidance to KOSKI officials on WB procedures, consultation and disclosure requirements. In addition, KOSKI will inform ILBANK and the WB regarding project changes or unforeseen circumstances in the approved project documents.

KOSKI will be responsible for providing technical and data support during the supervision of contractors and the preparation of technical and financial feasibility reports regarding projects. Moreover, KOSKI holds ultimate responsibility for the environmental and social performance of the

overall Project, including the performance of its contractors and any other contractors. A PIU will be established to carry out operational and administrative tasks. The PIU staff will be the KOSKI's own staff.

The KOSKI's environmental engineer, who will act as the Environmental Manager of this Project, will oversee the implementation of the ESMP and monitoring progress. The responsible parties for the monitoring progress are supervision consultant, contractor and KOSKI/PIU during the construction phase, while only KOSKI/PIU is responsible for monitoring progress during the operation phase of the Project. Potential impacts of Project will be assessed by analyzing relevant parameters in determined periods in the scope of Monitoring Plan. The analyses of parameters will be done by different ways such as sampling, visual observations, site inspections, maintenance records, grievance records etc. The parameters, analysis location, analysis method, analysis time and analysis cost were indicated in Table VI.3 and Table VI.4 in detail. Depending on the monitoring plan, Contractor will prepare monthly Environmental and Social Monitoring Reports (ESMRs) to be submitted to KOSKI, whereas KOSKI will review and submit ESMRs to ILBANK quarterly. The environmental engineer/expert, one Social Expert and an OHS Expert will be supported by environmental consultants, when necessary. Environmental engineer/expert will appoint a representative on site to lead the development of this ESMP, and its on-site implementation.

In addition, KOSKI's social expert will act as the Social Affairs Manager of this Project and will manage the social issues outlined in this ESMP and its monitoring progress. The social expert will also manage the grievance redress mechanism and stakeholder engagement.

The roles and responsibilities of KOSKI are given in Table VII.2.

Table VII.1 Structure of KOSKI/PIU

Occupation	Number	Duty in PIU
Mechanical Engineer	1	Head of PIU
	2	Technical Unit
Civil Engineer	1	Branch Manager/Technical Unit
	1	Technical Unit
Electric and Electronic Engineer	1	Branch Manager/Technical Unit
	1	Technical Unit
Environmental Engineer	1	Technical Unit
	1	Social Expert
Officer	2	Procurement Specialist
	1	Financial Expert
Financial Manager	1	Branch Manager
Industrial Engineer/Class A OHS Expert	1	OHS Expert

Moreover, KOSKI will be responsible for the incident and accident reporting and informing the necessary institutions (WB, ILBANK etc.), as per the provisions explained below:

- WB and ILBANK will be promptly notified of any incident or accident related to the Project which has, or is likely to have, a significant adverse effect on the environment, the affected

communities, the public or workers including but not limited to; incidents and accidents encountered during construction works, environmental spills, etc.

- Sufficient detail will be provided regarding the incident or accident, findings of the Root Cause Analysis (RCA), indicating immediate measures or corrective actions taken or that are planned to be taken to address it, compensation paid, and any information provided by any contractor and supervision consultant, as appropriate. It will be ensured that the incident report is in line with the WB's Environment and Social Incidence Response Toolkit. Subsequently, as per the Bank's request, a report on the incident or accident proposing measures to prevent its recurrence will be prepared.
- Therefore, KOSKI will report details of any significant environmental or social incidents (e.g., fatalities, lost time incidents, environmental spills etc.) within 3 business days and submit an incident report, including RCA, precautions and compensation measures taken within 30 business days. ILBANK will forward the incident report to the WB immediately upon receipt from KOSKI. Prompt notification of accidents and incidents is part of the contractor's ESMP. The monitoring and supervision of mitigation measures implementations will also be Contractor's responsibility during construction phase of the project for mentioned parameters as given in detail in Section VI.2. Therefore, KOSKI and the Contractor will be in cooperation.

TUMAS & ENCON Joint Venture, who prepared this ESMP and the SEP for the Project, is the E&S Consultant and will provide necessary information to the Project Owner and organize the stakeholder consultation meeting to be held for the stakeholders and Non-Governmental Organizations (NGOs) within the scope of ESMP and finalize of this ESMP and the SEP as per the concerns/opinions of the stakeholders of the Project.

The Supervision Consultant, who will be selected by tender process to be opened by the Project Owner and approved by ILBANK, will have at least one Environmental Expert, one Social Expert and one full time OHS Expert in its team. The number of experts will be increased, if necessary. Supervision Consultant will oversee the supervision of construction and/or rehabilitation works and installation of equipment. The respective experts will be responsible for identification and management of environmental, social and OHS related risks and will ensure initiation corrective actions where necessary. The job description given to Supervision Consultant and the required number/qualification of personnel will be determined by the joint efforts of PIU and contractor. The Supervision Consultant will oversee the supervision of construction and/or rehabilitation works and installation of equipment. The respective experts will be responsible for identification and management of environmental, social and OHS related risks and will ensure initiation corrective actions where necessary and report to ILBANK and the Project Owner in a timely manner. The experts will also monitor and evaluate the performance of the services provided by the Contractor.

In addition to these roles and responsibilities, the Supervision Consultant is responsible for controlling whether the necessary training are given to the personnel who will work during the construction phase. In addition, managing the GRM and regularly monitoring the reporting of complaints to the Project Owner is another responsibility of Supervision Consultant. Monitoring and auditing the consultation process will be carried out by Supervision Consultant to ensure that it is managed through safe and effective channels, considering the relevant national and local regulations as well as the health-related recommendations and guidelines of national and international health authorities due to the Covid-19 outbreak. Necessary arrangements will be made according to the "Interim Advice for IFC Clients on Safe Stakeholder Engagement in The Context of Covid-19" published by the IFC on May 15, 2020. In this respect, stakeholder engagement activities will be carried out. Supervision Consultant will take part in stakeholder engagement activities.

For the tender process, KOSKI is responsible for tendering all the project works and consulting services. Implementing an appropriate application of the environmental and social safeguard policies during the whole process is supervised and monitored by ILBANK. In addition, the WB will review incoming reports to ensure that the Bank standards are complied. The WB Procurement Regulations and Public Procurement Law will be applied during the tender process. WB will visit the project sites on occasion, and as required, as part of project supervision, controlling whether the necessary trainings are given to the personnel, who will work during the construction phase. WB will audit the Project Owner's compliance with the provisions set out in the ESMP/SEP managed by the Project Owner during the construction and operation phases via the ESMRs and the project progress reports to be submitted by ILBANK every six (6) months.

The contractor will construct the project in line with the approved design documents and will be the responsible body to implement and apply the mitigation measures given in this ESMP during the construction phase. The contractor will adhere to his/her responsibilities specified in this ESMP and ensure that it is aware of its duties and responsibilities within this ESMP for compliance with national regulation and WB Safeguard Policies. The contractor will employ a full time OHS specialist and a full time environmental and social expert who will instruct and consult the workers on compliant working structure and implementation of ESMP (including grievance redress mechanism and the applicable stakeholder engagement activities detailed in project SEP). Furthermore, a competent ESHS manager of the Contractor will monitor the implementation of measures given in the mitigation plan. The prompt notification of accidents and incidents within the scope of construction works in line with the above-described provisions is the responsibility of the contractor. The contractor will keep an incident register at the construction site throughout the construction and defects liability period. In addition, the Contractor will be responsible for the preparation and submission of the regular monthly ESMRs on the environmental, social and OHS issues of the Project during the construction phase.

Repair and maintenance will be the responsibility of the Contractor throughout the one-year Defects Liability Period (DLP). After that, the maintenance, repair and operational activities will be performed by the KOSKI.

VII.3. Grievance Redress Mechanism

In accordance with WB OP 4.01, a grievance redress mechanism (GRM) is established by which people, who deem that they have been adversely affected by the Project during planning, construction or operation can bring grievances to the Project for consideration and, if required, resolution. A specific project GRM is beneficial in addressing community and individual concerns and complaints before they escalate beyond control. The purpose of this mechanism is to establish a system for handling, evaluation and resolution of all kinds of grievances, concerns, queries and proposals of the project affected communities and other stakeholders, such as construction workers, regarding the project activities (mainly construction). During the project implementation process, grievances will be addressed at mainly two levels; (i) local (site) level at Construction Contractor/Operator, and (ii) provincial level at the KOSKI/PIU (involving also Konya Metropolitan Municipality and ILBANK). In other words, there will two (2) different GRMs for laborers and general public.

Managing grievances, including avoiding and minimizing them as well as effective handling, is an integral part of a sound stakeholder engagement strategy. Experience shows that significant numbers of grievances arise from misunderstandings, and that such grievances can be avoided, or their numbers reduced, through proactive and consistent engagement with communities. Engagement

also helps anticipate and review community concerns to prevent them from escalating into grievances. A project-specific GRM is beneficial in addressing community and individual concerns and complaints before they escalate beyond control.

A GRM has been established by KOSKI to facilitate and ensure that people or communities who have been impacted or fear adverse effects from the project will have access to and be heard and assisted by the project with effective and timely resolution to their concerns. The most important point in the grievance redress mechanism is to ensure that all complaints are effectively received, recorded, resolved and responded to by the PIU on a predetermined timetable and according to their content, and to ensure that the corrective / regulatory action to be taken is acceptable to both parties.

KOSKI/PIU and the Construction Contractors are responsible for implementing and maintaining GRM during the construction activities, where KOSKI is responsible for both the construction and operation phases (together with the Operator if contracted by KOSKI). The PIU of KOSKI, together with contractors and supervision consultants, has to ensure that grievance redress mechanism is implemented effectively. A Social Affairs Manager (the social expert of KOSKI) will be appointed by the KOSKI/PIU. Additionally, to facilitate communication with women during the grievance process, one of the PIU members assigned responsible for the GRM will be a woman.

KOSKI will establish GRMs for the use of both external and internal stakeholders, in line with the project Stakeholder Engagement Plan (SEP) of KOSKI that is prepared and presented by TUMAS – ENCON Joint Venture, the E&S Consultant. KOSKI will also ensure that a formal internal GRM for the project employees is in place. In addition, workers' grievances will be addressed through separate channels.

Under the PMU of the ILBANK Department of International Relations, the GRM Team was created with the assistance of expert/technical experts and technical group managers.

The responsibilities of the technical group manager are to ensure the implementation of the indicated procedures and to lead the grievance closure process when multi-dimensional work is needed.

The responsibilities of the social expert (from ILBANK PMU) is to ensure the complaint management system is working efficiently, the investigation and resolution of reported complaints in a timely and acceptable manner to this Procedure, the complaints register software is up-to-date, to support the ethics committee for the sensitive complaints to investigate the grievances, and to implement corrective actions to close out the complaints.

For a Project that ILBANK will fund through international financial institutions, a Project Implementation Unit (PIU) will be set up at the level of municipalities or utilities. Each PIU shall have a unique GRM, as specified in the Project's Stakeholder Engagement Plan. Municipalities and utilities will designate a focal point to execute GRM.

KOSKI/PIU and the Contractors are responsible for implementing and maintaining GRM during the construction activities, where KOSKI is responsible for both the construction and operation phases. The PIU of KOSKI, together with contractors and supervision consultants, has to ensure that grievance redress mechanism is implemented effectively. A Social Affairs Manager (the social expert of KOSKI) will be appointed by the KOSKI. Additionally, to facilitate communication with women during the grievance process, one of the PIU members assigned responsible for the GRM will be a woman.

This GRM will be available to both direct and contracted workers to allow them to raise their workplace related concerns and grievances. The structure of GRM is explained in the Derebucak Wastewater Treatment Plant Stakeholder Engagement Plan (SEP).

Monthly summaries regarding the grievances, queries, and related incidents together with the implementation status of corrective/preventive actions will be prepared by the contractor throughout the construction phase and by KOSKI during the operation phase. These summaries will be incorporated into monthly ESMRs, which will be prepared by the Contractor during construction phase of the project to be submitted to the Municipality. In addition, the Contractor should convey the grievances immediately to the project owner besides summarizing them in Monthly ESMRs. The monthly summaries/reports will be a means to assess both the number and nature of complaints (if any), along with KOSKI's and contractor/s' ability to address complaints in a timely and effective manner. As for the incidents, the Contractor is responsible for immediate notification of the contingencies such as environmental, social and labor issues or accidents, incidents or loss of time to the Project Owner and keeping an event log on site throughout the lifetime of the Project.

Monthly ESMRs will be prepared by the Contractor to be submitted to KOSKI. Quarterly ESMRs and semiannual Project Progress reports will be prepared by KOSKI, to be submitted to ILBANK together with the Grievance Register. Semi-annual ESMRs and Project Progress reports will be prepared by ILBANK to be submitted to WB. These reports will include a summary of the Project's performance on management of health, safety, environment and social issues, grievance redress mechanism and stakeholder engagement activities conducted during the specified period. All the work done within the GRM will be documented with the forms and logs in this SEP and will be evaluated and reported according to the determined KPI targets. It will be noted that the personal information of the complainant having used the GRM will remain confidential and will never be shared in these reports.

Graphic related to the grievance process are also presented in the Figure VII.2.

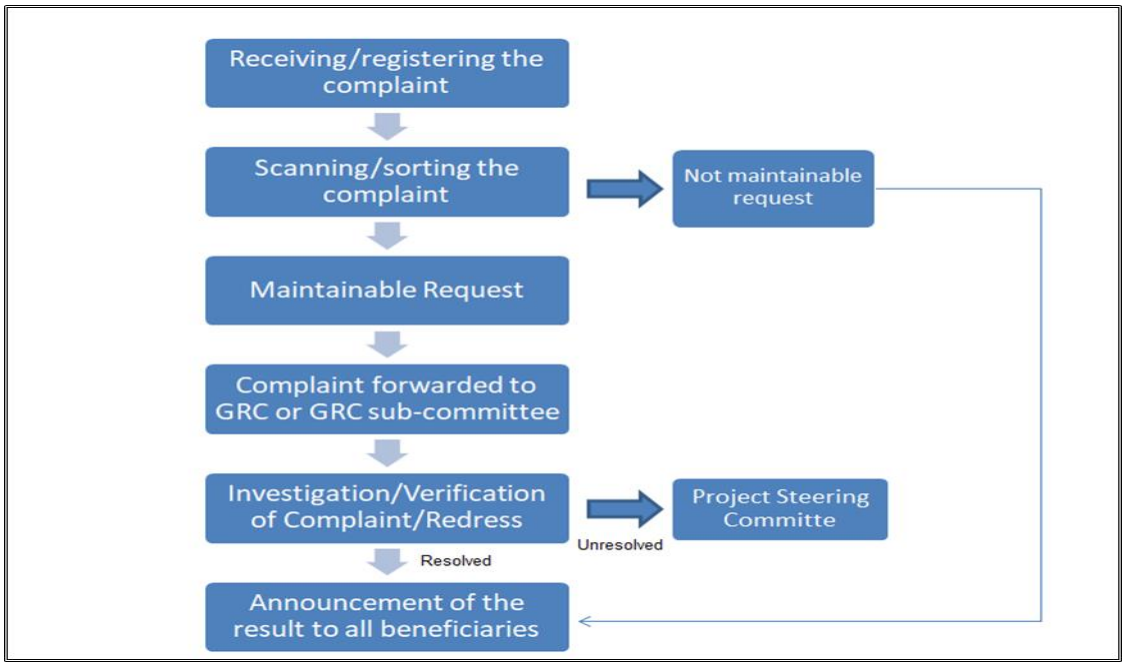


Figure VII.2 GRM Graph

The step-by-step grievance process managed by KOSKI is as follows. In addition, sample forms to be used by the Social Affairs Manager assigned by KOSKI and/or PIU members responsible for GRM are also given in Annex-4. In addition, the sample grievance register table is given in Table VII.2.

- **Submission of a complaint:** Receiving the grievance by any communication channel (KOSKI's website or e-mail, hotline) explained below.
- **Registration of complaint:** Registering/recording through making an entry in the register table and filling of the Grievance Form.
- **Forwarding of complaint:** The complaint is forwarded to relevant persons (site manager on construction sites and experts of the PIU) responsible for handling the complaint in not later than three working days upon receiving the complaint.
- **Evaluation of a complaint:** Evaluating the complaints within ten (10) working days and determining whether the complaint meets the admissibility criteria. If the complaint is not valid, providing relevant explanation to the complainant.
- **Response for a complaint:** If the complaint is valid, identifying and taking corrective measures for resolving the complaint in utmost fifteen (15) working days upon receiving. If resolving the complaint would take longer, a partial response could be provided to the complainant and fill the Grievance Closeout Form.
- **Recording the result of a complaint:** Recording the result of the complaint in register table.
- **Right to appeal**: If the complaint cannot be resolved with the existing process, applicants can always apply to relevant legal institutions.

Table VII.2 Sample Grievance Register

Date of Grievance	Name of the Complainant	Subject of Grievance	Responsible Party	Corrective Action	State of Grievance Closure	Date of Closure	Remarks

KOSKI uses a hotline "185" at present, which is accessible 24/7 for any emergencies, and communication link[9] though website of KOSKI, which also offers people to follow up their complaints. The project specific grievance redress mechanism will be adopted and used by KOSKI/PIU during both the construction and operation phases of the Project. All grievances related to the Project will be evaluated and responded to.

The grievance redress mechanism would serve for both internal (such as employees of KOSKI and contractor) and external stakeholders. Apart from the means of GRM presented by KOSKI, all internal and external stakeholders will also have the opportunity to benefit from other grievance redress mechanisms if not satisfied with the solutions offered by the Project's GRM or if they wish to submit their grievances to ILBANK as a higher authority through the following communication tools:

[9] *https://www.koski.gov.tr/sayfa/bize-yazin*

- Web site: https://www.ilbank.gov.tr/form/bilgiedinmeuluslararasi
- E-mail: bilgiuidb@ilbank.gov.tr
- Phone number: 0312 508 79 79(TBD)
- Address for Official Letter: ILBANK Department of International Relations, GRM Team (letters must be marked as personal or confidential) – Emniyet Mahallesi Hipodrom Caddesi No:9/21 Yenimahalle/ANKARA

All internal and external stakeholders will also have the opportunity to benefit from other grievance redress mechanisms such as Presidency's Communication Center (CİMER) that are used nation-wide which is accessible to all project stakeholders as an alternative and well-known channel for conveying their project-related grievances and feedback directly to state authorities.

- www.cimer.gov.tr
- Call Centre: 150
- Phone number: +90 312 525 55 55
- Fax number: +90 0312 473 64 94
- Address for Official Letter: Republic of Türkiye, Directorate of Communications Kizilirmak Mahallesi. Mevlana Bulvari No:144 CANKAYA/ANKARA
- Mail addressed to Republic of Türkiye, Directorate of Communications
- Individual applications at the community relations desks at governorates, ministries and district governorates.

Moreover, the Foreigners Communication Center (YİMER) has been providing a centralized complaint system for foreigners. YİMER will be available to all project stakeholders as an alternative and well-known channel for conveying their project-related grievances and feedback directly to state authorities.

- www.yimer.gov.tr
- Call Centre: 157
- Phone number: +90 312 5157 11 22
- Fax number: +90 0312 920 06 09
- Address for Official Letter: Republic of Türkiye, General Directorate of Migration Management, Camlica Mahallesi 122. Sokak No: 4 Yenimahalle /ANKARA
- Mail addressed to Republic of Türkiye, Directorate of Communications
- Individual applications at the Republic of Türkiye General Directorate of Migration Management

The grievance and feedback related to the Project that is lodged/conveyed through CIMER and/or YIMER are received by Department for Planning and Coordination under the General Directorate of ILBANK. If the grievance and feedback is related with Department of International Relations, Department for Planning and Coordination will forward the complaint to the GRM Team with ensuring its anonymity and confidentiality by observing the requirements stipulated by the Law on the Protection of Personal Data (Law No. 6698, 2016). The complaints will be recorded by the GRM Team to the GRM database and managed as per GRM Procedures to timely inform the project on taking corrective actions. Both CIMER and YIMER will complement GRM throughout the project life.

If the complaint cannot be resolved with the existing process, applicants can always appeal to relevant legal institutions. Such institutions can be summarized as follows:

- Civil Courts of First Instance
- Administrative Courts
- Commercial Courts of First Instance
- Labor Courts, and
- Ombudsman (https://ebasvuru.ombudsman.gov.tr/)

Furthermore, communities and individuals, who believe that they are adversely affected by a WB supported project, may submit complaints to the Bank's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. The details are provided in the project-specific SEP.

Certain complaints warrant urgent action, and the regular GRM procedure may be inappropriate or too slow to prevent an issue from escalating. A separate fast-tracked GRM, including guidance on the circumstances under which it should be employed, can help ensure that high-priority complaints are dealt with in a timely manner. In the case of complaints alleging serious harm or risk of harm, and/or serious rights violations, the GRM's standard operating procedures will call for a fast-track response, whether by the GRM or by immediate referral to another office or organization and immediate notification to the complainant of that referral.

Furthermore, the project GRM will include a channel to receive and address confidential complaints related to SEA/SH and gender based violence (GBV) with special measures in place. If an employee faces insults, ethnic discriminations or SEA/SH issue s/he can either apply to a higher level superior or directly go to police station, as stipulated in the national referral system of the country for dealing such cases. The content and procedures of the project's GRM will also have a reporting line on such cases in regard to SEA/SH issues and will be handled under full confidentiality. The GRM focal point receiving the SEA/SH related grievance should direct this to national referral systems immediately and record that this has been directed, as set out in the GRM Procedure of ILBANK. All details of the complainant of the sensitive case will be kept strictly confidential.

VII.4. Capacity Building and Training

One of the main necessities of the ESMP is training of the Project Owner's and contractor's top-level management and employees.

Necessary training will be given to the personnel immediately after the recruitment process, which will be also refreshed during the work period and will be performed at a number of levels. Training will cover workers' rights, contract requirements, Code of Conduct, grievance redress mechanism and contact channels. Compliance with the rules of code of conduct, including gender-based violence, sexual harassment, sexual exploitation and abuse, which are included in the trainings to be provided, will be in the contract articles of the personnel. Some short-term training is required for the Environment Manager, other staff members of the PIU and the contractor staff to raise their levels of environmental awareness. The training can be conducted by either some external experts or through the help of in-house expertise of the PIU and the consultants and help of ILBANK and the WB. In the long-term training, special environmental and social issues will be examined, and likely solutions provided to the PIU.

The mentioned trainings will take place in maximum two (2) days. This period will be determined by taking into account the responsible trainer's opinion on how many days it takes to explain the relevant subject, the evaluation of the trainees' prior knowledge and capacities on the relevant subjects and the detailed scope of the syllabus that has been prepared. The PIU is also responsible for the monitoring of the Contractor's actions on training. The training will be given after signing the works contracts and refresher trainings will be held as needed depending on work progress and construction activities. Measurement and evaluation should be performed at the end of the training conducted. This is to measure the effectiveness of the training and to measure the trainees' level of knowledge and competence. According to the review results, the training program can be modified, or trainers can be replaced, or training can be repeated, if needed, upon determining whether the training is effective.

The main trainings that are planned to be given are as follows, but not limited to:

- Waste Management,
- Energy Efficiency,
- Safe Driving,
- Occupational Health and Safety,
- Chance Find Procedure,
- Induction regarding Code of Conduct, GBV & SEA/SH, GRM, EHS and WB Requirements, and
- First-Aid, Emergency Preparedness and Covid-19 Measures

Environmental and Social Trainings

Environmental and Social Trainings will cover the waste management, energy efficiency, waste that causes environmental pollution, hazardous waste management, traffic management, infectious diseases and grievance redress mechanism. Environmental and social trainings will be given to the appointed staff and workers of the Contractor by ILBANK before the construction starts. The planned training is expected to take four (4) hours. The training will be refreshed as the work site changes and/or workers change.

Chance Find Procedure Training

Chance Find Procedure (see Annex-6) training will cover the actions required if previously unknown heritage resources, particularly archaeological resources, during the project construction. The training will be given to the appointed staff and workers of the Contractor by ILBANK before the construction starts. The planned training is expected to take two (2) hours. The training will be refreshed as the work site changes and/or workers change.

Occupational Health and Safety Training

OHS Training will cover the work-site accidents and their causes in construction works, special working subjects according to the teams, technical subjects such as the correct use of hand tools and equipment. In addition, the training will focus on information on labor legislation, legal rights and responsibilities of employees, workplace order, legal consequences arising from work accident and occupational disease. The training will be given to the workers of the Contractor by ILBANK before the construction starts. The planned training is expected to take two (2) hours. The training will be refreshed as the work site changes and/or workers change.

Induction Training

Induction Training will cover the current risks and potentially dangerous areas, emergency action and safety practices related to the site. The training will be given to the workers of the Contractor by ILBANK two months before the construction starts. The planned training is expected to take two (2) hours. The training will be refreshed as the work site changes and/or workers change.

First Aid and Emergency Preparedness Training

The subjects of the First Aid and Emergency Preparedness Training will be defined by the relevant educational institutions. The training will be given to the appointed staff and workers of the Contractor before the construction starts. The planned training is expected to take 16 hours. The training will be refreshed as the work site changes and/or workers change

Table VII.3 provides examples of the basic training for the ESMP implementation. The training programs will be developed annually and delivered by the PIU.

Table VII.3 Proposed Training Program

Module 1	
Training course	Environmental and social supervision, monitoring and reporting
Participants	Environmental staff, technical staff and administrative staff of the PIU
Time	Soon after the project effectiveness but at least one (1) month before the construction of the contract. The follow-up training will be scheduled as needed.
Duration	Two (2) days of training twice a year to be repeated on a yearly basis until the end of the DLP.
Content of the Training	General environmental and social management relating to the Project Requirements on environmental and social monitoring Monitoring and implementation of mitigation measures Guide and supervise contractor in implementation of the ESMP Documentation and reporting Code of conduct SEA/SH and GBV training/ awareness Risk response and control Other areas to be determined
Trainer	Environmental and Social Consultant or ILBANK
Module 2	
Training course	Implementation of mitigation measures
Participants	Contractor, related authorities: On-site construction management staffs, environmental staffs of contractor, related authorities
Time	After signing the works contract

Duration	Two (2) days of training twice a year to be repeated on a yearly basis depending on needs.
Content of the Training	Overview of potential impacts and mitigation measures Requirements of environmental monitoring Occupational Health and Safety Training Role and responsibilities of the contractor Content and methods of implementation of environmental mitigation measures Response and risk control Preparation and submission of report Risk response and control Other areas to be determined
Trainer	PIU with support of ILBANK

In addition, the training program/modules shall address a range of issues, including but not limited to:

- Purpose of ESMP regarding the Project activities,
- Requirements in management plans and monitoring activities to be performed within the scope of this plan,
- Understanding of the sensitive environmental and social receptors within the project area and its vicinity, and
- Awareness-raising about the potential risk and impacts from the project activities,
- Grievance redress mechanism developed within the scope of the project, grievance redress mechanism officer and employee rights,
- Community health, safety and security risks and measures,
- OHS, first aid, emergency preparedness,
- Covid-19 related measures and protection measures,
- Code of conduct and clothing,
- Communication with the local community,
- Code of conduct training, including gender-based violence, sexual harassment, sexual exploitation and abuse,
- Traffic and road safety principles, and
- Training aiming at the sorting, storage and environmental planning of waste.

VII.5. Environmental and Social Monitoring Report

Environmental and Social Monitoring Report (ESMR) is an important tool to record the monitoring activities.

The results of technical assessments of relevant issues given in Table VI.3 and Table VI.4 will be presented in ESMRs. The results shall be compared with the national legislative requirements and WBG General EHS Guidelines. The results of the visual observations together with the key issues observed will be submitted in written form. ESMR will focus on the negative findings as well as the good practices. The negative findings will be supported with photographical evidence. For each negative observation, a corrective action will be suggested with a reasonable due date. Any

analysis/sampling/measurement report will be given as an annex of the ESMR together with the relevant assessment and necessary remediation activities. The findings of the ESMRs will keep this ESMP as a living document; thus, the ESMP will be reviewed and revised by the environmental and social unit of the KOSKI according to these findings, if necessary.

In that scope, Contractor will prepare monthly ESMRs to be submitted to KOSKI and KOSKI's PIU will produce quarterly ESMRs and progress reports for all sub-project sites and monitor quality of reporting throughout the duration of works and reporting requirements will be included in bidding documents of the contractors. KOSKI will be submitting these reports to ILBANK together with the Grievance Register. Also, ILBANK will prepare and submit regular ESMRs (semi-annually) on the environmental, social, health and safety performance of the Project, including but not limited to the implementation of the ESMP, status of preparation and implementation of E&S documents required under the ESMP, stakeholder engagement activities, performance of the grievance redress mechanism(s) to the WB together with Project Progress Reports.

The reports will be prepared in Turkish and English, and annual ESMRs will be disclosed through KOSKI's website and at least Turkish versions will be made physically available at mukhtar offices at Derebucak District.

VIII. CONSULTATIONS WITH AFFECTED GROUPS AND NON-GOVERNMENTAL ORGANIZATIONS (NGOS)

The E&S Consultant is preparing the Draft ESMP in compliance with the stipulated standards. The Draft ESMP will be subject to stakeholder consultation aiming to inform the public and to receive comments and concerns of the project-affected groups and local NGOs (see Table VII.4) in line with the procedure stipulated by the international requirements In this regard the non-technical summary of the Draft ESMP will be disclosed before and during the stakeholder consultation meeting.

In the meeting, the E&S Consultant will make a presentation that provides information on project description, its potential environmental and social impacts and risks and then comments and expectations of the stakeholders will be received through a questions and answers session. In addition, during the meeting, Sample Consultation Form provided in Annex-4 will be filled out by participants. The inputs of the consultation activities will be taken into account and addressed in the final ESMP. KOSKI will be responsible for recording the minutes of the meeting and updating the ESMP and SEP accordingly to ensure that SEP includes the minutes (photographs, if any) and details of the meeting. The consultation activities will be presented considering the content provided in “Annex 3: Table of Contents for the Public Consultation Documentation” of ESMF prepared by ILBANK for SCP-II AF.

All of the required Covid-19 measures will be in place during organization and execution of the stakeholder engagement activities including the stakeholder consultation meeting. In the scope of health and safety risks associated with the project activities, the number of personnel who are infected with a contagious disease, including COVID-19 will be monitored. According to Guidance to COVID-19 Outbreak Management and Working prepared by the Ministry of Health and Interim Advice for IFC Clients on Safe Stakeholder Engagement in the Context of COVID-19, to carry out stakeholder consultation safely in terms of Covid-19, virtual, remote and safe engagement approaches such as online communication tools and audio options will be considered.

VII.6. Identification of Consultation Participants

In order to develop an effective consultation process, it is necessary to identify stakeholders and to determine who is likely to be affected (both directly and indirectly) by the Project (“affected parties”); who may have an interest in the Project (“interested parties”); and have the potential to influence project outcomes or operations. In addition, it is also essential to identify individuals and groups that may be affected differentially or disproportionately by the Project because of their disadvantaged or vulnerable status in order to construct an effective consultation process. For this purpose, SEP has been prepared by E&S Consultant. In this Plan, individuals/groups and institutions that will be affected or can be affected by this project have been identified.

The persons and institutions that are affected or likely to be affected by the Project provided in Table VII.4 are expected to attend the stakeholder consultation meetings. In this framework, the points taken into account in the determination of the stakeholder consultation meeting participants who will be affected or have the potential to be affected by the project are as follows:

- The impact area of project
  - Living in residential areas close to the project area
  - Being affected by problems such as noise and dust that may arise during the construction phase of the project
- The nature of impact

- According to the nature of the impact, local/national government types, NGOs, academic institutions, and research institutions that may be related to this impact issue

It should be noted that the presented project-affected groups and local NGOs list provides the most prominent stakeholders and that organizations or groups, which are not listed, and wish to be informed about the Project, can make contact ILBANK and/or KOSKI to provide their contact information. The identified potential stakeholders are listed in Table VII.4.

Table VII.4 Project's Potential Stakeholder List

Level	Category	Organization / Entity
Internal	Project Parties	ILBANK
		KOSKI
		Contractor/s
		Sub-contractor/s
		Project personnel
International	International Institutions/Lenders	World Bank
National	Ministries and Relevant Central Authorities	Ministry of Environment, Urbanization and Climate Change
		Ministry of Agriculture and Forestry
		Ministry of Health
		Ministry of Energy and Natural Resources
		Ministry of Foreign Affairs
		Ministry of Labor and Social Security
		General Directorate of Environmental Management
		General Directorate of State Hydraulic Works
		General Directorate of Water Management
		Ministry of Interior Disaster and Emergency Management Presidency (AFAD)
	NGOs	Union of Chambers of Turkish Engineers And Architects (TMMOB)
		Chamber of Environmental Engineers
		Chamber of Agricultural Engineers
		Environment Foundation of Türkiye
		Environment Protection Foundation of Türkiye
		Nature Association
		Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats (TEMA)
		Waste and Environmental Management Association (TAYCED)
		Foundation for the Protection and Promotion of the Environment and Cultural Heritage (CEKUL)
		WWF Türkiye
Local	Governmental / Local Authorities and Agencies	Governorship of Konya
		Konya Metropolitan Municipality
		Konya Regional Directorate of Cultural Heritage Preservation Board
		Konya Provincial Directorate of Environment, Urbanization and Climate Change
		Konya Provincial Directorate of Agriculture and Forestry
		Konya Provincial Directorate of Health

Level	Category	Organization / Entity
		Derebucak Municipality
		District Governor of Derebucak
		Derebucak Social Assistance and Solidarity Foundation
		Provincial AFAD offices
	NGOs	Konya Provincial Bee Breeders' Association
		Union of Chambers of Turkish Engineers And Architects (TMMOB)
	Residential Areas/Local Communities/Potentially Project Affected People	Sarayönü Neighborhood
		Kenankuyu Neighborhood
		Yeni Neighborhood
		Musalla Neighborhood
	Business Enterprises	Related business enterprises within the Project Impact Area (if any)
	Universities	Selcuk University
		Necmettin Erbakan University
		Konya Technical University
		KTO Karatay University
		Konya Food and Agriculture University

Information obtained from formal/informal interviews with representatives/key informants of neighborhoods within the project area are used to identify vulnerable/disadvantaged individuals/ groups. In addition, the guidance of the official authorities and public institutions in the region has helped identify possible vulnerable/disadvantaged individuals/groups. In the scope of this Project, , children, the elderly, and the disabled people, who live close to the project area and live in areas where noise and dust problems are likely to occur during the construction phase of the Project, are considered as vulnerable/disadvantaged individuals/groups. However, the details of vulnerable/disadvantaged individuals/ groups have been identified in the SEP as one of the key components of the plan.

VII.7. Stakeholder Consultation

The stakeholder consultation meeting of the Project was held on 21th of September 2023. Derebucak Municipality Cafeteria was selected by KOSKI as the meeting venue, which is located at the Derebucak District of Konya Province. The meeting venue had enough capacity and facilities to ensure comfortable and efficient communication during the event.

Prior to stakeholder consultation meeting, several information methods were used to inform the related public authorities (including provincial governorates, district governorates, municipality mayors, etc.), mukhtars and local people, and local media agencies and wider public including Non-Governmental Organizations (NGOs), etc. During the information process in advance of the stakeholder consultation meeting, initially announcements were published in local newspapers on September 08, 2023 and official website of KOSKI on September 12, 2023. Advertisement on newspaper and KOSKI official website to announce the meeting is given in Annex 4-1-1. In addition, before the commencement of meeting, project information brochures were distributed to participants and maps of the Project were also made available for them. The brochure is provided in Annex 4-1-2.

The meeting was held with the participation of the local people together with the representatives of KOSKI (Project Beneficiary and Executing Organization) and ENCON (the E&S Consultant). The photographs from meeting are presented in Annex 4-1-5 and Annex 4-1-6.

The meeting started with an introduction and explanation of the purpose and scope of the meeting and followed by a presentation by ENCON and a final discussion session where questions, concerns and suggestions of the participants were received. The presentation used during the meeting is provided in Annex 4-1-6. The main topics covered in the presentations were as follows:

- What is the Project?
- Who are the Project Main Executive Body, the Project Beneficiary and Executing Organization and the Project Sponsors?
- What are the Anticipated Benefits of the Project?
- What is the Environmental and Social Impact Assessment Studies?
- Stakeholder Engagement: How to Participate into the Process?
- Discussion (Questions and Answers) Session

Large-scale (A1 size) maps showing the Project area were provided for the public.

A total 30 people participated in the meeting held on September 21, 2023 for the Project. List of participants to the SCM is presented Annex 4-1-4 of this document. The meeting lasted for about one hour. The questions, issues, concerns and suggestions raised by the participants during the SCM were categorized and a summary of the SCM findings is provided in Table VII.5.

Table VII.5 Summary of Stakeholder Consultation Meeting Findings

Party who Raised the Question/ Issue/Concern/ Suggestion	Question/Issue/Concern/ Suggestion Raised	Response of Project Sponsors/ Environmental Consultant
Participant 1*	Will a wastewater treatment plant be built in Pınarbaşı neighborhood?	It was stated that there is a master plan for the neighborhoods in the Beyşehir Lake region, natural wastewater treatment will be implemented, but there are criteria for population and proximity to the lake, and within this scope, a location determination has been made for the Pınarbaşı neighborhood.
Participant 2*	Can treated wastewater be used for irrigation?	It was stated that grain group products such as barley and wheat can be irrigated with permission from the Provincial Directorate of Environment, Urbanization and Climate Change, but its use is not recommended for irrigation of vegetables and fruits. It was also added that the treated water will have a Class B irrigation water quality.
Participant 3*	Gencek neighborhood also needs a wastewater treatment plant, will it be built?	It was stated that it is within the scope of the master plan for the neighborhoods in the Beyşehir Lake region, natural wastewater treatment will be implemented and within this scope, a location determination has been made for the Gencek neighborhood.

**The participation's name is not given because of the Law on Protection of Personal Data.*

VII.8. Consultation Documentation

In the scope of project consultations with project affected groups and NGOs, it is required to hold one (1) stakeholder consultation meeting as per WB OP 4.01. This process was carried out by following the steps below.

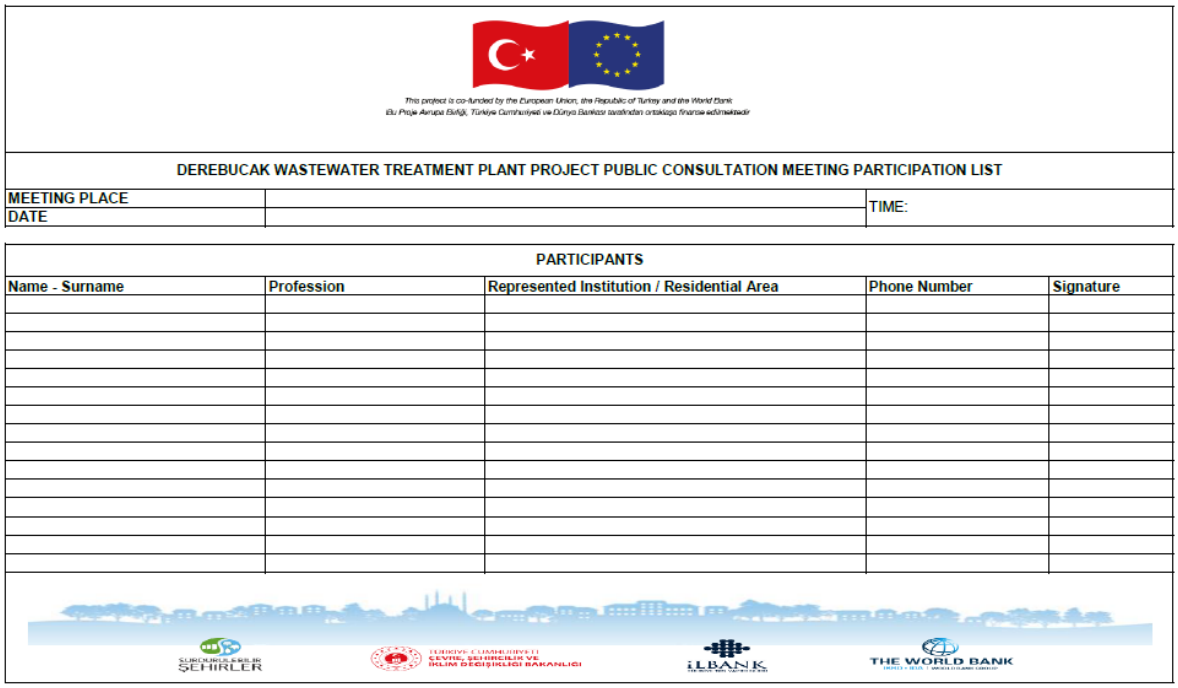
Place and Date of Public Information and Participation

When the date and place of the stakeholder consultation meeting are clarified, they will be announced through the local media, Notice Board of the KOSKI, and an information text sent to the neighborhood mukhtars. Information regarding the planned stakeholder consultation is provided in Table VII.6.

Table VII.6 Details of Planned Stakeholder Consultation

No	Location	Notes	Stakeholder Consultation
1	Derebucak District	Announcement of stakeholder consultation has been published on media (local and/or national newspaper) Announcement has been placed at the Notice Board of the KOSKI, mukhtar office, local mosques and schools Non-technical Summary of the Draft ESMP has been disclosed via web site.	Indicative: 21.09.2023

Information on the participants of the stakeholder consultation meetings will be recorded via a "participant list" filled in by the attendees during the meeting. The participation list format is given in Figure VII.3.



This project is co-funded by the European Union, the Republic of Turkey and the World Bank
Bu Proje Avrupa Birliği, Türkiye Cumhuriyeti ve Dünya Bankası tarafından ortaklaşa finanse edilmektedir

DEREBUCAK WASTEWATER TREATMENT PLANT PROJECT PUBLIC CONSULTATION MEETING PARTICIPATION LIST

MEETING PLACE		TIME:
DATE		

PARTICIPANTS

Name - Surname	Profession	Represented Institution / Residential Area	Phone Number	Signature

SÜRDÜRÜLEBİLİR ŞEHİRLER · TÜRKİYE CUMHURİYETİ ÇEVRE, ŞEHİRCİLİK VE İKLİM DEĞİŞİKLİĞİ BAKANLIĞI · İLBANK · THE WORLD BANK

Figure VII.3 Participation List of Stakeholder Consultation Meeting

The list of participants and/or other forms that will include personal information such as duties, e-mail addresses, signature, contact numbers, etc. of the participants will be kept in the records and will be shared in the ESMP and SEP after the respective lines containing personal data are blurred considering “The Law on The Protection of Personal Data”. Moreover, the screenshots of the newspaper ads, full minutes of the meeting and all materials/documents/ forms related with the consultation activities will be provided as an annex to this ESMP and SEP.

Meeting Program

It is thought that the meeting will be held with the participation of the relevant beneficiaries and stakeholders, local people and non-governmental organizations. The presentation, which will be presented and explained to the people at the stakeholder consultation meeting and brochures, will be prepared by TUMAS & ENCON Joint Venture, the E&S Consultant. In addition, during the meeting, large-scale (A1 size) maps showing the Project area and brochures will be provided for the participants.

The main framework of the presentation is given below:

- Aim of stakeholder consultation meeting,
- Introduction of the Project Owner, Project Implementing Agency (Borrower) and Project Financier,
- Project area,
- Purpose and benefits of the Project,
- Features of Projects,
- Potential Adverse impacts and risks,
- Explaining the stakeholder engagement process,
- Discussion (Questions and Answers) session.

The program and content of the stakeholder consultation meeting will be finalized after the location and time of the meeting are determined.

Summary Meeting Reports

KOSKİ will be responsible for recording the minutes of the meeting and updating the ESMP and SEP accordingly to ensure that ESMP and SEP includes the minutes and details of the meeting including the photographs, if any, screenshots of the newspaper ads, participants list, brochures, full minutes of the meeting as an appendix, etc.

Questions, issues, concerns and suggestions raised by the participants during the consultation meeting will be categorized and a summary of the meeting findings will be prepared, together with the participation list, highlights from the consultations, number of participants, meeting venue, etc.

After stakeholder consultation meeting on draft ESMP, it will be finalized, incorporating the results of the stakeholder consultation and the final ESMP will be published by ILBANK/KOSKI and on WB website.

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IX. ANNEXES

ANNEX-1 CONTRIBUTORS

Name-Surname	Profession
Dr. Ibrahim Haluk CERIBASI	Environmental Engineer
Dr. Okan BILKAY	Mechanical Engineer
Tolga BALTA	Environmental Engineer, Msc
Huseyin TEKIN	Environmental Engineer
Sumeyra CAKIR	Biologist
Nazan Duygu YIGITER	Urban Planner, Msc
Baris USLU	Hydrogeology Engineer
S. Tugce Hazinedar Yaman	Sociologist
Asli KARABACAK	Environmental Engineer, Msc.
Elif Ekin KILIC	Environmental Engineer
Dicle AGIS	Environmental Engineer
Serkan KUCUKUNSAL	Environmental Engineer, Msc.

ANNEX-2 LAND OWNERSHIP STATUS OF THE WWTP SITE

Türkiye Cumhuriyeti

TAPU SENEDİ

İli	KONYA	Fotoğraf
İlçesi	DEREBUCAK	
Mahallesi	SARAYÖNÜ	
Köyü		
Sokağı		
Mevkii	TAŞLIGEÇİT	

Satış Bedeli	Pafta No.	Ada No.	Parsel No.	Yüzölçümü ha	m²	dm²
140.002,63	N26b15b3b	159	25		4.594,77 m2	

GAYRİMENKULÜN

Niteliği	TARLA
Sınırı	Planındadır Zemin Sistem No : 46863867
Edinme Sebebi	Tamamı Elbirliğiyle MUSTAFA YILMAZ : HASAN Oğlu , AHMET YILMAZ : HASAN Oğlu , EMİNE KURTCU : HASAN Kızı , AHMET İNCE : MEHMET Oğlu , MUSTAFA İNCE : MEHMET Oğlu , FATMA ÇIKI : MEHMET Kızı , RAMAZAN İNCE : MEHMET Oğlu , ABDULLAH İNCE : MEHMET Oğlu , GÜLSÜM EYLİK : MEHMET Kızı , ŞEHRİBAN İNCE : HASAN Kızı , AYŞE DEMİRBAŞ : HASAN Kızı , SERKAN İNCE : HASAN Oğlu adına kayıtlı iken KOSKİ- KONYA SU VE KANALİZASYON İDARESİ GENEL MÜDÜRLÜĞÜ adına Uzlaşma/Anlaşma Tutanağı ile Kamulaştırma İşlemi işleminden.
Sahibi	KOSKİ- KONYA SU VE KANALİZASYON İDARESİ GENEL MÜDÜRLÜĞÜ — Tam

Geldisi		Yevmiye No.	Cilt No.	Sahife No.	Sıra No.	Tarihi	Gittisi	
Cilt No.		490	21	2004		21/08/2017		Cilt No.
Sahife No.		Siciline Uygundur. Osman EROĞLU Tapu Müdürü						Sahife No.
Sıra No.								Sıra No.
Tarih		NOT : * Mülkiyetin gayri ayni hakları ve şerhler için tapu kütüğüne müracaat edilmelidir. ** Tebligat Kanunu hükümleri gereğince adres değişikliği ilgili Tapu Sicil Müdürlüğüne bildirilecektir.						Tarih

D.M.O. Basım İşl. Md. Döner Sermaye İşletmesi tarafından bastırılmıştır. Stok No 129

ANNEX-3 EIA EXEMPTION LETTER

T.C. Çevre ve Şehircilik Bakanlığı
KONYA ÇEVRE VE ŞEHİRCİLİK İL MÜDÜRLÜĞÜ - ÇED VE ÇEVRE İZİNLERİNDEN SORUMLU ŞUBE MÜDÜRLÜĞÜ
25/08/2016 11:54 - 47342952-220.03-E.11142
08064879

T.C.
ÇEVRE VE ŞEHİRCİLİK BAKANLIĞI

İSLÂM DÜNYASI TURİZM BAŞKENTİ KONYA

T.C.
KONYA VALİLİĞİ
Çevre ve Şehircilik İl Müdürlüğü

Sayı : 47342952-220.03-
Konu : ÇED Muafiyeti

KONYA SU VE KANALİZASYON İDARESİ BAŞKANLIĞI adına ARBİOTEK ÇEVRE ÇÖZÜMLERİ ARAŞTIRMA GEL. ÇEVRE LAB. VE İNŞ. SAN. TİC.LTD.ŞTİ.
Selçuk Üniversitesi TGB1 Safir Panaroma F Blok No:302-303 Selçuklu/KONYA

Konya İli, Derebucak İlçesi Sarayönü Mahallesi 159 Ada 94 ve 95 Parsel mevkiinde Konya Büyükşehir Belediyesi Başkanlığı(Konya Su ve Kanalizasyon İdaresi Başkanlığı) tarafından yapılması planlanan Derebucak Atıksu Arıtma Tesisi (400 m3/gün) projesi, 25/11/2014 tarih ve 29186 sayılı Resmi Gazete'de yayımlanarak yürürlüğe giren ÇED Yönetmeliği Listelerindeki eşik değerden az olduğu için kapsam dışı olarak değerlendirilmiştir.

Ancak, planlanan yatırım ile ilgili olarak, 5491 sayılı kanunla değişik 2872 sayılı Çevre Kanunu ile bu Kanuna istinaden çıkarılan Yönetmeliklerin ilgili hükümlerine uyulması ve diğer mer'i mevzuat çerçevesinde öngörülen gerekli izinlerin alınması, ekolojik dengenin bozulmamasına, çevrenin korunmasına ve geliştirilmesine yönelik tedbirlere riayet edilmesi gerekmektedir.

Bilgilerinizi rica ederim.

Osman KOCAOĞLU
Çevre ve Şehircilik İl Müdürü V.

Evrağın Aslı Güvenli Elektronik İmzalıdır
Kani FİLİZ V. H. K. I. Evrak Memuru
Tarih : 25 Ağustos 2016

Horozluhan Mah. Abdülbasri Sk. no:1 Selçuklu/ Konya
Telefon No: 03322354525 Faks: 03322354527
E-Posta: hatice.tunc@csb.gov.tr İnternet Adresi: www.csb.gov.tr

Bilgi için:Hatice Tunç
Ziraat Mühendisi

ANNEX-4 STAKEHOLDER CONSULTATION MEETING

Annex 4-1 Announcements and Presentation for the Stakeholder Consultation Meeting

DOĞANHİSAR, DEREBUCAK VE TAŞKENT ATIKSU ARITMA TESİSİ PROJELERİ HALKIN KATILIMI TOPLANTISINA DAVET

Konya Su ve Kanalizasyon İdaresi Genel Müdürlüğü ve İller Bankası A.Ş. tarafından Dünya Bankası finansmanı ile yürütülecek olan "Sürdürülebilir Şehirler Projesi-II Ek Finansman (SŞP-II-EF)" kapsamında Konya ili, Doğanhisar, Derebucak ve Taşkent İlçeleri sınırları içinde yapılması planlanan **Doğanhisar, Derebucak ve Taşkent Atıksu Arıtma Tesisi Projeleri** için yürütülen çevresel ve sosyal çalışmalar kapsamında halkı bilgilendirmek, halkın görüş ve önerilerini almak, inşaat ve işletme dönemlerinde halk ile işbirliği tesis etmek üzere İdare tarafından planlanan ve aşağıda detayları verilen "**Halkın Katılımı Toplantısı**" düzenlenecektir.

Halkımıza saygı ile duyurulur.

Toplantı Tarihi, Saati ve Yeri

Doğanhisar AAT:
Tarihi: 21.09.2023 Perşembe günü saat:10.00
Adresi: Doğanhisar Kültür Merkezi Pazar Mahallesi İhsan Zeki Doyduk Caddesi No:7 Doğanhisar/KONYA
Derebucak AAT:
Tarihi: 21.09.2023 Perşembe günü saat:14.00
Adresi: Derebucak İlçe Parkı Sarayönü Mahallesi Av. Tahir AKYÜREK Caddesi No:71 Derebucak/KONYA
Taşkent AAT:
Tarihi: 22.09.2023 Cuma günü saat:14.00
Adresi: Taşkent Belediyesi Düğün Salonu Hıra Mahallesi Vali İzzet Bey Caddesi No:6 Taşkent/KONYA

Proje Sahibi : Konya Su ve Kanalizasyon İdaresi Genel Müdürlüğü
Tel : 0 332 221 61 00
Faks : 0 332 235 46 34

Annex 4-1-1 Local Newspaper Announcement

Ayrıca ÇSYP kapsamında uygulanacak **izleme ve denetim faaliyetleri** de tanımlanacaktır. ÇSYP çalışmaları kapsamında toprak ve hava ortamları, gürültü, koku, su kaynakları, atıklar, trafik üzerinde oluşabilecek etkiler belirlenecek ve ilgili etki azaltma önlemleri belirtilecektir.

İzleme gerekliliklikleri de ÇSYP kapsamındaki izleme tablolarında tanımlanarak sunulacaktır. Buna göre projenin inşaat aşamasında, üst toprak kaybı, toprak kirliliği, toz emisyonları, gürültü, sızıntı, su kirliliği, atık üretimi ve iş sağlığı ve güvenliği, işletme aşamasında ise kimyasalların depolanması ve kullanımı, atıklar, gürültü, geçim kaynakları, şikâyetler, topluluk çatışmaları, paydaş katılımı, iş sağlığı ve güvenliği ve işgücü parametreleri **ÇSYP'de belirlenen şartlara uygun olarak izlenecektir**.

Bu Çevresel ve Sosyal Yönetim Planı (ÇSYP)'nin uygulanmasından sorumlu ana kurum, projenin inşaatından ve işletme aşamalarından da sorumlu olan Konya Su ve Kanalizasyon İdaresi (KOSKİ)'dir. Ayrıca, projenin farklı aşamalarında çeşitli taraflar (Yükleniciler, Müşavir firma, Proje Uygulama Birimi, İLBANK, vb.) ÇSYP kapsamında çeşitli konularda sorumluluk alacaklardır. Sözü edilen tüm çalışmalar KOSKİ tarafından koordine edilecektir.

Proje dokümanları ayrıca KOSKİ'nin internet sitesi üzerinden yayınlanacaktır ve talep edilmesi halinde bu dokümanlar KOSKİ tarafından paylaşılacaktır.

5

Konya halkının hem inşaat hem de işletme aşamasında Proje ile ilgili endişelerini, görüşlerini, şikâyetlerini ve önerilerini almak adına bir **Şikâyet Giderme Mekanizması** kurulmuştur.

Bu mekanizma aracılığıyla iletilen şikâyetler, hızlı ve hassas bir şekilde ele alınacaktır.

Şikâyet Giderme Mekanizması'nın kurulmasından ve uygulanmasından sorumlu kurum Konya Su ve Kanalizasyon İdaresi (KOSKİ) olacaktır. Bu kapsamda proje ile ilgili beklenti, görüş, öneri ve şikâyetlerin paylaşılması için aşağıda verilen iletişim kanalları da ayrıca kullanılabilecektir:

Paydaş Katılım Toplantıları

KOSKI:

Telefon:0 332 221 61 00

E-mail: koski@hs03.kep.tr
koski@hs01.kep.tr

Tüm iç ve dış paydaşlar, projeyle ilgili şikâyetlerini ve geri bildirimlerini doğrudan devlet yetkililerine iletmek için alternatif ve iyi bilinen bir kanal olarak tüm proje paydaşlarının erişimine açık olan ve ülke çapında kullanılan Cumhurbaşkanlığı İletişim Merkezi (CİMER) gibi diğer şikâyet giderme mekanizmalarından da yararlanma hakkına sahip olacaktır.

- **www.cimer.gov.tr**
- **Çağrı merkezi:150**
- **Telefon numarası: +90 312 525 55 55**

6

This project is co-funded by the European Union, the Republic of Turkey and the World Bank
Bu Proje Avrupa Birliği, Türkiye Cumhuriyeti ve Dünya Bankası tarafından ortaklaşa finanse edilmektedir

SÜRDÜRÜLEBİLİR ŞEHİRLER PROJESİ-II

Derebucak Atıksu Arıtma Tesisi Projesi

Bilgilendirme Broşürü

EYLÜL 2023

1

Derebucak Atıksu Arıtma Tesisi Projesi ("Proje"), Türkiye'deki şehirlerde sürdürülebilir kalkınmayı desteklemek için Sürdürülebilir Şehirler Projesi- II Ek Finansman (SŞP-II-EF) kapsamındaki alt projelerden biridir. SŞP-II-EF, özellikle afetlere ve iklim değişikliğinin hafifletilmesine ve risklere karşı şehir direncine ilişkin proje yaklaşımlarını geliştirmeyi amaçlamaktadır.

Dünya Bankası (DB) tarafından finanse edilen proje, İller Bankası A.Ş. aracılığı ile KOSKİ tarafından yürütülecektir.

Proje, Derebucak İlçesi'nde atıksu arıtımı eksikliğinden kaynaklanan çevre kirliliğini çözmeyi ve halk sağlığını iyileştirmeyi amaçlamaktadır.

Derebucak Atıksu Arıtma Tesisi, gelişmiş biyolojik atıksu arıtma sistemi olarak tasarlanmıştır. Mevcut durumda, Kocadere Nehri'ne arıtılmamış atıksu deşarjı, çevre ve halk sağlığı üzerinde önemli bir baskı oluşturmaktadır.

Bu kapsamda Proje, 2055 hedef yılı ile 400 m^3/gün kapasiteli bir Atıksu Arıtma Tesisi (AAT) inşa ederek bu baskıyı ortadan kaldırmayı hedeflemektedir. Proje ile hizmet verilmesi öngörülen nüfus yaklaşık 2.570 kişidir. Proje, Derebucak İlçesi Sarayönü Mahallesi 159/25 parseli üzerinde yaklaşık 2.400 m^2 alana inşa edilecektir (Bkz: Şekil 1).

2

Projenin beklenen sonuçları aşağıdaki gibidir:

- Proje, KOSKİ'nin Derebucak ilçesinde uygun bir atıksu arıtması sağlamasını ve böylece halk sağlığı, çevre ve doğal kaynaklara yönelik riskleri azaltmasını sağlayacaktır,
- Proje, bölgedeki koku şikayetlerini ortadan kaldıracaktır;
- Proje, Türkiye'nin atıksu sektöründe ulusal ve uluslararası kalite standartlarına uyum çabalarına katkı sağlayacaktır;
- Halkın sağlık standartları projenin uygulanmasıyla iyileştirilecektir.

Projenin inşaatının on iki (12) ayda tamamlanması planlanmaktadır.

İnşaat ve işletme aşamalarında istihdam edilecek toplam işçi sayısı kesin olmamakla birlikte, inşaat ve işletme aşamalarında sırasıyla 100 ve 10 olarak öngörülmektedir.

Projenin işe alım sürecinde yerel halka öncelik verilecektir.

Proje, ulusal mevzuatın yanı sıra DB Koruma Politikaları, yönergeler, standartlar ve en iyi uygulama belgeleri de dahil olmak üzere iyi uluslararası uygulamalarla uyumlu olacaktır.

3

Proje herhangi bir ekonomik yer değiştirmeye neden olmayacaktır. AAT'nin inşası sırasında sadece yerel işletmeler üzerinde önemli olmayan geçici etki olacaktır. Yolların kapanmasından mümkün olduğunca kaçınılacak, inşaat faaliyetleri nedeniyle proje çevresindeki işletmelerin kapanması beklenmemektedir.

Şekil 1: Derebucak AAT Yer Bulduru Haritası

Beklenen etkilerin yönetimi için bir Çevresel ve Sosyal Yönetim Planı (ÇSYP) geliştirilmiştir.

ÇSYP, Projenin geliştirilmesinden kaynaklanan olası çevresel ve sosyal etki ve riskleri belirlemek ve önemli olumsuz çevresel etkiler için etki azaltma önlemleri önermek amacıyla hazırlanmaktadır.

4

Annex 4-1-2 Brochure Distributed During the SCM

This project is co-funded by the European Union, the Republic of Turkey and the World Bank
Bu Proje Avrupa Birliği, Türkiye Cumhuriyeti ve Dünya Bankası tarafından ortaklaşa finanse edilmektedir

SÜRDÜRÜLEBİLİR ŞEHİRLER PROJESİ - II

DEREBUCAK ATIKSU ARITMA TESİSİ PROJESİ

HALKIN KATILIMI TOPLANTISI

BİLGİLENDİRME SUNUMU

EYLÜL 2023

KAPSAM/GÜNDEM

DEREBUCAK ATIKSU ARITMA TESİSİ PROJESİ

Proje yürütücüsü kimdir? Proje uygulayıcısı kimdir? Proje finansörü kimdir?

- Proje'nin beklenen faydaları nelerdir?
- Çevresel ve Sosyal Çalışmalar nedir?
  - Olası çevresel ve sosyal etkiler
  - Etki azaltıcı önlemler ve yönetim stratejileri
- Paydaş Katılımı: Sürece nasıl dahil olabilirsiniz?
- Sorular ve Cevaplar (Proje ile ilgili soru, beklenti, görüş ve öneriler)

PROJE YÜRÜTÜCÜSÜ KİMDİR?
PROJE UYGULAYICISI KİMDİR?
PROJE FİNANSÖRÜ KİMDİR?

PROJE YÜRÜTÜCÜSÜ: İLLER BANKASI ANONİM ŞİRKETİ GENEL MÜDÜRLÜĞÜ

PROJE UYGULAYICISI: KONYA BÜYÜKŞEHİR BELEDİYESİ SU VE KANALİZASYON İDARESİ GENEL MÜDÜRLÜĞÜ (KOSKİ)

PROJE FİNANSÖRÜ: DÜNYA BANKASI

PROJENİN YERİ

- Proje alanı Konya ili Derebucak ilçesinde yer almaktadır. İlçe, Konya il merkezine 140 km uzaklıktadır.
- Derebucak Atıksu Arıtma Tesisi için ayrılan arsa büyüklüğü yaklaşık 2400 m²'dir.

SÜRDÜRÜLEBİLİR ŞEHİRLER
TÜRKİYE CUMHURİYETİ ÇEVRE, ŞEHİRCİLİK VE İKLİM DEĞİŞİKLİĞİ BAKANLIĞI
İLBANK TÜRKİYE'NİN YAPICI GÜCÜ
THE WORLD BANK IBRD • IDA | WORLD BANK GROUP

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PROJENİN AMACI ve FAYDALARI

- Proje, KOSKİ'nin Derebucak ilçesinde uygun bir atıksu arıtması sağlamasını ve böylece halk sağlığı, çevre ve doğal kaynaklara yönelik riskleri azaltmasını sağlayacaktır.
- Proje, bölgedeki koku şikayetlerini ortadan kaldıracaktır.
- Proje, Türkiye'nin atıksu sektöründe ulusal ve uluslararası kalite standartlarına uyum çabalarına katkı sağlayacaktır.
- Halkın sağlık standartları projenin uygulanmasıyla iyileştirilecektir.

PROJE ÖZELLİKLERİ

- **Derebucak Atıksu Arıtma Tesisi**, 400 m^3/gün kapasiteli gelişmiş biyolojik atıksu arıtma sistemi olarak tasarlanmıştır.
- Proje ile hizmet verilmesi öngörülen nüfus yaklaşık 2.570 kişidir.
- Projenin personel ihtiyaçları henüz kesinleşmemiş olmakla beraber işe alım sürecinde yerel halka öncelik verilecektir.
- Projenin inşaat faaliyetlerinin 12 ay süreceği öngörülmektedir.

PROJE ÖZELLİKLERİ

- Proje, Derebucak İlçesi Sarayönü Mahallesi 159/25 parseli üzerinde yaklaşık 2.400 m^2 alana inşa edilecektir.
- Atıksu arıtma tesisinin inşasının yapılacağı arazi, 27.08.2017 tarihinde KOSKİ tarafından sahiplerinden satın alınmıştır ve arazi şu anda KOSKİ'ye aittir.
- Arazi devir işlemleri tamamlandığından herhangi bir özel arazinin kamulaştırılması gerekmemektedir.
- Atıksu arıtma tesisi daha önce çilek yetiştiriciliği için kullanılmıştır, ancak alan şu anda atıl durumda olup herhangi bir amaç için kullanılmamaktadır. Arazide, en son kiracı tarafından 2017 yılında çilek ekimi yapılmış ancak arazi alınmadan önce kiracı araziden ayrılmıştır .

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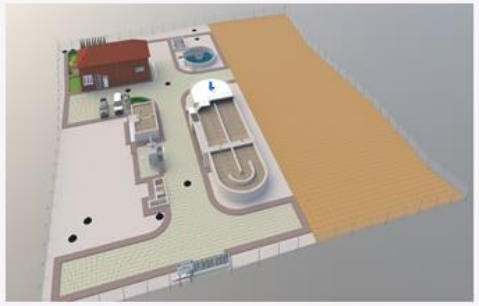
DEREBUCAK AAT GÖRÜNÜMÜ



ÇEVRESEL VE SOSYAL ÇALIŞMALARIN KAPSAMI

FİZİKSEL ve BİYOLOJİK ÇEVRE | SOSYO-EKONOMİK ÇEVRE | KÜLTÜREL MİRAS

Etki Kaynağı Faaliyetler/Durumlar

- Tesviye, Kazı ve Dolgu
- Malzeme Temini ve Taşınması
- Atık Oluşumu
- İstihdam
- İşletme sırasında oluşabilecek teknik hatalar

İlgili Çevresel ve Sosyal Unsurlar

- Toprak Ortamı
- Su Kaynakları
- Biyolojik Ortam
- Hava Kalitesi
- Gürültü
- Koku
- Trafik
- Atık Yönetimi
- Kültürel Miras
- Sosyo-ekonomik Çevre
- Toplum Sağlığı ve Güvenliği
- İş ve Çalışma Koşulları

TOPRAK ORTAMI

Olası Etkiler

- Üst toprak kaybı
- İnşaat makine ve ekipmanlarında kullanılacak yakıt, boya ve yağların sızması ve dökülmesi nedeniyle toprak kirlenmesi riski
- Proje kapsamında oluşacak katı veya sıvı atıkların kontrolsüz depolanması veya bertaraf edilmesi durumunda oluşabilecek toprak kirliliği
- Erozyon potansiyeli

Alınacak Önlemler

- ✓ Sadece belirlenen çalışma sahaları ve güzergahları kullanılarak kirlenmeye maruz kalacak toprak miktarı minimuma indirgenecektir.
- ✓ Şantiyede kullanılacak iş makinesi ve araçlar için gerekli olan yakıt, öncelikle en yakın istasyondan sağlanacak; gerekli görülmesi halinde sahada depolanabilecek yakıtlar, gerekli sızdırmazlık önlemlerinin alındığı alanlarda depolanacaktır.
- ✓ Erozyona sebep olmamak için bitkisel toprağın sıyrılması olması gerekenden erken yapılmayacaktır ve sıyrılan toprak uygun koşullarda (çevre düzenlemesi vs) yeniden kullanılmak üzere depolanacaktır.

SU KAYNAKLARI

Olası Etkiler

- İnşaat aşamasında, çalışanların günlük ihtiyaçları su temini gereksinimini yaratacaktır.
- Projenin inşaat aşamasında toz bastırma için su kullanılacaktır.

Alınacak Önlemler

- ✓ AAT'nin çıkış suyu kalitesi Kentsel Atıksu Arıtma Yönetmeliği'nde belirtilen sınır değerlerle uyumlu olacak ve deşarj edilen su Kocadere Nehri'nin kirlenmesine neden olmayacaktır.
- ✓ Boruların ve pompaların bakım ve onarım işleri geciktirilmeden yapılacaktır.
- ✓ Toz bastırma faaliyetleri için sulamaya bağlı yüzey akışı önlenecektir.
- ✓ İnşaat çalışmalarında oluşacak atıksu, su kaynaklarına deşarj edilmeyecektir.

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KARASAL BİYOÇEŞİTLİLİK

Olası Etkiler

- Flora- fauna türleri üzerindeki olası riskler

Alınacak Önlemler

- ✓ Proje alanı içerisinde korunan ve hassas ekosistemler veya türlerin olması öngörülmemektedir.
- ✓ Çalışma alanı sınırları içerisinde gerekli görülmedikçe bitki örtüsü temizliği yapılmayacaktır. Bitki örtüsü temizliği yapılan yerlerde mümkün olduğunca tekrar bitkilendirme yapılacaktır.
- ✓ Arazi hazırlığı aşamasından önce, inşaat faaliyetlerinin yapılacağı bölge önceden belirlenecek ve bu sınırların dışına çıkılmayacaktır.

HAVA KALİTESİ VE GÜRÜLTÜ

Olası Etkiler

- Projenin inşaat aşamasında hava kalitesi üzerindeki başlıca etkiler, malzeme taşıma, araç hareketi ve ağır iş makinelerinden (kamyonlar, ekskavatörler, vb.)kaynaklanan emisyonlardan kaynaklı etkiler olacaktır. Hava kirliliği esas olarak toz emisyonları ve egzoz emisyonlarıyle sera gazı emisyonları kaynaklı olacaktır.
- Sahanın hazırlanması ve inşaat faaliyetleri için kullanılacak ulaşım araçları, makineler ve diş mekan ekipmanları tarafından gürültü oluşması beklenmektedir.

Alınacak Önlemler

- ✓ İnşaat sahaları toz oluşumuna karşı düzenli olarak sulanacaktır.
- ✓ İnşaatta gürültü bariyerleri kullanılarak gürültü azaltımı sağlanacaktır.
- ✓ İnşaat araçlarının şantiyeye girmeyi beklerken veya şantiyede beklerken motorlarını çalışır durumda tutmalarına izin verilmeyecektir.
- ✓ AAT sahası sınırlarına ağaç dikilecektir.
- ✓ Proje kapsamında gürültü seviyesi düşük ekipman seçimine özen gösterilecektir.
- ✓ İnşaat faaliyetleri mümkün olduğunca gündüz saatlerinde yapılacaktır.

KOKU

Olası Etkiler

- Atıksu arıtma tesisinin çamur üniteleri kaynaklı düşük miktarda koku oluşumu görülebilir.

Alınacak Önlemler

- ✓ Katı atık ve aktif çamur miktarlarının azaltılması sağlanacaktır.
- ✓ Biyolojik arıtım sırasında havalandırma oranı artırılacaktır.
- ✓ Arıtma tesisi kapasitesini aşan atıksu akışı önlenecektir.
- ✓ Koku ile ilgili şikayetleri yönetmek için işleyen bir şikayet giderme mekanizması kurulacaktır.

TRAFİK

Olası Etkiler

- Şehir içinde ve tesis çevresinde gerçekleştirilecek inşaat faaliyetleri dolasıyla trafiğin artması ve aksaması

Alınacak Önlemler

- ✓ Trafik Yönetim Planı hazırlanacak ve trafiği etkileyebilecek tüm faaliyetler bu plana göre yapılacaktır.
- ✓ Trafik, trafik güvenliğini ve trafik akışındaki aksamaları minimuma indirecek şekilde düzenlenecektir.
- ✓ Yolların kapatılması gerekiyorsa resmi izinler alınacak ve aksaklığın güzergahı ve süresi önceden belirlenecektir.
- ✓ Gerekli trafik levhaları ve bariyerler yüklenici tarafından konulacaktır.
- ✓ Şikayet mekanizması kurulacak ve işletilecektir.

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ATIK OLUŞUMU

Atık Üretilecek Olası Kaynaklar

- İnşaatta çalışacak personel kaynaklı katı atık oluşumu
- Ahşap, kağıt, karton, plastik vb. ambalaj atıkları
- Proje'nin inşaat ve işletme aşamaları kapsamında oluşabilecek tehlikeli ve özel atıklar, kontamine kaplar, bez ve giderler, atık pil ve akümülatörler, atık yağlar vb.
- Hafriyat ve inşaat atıkları

Alınacak Önlemler

- ✓ Proje kapsamında oluşacak atıklar atık yönetimi hiyerarşisine göre yönetilecektir.
- ✓ Atıklar çok bekletilmeden bertaraf edilecektir.
- ✓ Geri dönüştürülemeyen ve değerlendirilemeyen katı atıklar şantiye sahasındaki çöp konteynırlarında toplanacak ve belediye tarafından uzaklaştırılacaktır. Atıkların sahada yakılması veya gömülmesi söz konusu olmayacaktır.
- ✓ Atık oluşumu, depolanması ve bertarafı ile ilgili kayıtlar tutulacaktır. Geçici depolanan atıklar özelliklerine göre sınıflandırılacaktır.

SOSYO-EKONOMİ

Olası Etkiler:

- Projenin inşaat ve işletme aşamalarında toz, gürültü, ulaşımın aksaması gibi hususlar söz konusu olabilir.
- Proje kapsamında çalıştırılacak iş gücünün; çalışma şartları, haklarının korunması, iş sağlığı ve güvenliği gibi konular üzerindeki olası etkileri olabilir.

Alınacak Önlemler

- ✓ Çalışanların ulusal iş hukuku kapsamındaki haklarıyla ilgili açık ve anlaşılır bir şekilde bilgilendirilmesi
- ✓ İş Sağlığı ve Güvenliği kapsamında inşaat aşamasında çalışanlara ve operasyon ve bakım personeline eğitimler verilmesi
- ✓ Çalışanların ve üçüncü kişilerin, proje ile ilgili alanlara girişinin kontrollü bir şekilde sağlanması, Proje alanının güvenliğini sağlamak için gerekli izinlere sahip kişilerin veya kuruluş görevlilerinin alana erişime izin verilmesi
- ✓ Tüm ekipmanın uygun çalışma düzeninde çalıştırılması
- ✓ Şikayet mekanizmasının kurulması ve işletilmesi

ARKEOLOJİ VE KÜLTÜREL MİRAS

Olası Etkiler

- İnşaat aşamasında bilinmeyen arkeolojik yerleri ve kalıntıları keşfetme ve bunlara olası zarar vermek
- İnşaat aşamasında bulunan arkeolojik yerlerin ve kalıntıların değerli olduğunu fark edemeden önemli kültürel değerleri kaybetmek

Alınacak Önlemler

- ✓ Kültürel mirasın korunmasının önemi ve Proje'nin kültürel miras kaynaklarına olan etkilerini önleme, en aza indirme veya hafifletme tasarrufları konusunda farkındalıklarını artırmak için tüm Proje personeli ve Taşeronlara eğitim verilecektir. Eğitim KOSKİ/PIU Ç&S Uzmanı tarafından yürütülecektir.
- ✓ Yüklenici ve Taşeronlarla yapılan sözleşmelerde inşaat süresince inşaat kaynaklı zararların karşılanmasına yönelik hükümler yer alacaktır.
- ✓ Yüklenicinin Proje alanında yapacağı işler sırasında herhangi bir taşınır veya taşınmaz kültür varlığı ile karşılaşması durumunda, Yüklenici tüm işleri durdurmalı, 2863 sayılı Kanun'un 4. maddesi uyarınca KOSKİ tarafından en yakın Mahalli İdare veya Müze Müdürlüğü'ne haber vermeli ve bundan sonra ilgili makamdan gelecek talimatlara uymalıdır.

PAYDAŞ KATILIMI: SÜRECE NASIL DAHİL OLABİLİRSİNİZ?

Görüş ve Şikayet Bildirme Mekanizması

Proje kapsamında bir şikayet Mekanizması kurulacak ve herkes tarafından erişilebilir olacaktır.

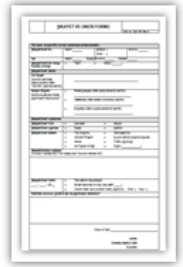
Proje ile ilgili beklentileriniz, görüşleriniz, önerileriniz ve şikayetleriniz;

- Paydaş Katılım Toplantıları sırasında,
- KOSKİ internet sitesini kullanarak,
- Şikayet Mekanizmasını kullanarak,
- Alo 153 ve Alo 185 Acil Yardım Hattı aracılığıyla,
- Cumhurbaşkanlığı İletişim Merkezi (CİMER) aracılığıyla,
- KOSKİ proje temsilcisi aracılığıyla iletebilirsiniz.

Telefon: 0 332 221 6100

Adres: İnsaniye Mh. Kazım Karabekir Cd. No :58 42060 Selçuklu/Konya

E-mail: koski@hs01.kep.tr, koski@hs03.kep.tr



- Bu toplantıda sunacağınız görüş, öneri ve şikayetleriniz kayıt altına alınarak nihai raporda ilgili paydaşların (KOSKİ, İLBANK, DB) bilgisine sunulacaktır.

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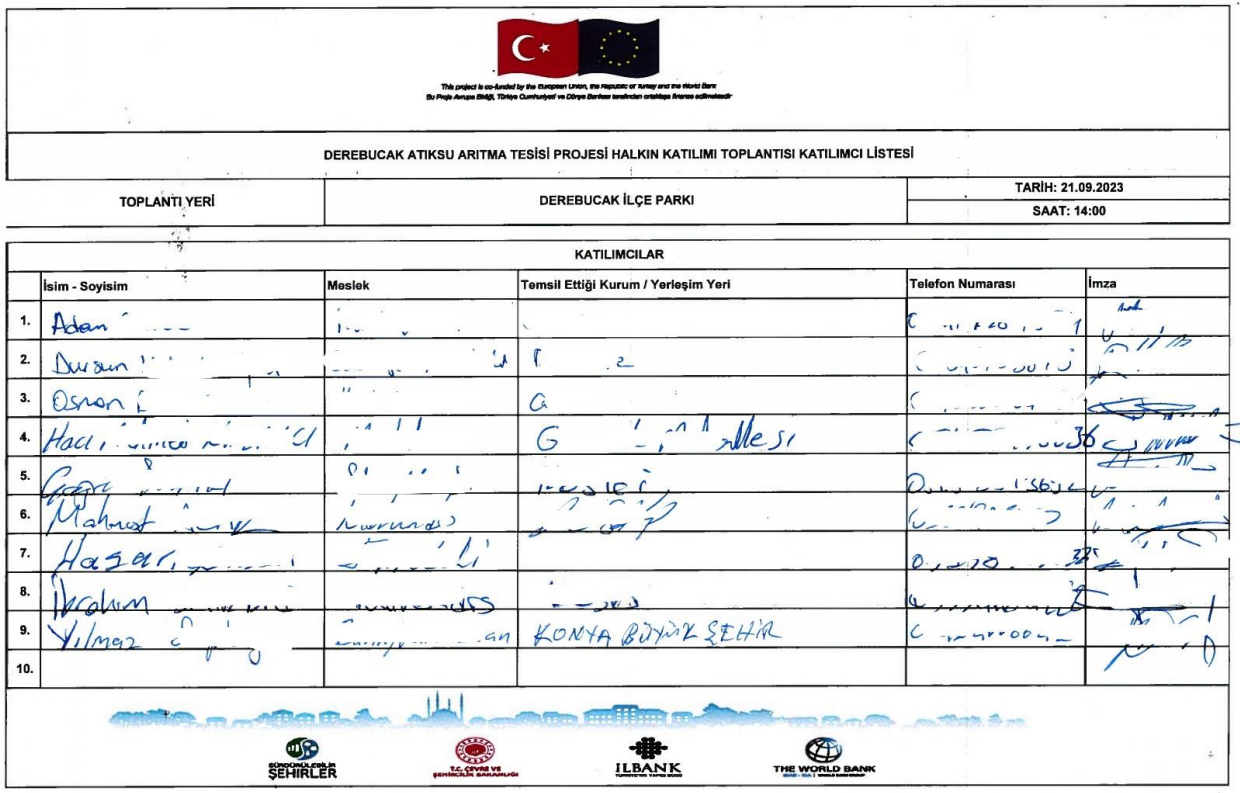
Annex 4-1-3 Project Information Presentation that was presented at SCM

Annex 4-2 Stakeholder Consultation Meeting Participant Lists and Photos



DEREBUCAK ATIKSU ARITMA TESİSİ PROJESİ HALKIN KATILIMI TOPLANTISI KATILIMCI LİSTESİ

TOPLANTI YERİ	DEREBUCAK İLÇE PARKI	TARİH: 21.09.2023 SAAT: 14:00

KATILIMCILAR

	İsim - Soyisim	Meslek	Temsil Ettiği Kurum / Yerleşim Yeri	Telefon Numarası	İmza
1.	Adan				
2.	Dursun				
3.	Osman				
4.	Hacı				
5.					
6.	Mahmut				
7.	Hasan				
8.	İbrahim				
9.	Yılmaz		KONYA BÜYÜKŞEHİR		
10.					

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DEREBUCAK ATIKSU ARITMA TESİSİ PROJESİ HALKIN KATILIMI TOPLANTISI KATILIMCI LİSTESİ

TOPLANTI YERİ	DEREBUCAK İLÇE PARKI	TARİH: 21.09.2023 SAAT: 14:00

KATILIMCILAR

	İsim - Soyisim	Meslek	Temsil Ettiği Kurum / Yerleşim Yeri	Telefon Numarası	İmza
1.					
2.					
3.					
4.	İSMAİL				
5.					
6.					
7.					
8.					
9.					
10.	Mehmet				

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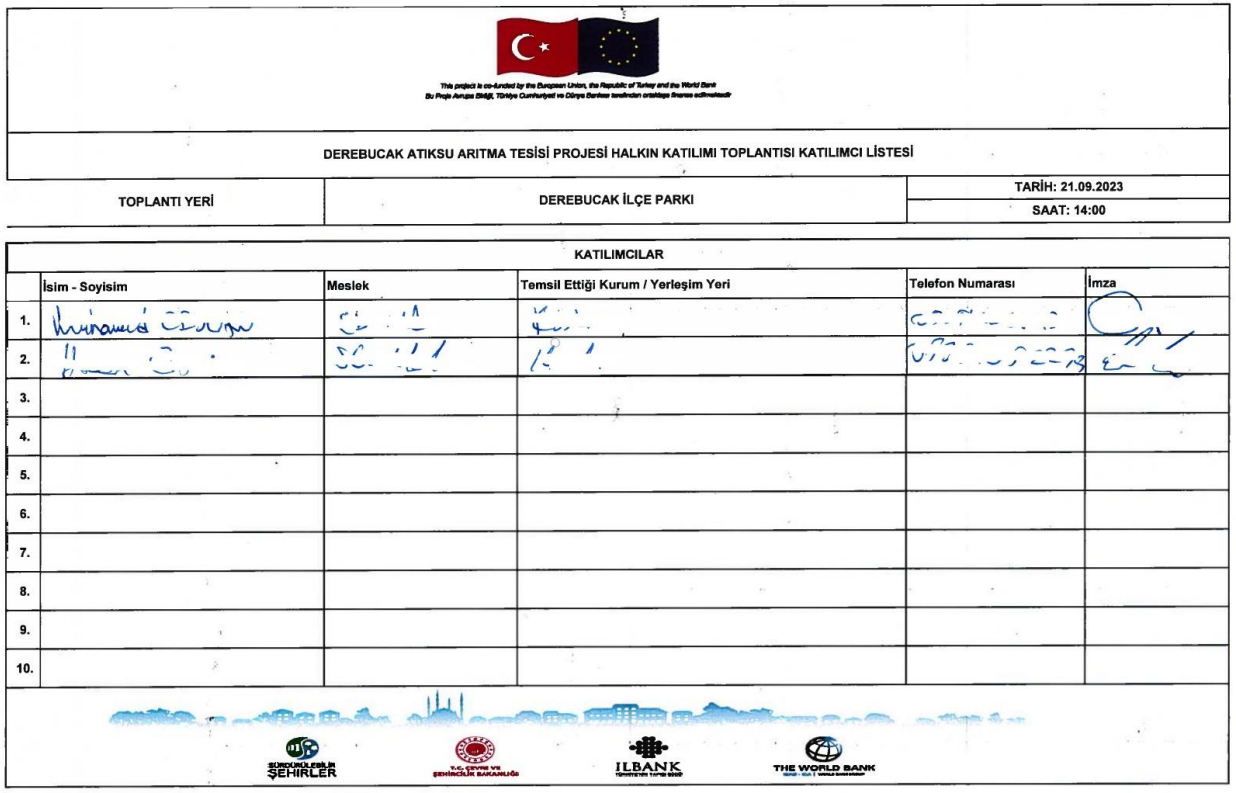
DEREBUCAK ATIKSU ARITMA TESİSİ PROJESİ HALKIN KATILIMI TOPLANTISI KATILIMCI LİSTESİ

TOPLANTI YERİ	DEREBUCAK İLÇE PARKI	TARİH: 21.09.2023 SAAT: 14:00

KATILIMCILAR

	İsim - Soyisim	Meslek	Temsil Ettiği Kurum / Yerleşim Yeri	Telefon Numarası	İmza
1.	Ali				
2.	Ömer				
3.	Halit				
4.	Ahmet				
5.	Abdullah				
6.	Murat				
7.	İbrahim				
8.	Osmancan				
9.	Büşra				
10.	Ülkü				



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TOPLANTI YERİ	DEREBUCAK İLÇE PARKI	TARİH: 21.09.2023 SAAT: 14:00

KATILIMCILAR

	İsim - Soyisim	Meslek	Temsil Ettiği Kurum / Yerleşim Yeri	Telefon Numarası	İmza
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

SÜRDÜRÜLEBİLİR ŞEHİRLER · T.C. ÇEVRE VE ŞEHİRCİLİK BAKANLIĞI · İLBANK · THE WORLD BANK

Annex 4-1-4 Stakeholder Consultation Meeting List of Participants

Annex 4-1-5 During the SCM

Annex 4-1-6 Presentation

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ANNEX-5 SAMPLE FORMS FOR GRIEVANCE REDRESS MECHANISM

Annex 4-1Sample Grievance Form

KOSKİ	**KONYA METROPOLITAN MUNICIPALITY / GENERAL DIRECTORATE OF WATER AND SEWERAGE ADMINISTRATION** **Construction of Derebucak WWTP** **GRIEVANCE FORM**

Person Filling out the Form:	Date and time:
Meeting Agenda:	Reference No:
INFORMATION ABOUT THE COMPLAINANT	
Name Surname:	**Means of Complaint:**
TR Identification number:	Phone / Toll Free Hotline ☐
Phone:	Face to Face Meeting ☐
Address:	Website / E-Mail ☐
E-Mail:	Other (Explain) ☐

Stakeholder Type				
Public Institution ☐	PAP ☐	Private Enterprise ☐	Professional Chamber ☐	NGO ☐
Interest Groups ☐	Industry Associations ☐	Labor Unions ☐	Media ☐	University ☐

DETAILED INFORMATION ON THE COMPLAINT	
Explanation of the complaint:	
Action requested by the complainant:	

Registrant Name Surname/ Signature **Complainant Name Surname / Signature**

Annex 4-2 Sample Grievance Closeout Form

	KONYA METROPOLITAN MUNICIPALITY / GENERAL DIRECTORATE OF WATER AND SEWERAGE ADMINISTRATION **Construction of Derebucak WWTP**
	GRIEVANCE CLOSEOUT FORM

Reference No:	
IDENTIFICATION OF CORRECTIVE ACTION	
1	
2	
3	
4	
5	
Responsible Departments	
TERMINATION OF COMPLAINT	
This section will be filled and signed by the complainant in the event that the complaint specified in the "Grievance Register Form" is resolved.	

Grievance Closeout Date:

Name-Surname/Signature of the Person Closing Complaint:

Name-Surname/Signature of Complainant:

...../……/……

.

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KOSKİ	**KONYA METROPOLITAN MUNICIPALITY / GENERAL DIRECTORATE OF WATER AND SEWERAGE ADMINISTRATION** **Construction of Derebucak WWTP** **CONSULTATION FORM**

Person Filling out the Form:	Date and time:
Meeting Agenda:	Consultation Registration:

CONSULTATION INFORMATION	
Interviewed Institution:	Communication Type
Name-Surname of the Interviewee:	Phone / Hotline ☐
Phone:	Face to Face Meeting ☐
Address:	Website / E-mail ☐
E-Mail:	Other (Explain) ☐

Stakeholder Type

Public Institution ☐	PAP ☐	Private Enterprise ☐	Professional Chamber ☐	NGO ☐
Interest Groups ☐	Industry Associations ☐	Labor Unions ☐	Media ☐	University ☐

CONSULTATION DETAILS	
Questions about the project:	
Project concerns/feedback:	
Responses to the views expressed above:	

Recorded by
Name-Last Name/Signature

Complainant
Name-Last Name/Signature

ANNEX-6 CODE OF CONDUCT

A minimum requirement for the Code of Conduct has been established taking into account the problems, impacts and mitigation measures identified in the following:

-

- Project reports e.g. ESIA/ESMP
- Any particular GBV/SEA requirements
- Consent/permit conditions (regulatory authority conditions attached to any permits or approvals for the project)
- Required standards including World Bank Group EHS Guidelines
- Relevant international conventions, standards or treaties, etc., national, legal and/or regulatory requirements and standards (where these represent higher standards than the WBG EHS Guidelines)
- Relevant standards e.g. Workers' Accommodation: Process and Standards (IFC and EBRD)
- Relevant sector standards e.g. workers' accommodation
- Grievance redress mechanisms.

In accordance with the contract, the Contractor is obliged to implement the measures covering the environmental and social risks related to the Construction Works, including sexual exploitation, abuse and harassment.

This Code of Conduct is also included in the solution measures for environmental and social risks related to Construction Works. This set of rules applies to all employees on the Construction Site and other locations where work is carried out. The Code of Conduct is also binding on the personnel of each subcontractor and each employee who assists in the performance of the works. All of the above-mentioned employees will be referred to as "Contractor's Personnel", and compliance with the Code of Conduct will be mandatory for all of them.

This Code of Conduct defines the required behavior expected from all Contractor's Personnel. Dangerous, unpleasant, harassment/abuse or violent behavior will never be allowed in our work environment. Everyone is free to openly share their thoughts and concerns without fear of retaliation.

The behaviors expected from the Contractor's Personnel are as follows:

- Performing their duties with due competence and care,
- Complying with this Code of Conduct and all applicable laws, regulations and other requirements, including protecting the health, safety and well-being of the local community (including vulnerable and disadvantaged groups), the Consultant's Experts, the Client's personnel, and the Contractor's personnel, including sub-contractors and day workers,
- Ensuring that the machinery, equipment and processes used by each employee in the work area are safe and do not pose a risk to health, using of necessary personal protective equipment, taking necessary precautions in the use of chemical, physical and biological substances, and following appropriate emergency application procedures,
- Reporting workstations that are considered unhealthy and unsafe, and staying away from areas where human life is considered to be at serious danger,
- Respecting other people and not discriminating against certain groups such as women, people with disabilities, migrant workers and children,
- Avoiding Sexual Harassment[10]
- Avoiding Sexual Abuse[11]

[10] *Any unwelcome sexual advances, request for sexual favors, and other verbal or physical conduct of a sexual nature.*

- Avoiding Sexual Exploitation[12]
- Protecting of children, ensuring their safety in Project Areas and prohibiting sexual activity or abuse, or otherwise unacceptable behavior towards them,
- Participating in relevant trainings on issues such as health and safety, Sexual Exploitation, Abuse and Sexual harassment related to the environmental and social aspects of the Convention,
- Respecting reasonable work instructions and ensuring protection and proper use of property,
- Complying with sanitation requirements,
- Avoiding conflicts of interest such that benefits, contracts, or employment, or any sort of preferential treatment or favors, are not provided to any person with whom there is a financial, family, or personal connection,
- Reporting a violation of this Code of Conduct,
- Non-retaliation against personnel who report violations of the Code.

Examples of Sexual Harassment

- One Contractor's Personnel making positive or negative comments about the appearance and sexual attractiveness of another Contractor Personnel.
- A Contractor's or Employer's Personnel contacting physically another Contractor's Personnel.
- A Contractor Personnel telling another Contractor's Personnel that they can get a salary increase or promotion if they send him/her nude photos.

Examples of Sexual Exploitation and Abuse

- A Contractor's Personnel telling a community member that he or she can get a job on the work site in exchange for sexual intercourse (eg. kitchen and cleaning jobs).
- A Contractor's personnel making electrical connections to households offer to connect to the grid in exchange for sexual intercourse in female-headed households.
- A Contractor's Personnel rapes or otherwise sexually assaults a member of the community.
- A Contractor's Personnel preventing access to the Site if the sexual desire of a person is not met.
- A Contractor's Personnel telling a person applying for a job under the Contract that they will only be given employment in exchange for sexual intercourse.

Violation of this Code of Conduct by the Contractor's Personnel may have serious consequences and may result in the termination of the contract and the transfer of the matter to the legal authorities.

[11] *Actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions.*

[12] *Any actual or attempted abuse of a position of vulnerability, differential power or trust for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another.*

ANNEX-7 CHANCE FIND PROCEDURE

1. Introduction

The Municipality is responsible for avoiding or mitigating any potential impacts of the Activities on the physical or cultural resources. It is anticipated that the project sites are selected such that there would not be any overlapping with archaeological and heritage sites/assets within the project impact area. However, there is still a possibility of encountering some unknown archaeological sites and cultural heritage assets as a Chance Find during project activities. A Chance Find means potential cultural heritage objects, features or sites that are identified outside of a formal site reconnaissance, normally as a result of construction monitoring. Thus, this document aims to outline the procedure and respective responsibilities in relation to the management of Chance Finds during construction works.

2. Roles and Responsibilities

The Municipality and all the contractors are responsible for complying with the procedure during the project construction activities. In this regard, the Municipality would be providing training to their and the contractors' employees involved in supervision and construction works regarding the procedure. Mainly a Chance Find could be encountered during the pre-construction and ground disturbance (e.g., excavation and levelling) activities. Thus, the procedure has to be implemented day to day at this stage.

3. Chance Find Process and Procedure

The step by step process and procedure to be followed upon a Chance Find discovery is provided below:

Step 1 - After the discovery of a Chance Find:

- All work must cease at the location where discovery is made.
- A temporary buffer zone around the Chance Find will be established.
- The contractor contacts the Municipality and the relevant Governmental Archaeological Museum in the Province is informedimmediately.
- The Chance Find location is secured through flagging or no-entry signs, etc.
- The Chance Find should not be moved, removed or further disturbed.

Step 2 – Recording

- The Chance Find Form Part A is filled in by the contractor and sent to the Municipality and a copy is filed for records.

Step 3 – Contact with local authority

- The contractor notifies the relevant Governmental Archaeological Museum in the Province for the Chance Find.

Step 4 – Authority's decision

The relevant Museum decides on the following path of actions for chance find area:

Step 4.A - No significance to site or finding

- The Museum declares that the site/finding is considered to be of no significance.
- The contractor informs the Municipality.
- The contractor records the decision on Part B of the Chance Find Form and sends a copy to the Municipality.
- A copy of the Chance Find Form Part B is kept for records.
- No further actions are required.
- This step closes out the Chance Find procedure.
- Construction activities may resume.

Step 4.B – Significance of the site

- The Museum declares that the site/finding is considered to be of significance.
- The Museum decides on further actions and informs the contractor and the contractor informs the Municipality.
- The contractor records the decision on Part B of the Chance Find form.
- Proceed to Step 5.

Step 5 – Site investigation

Step 5.A - After field investigation the Museum declares the site/finding has minor significance

- The contractor informs the Municipality.
- The contractor records the decision on Part C of the Chance Find form and sends a copy to the Municipality
- A copy of the Chance Find Form Part B is kept for records.
- No further actions are required.
- This step closes out the Chance Find procedure.
- Construction activities may resume.

Step 5.B - After field investigation the Museum declares the site/finding has moderate significance

- Further studies such as test pit/salvage excavations or remote sensing investigation are to be completed.
- The Museum provides instructions, and/or supervision for the studies.
- The contractor informs the Municipality.
- The Municipality provides an archaeological work team of qualified archaeologist and workers to work under the supervision of the Museum.

- After the excavation is completed, the team provides a report to the Museum directorate.
- The Museum directorate reports the study outcomes to the relevant Regional Preservation Board of Cultural Assets.
- The relevant Regional Preservation Board of Cultural Assets officially confirms completion of recovery and informs the Municipality.
- The contractor records the decision on Part C of the Chance Find Form and sends a copy to the Municipality.
- A copy of the Chance Find Form Part B is kept for records.
- No further actions are required.
- This step closes out the Chance Find procedure.
- Construction activities may resume.

Step 5.C - After field investigation the Museum declares the site/finding has major significance

- Salvage excavation is to be completed.
- The site is to be treated according to Law on the Protection of Cultural and Natural Assets Law (No. 2863 dated 21.07.1983).
- The Museum provides instructions, and/or supervision for test pit/salvage archaeological excavation.
- The contractor informs the Municipality.
- The Municipality provides an archaeological work team of qualified archaeologist and workers to work under the supervision of the Museum.
- Once the excavation is completed, salvage excavation team provides a report to Museum directorate.
- The relevant Regional Preservation Board of Cultural Assets officially confirms completion of recovery and informs the Municipality.
- The site will be officially recorded and protected according to Turkish regulations.
- The contractor records the decision on Part C of the Chance Find Form and sends a copy to the Municipality.
- A copy of the Chance Find Form Part B is kept for records.
- No further actions are required.
- This step closes out the Chance Find procedure.
- Construction activities may resume or further actions need to be taken.

It is important to note that in case human remains are found, all project team and the local authorities will be immediately notified.

4. Monitoring and Reporting

The contractor will monitor all construction or other ground disturbance activities for evidence of presence of cultural heritage items. Chance Finds will be recorded on the Chance Find Report Form (see Annex-9.1). All Chance Find Report Forms will be kept in hard copy at the site and will also be scanned and saved electronically. Any Chance Find will be recorded in the Chance Find Register (see Annex-9.2).

Annex 9.1 Chance Find Report Form

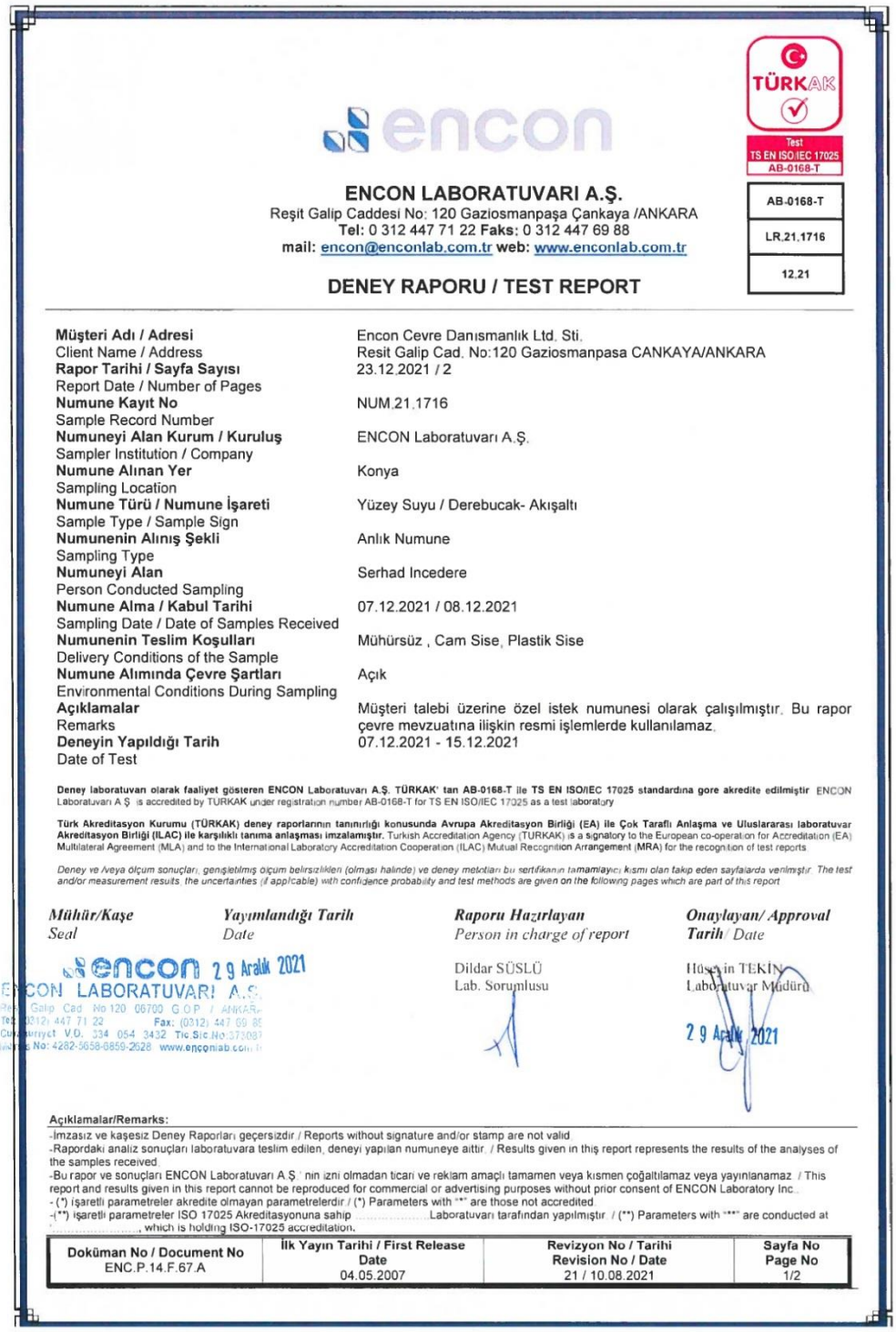
PART A			
Project Location (Province):	District: Neighborhood:	Date:	Form No:
Name of person reporting Chance Find:			
Was work stopped in the immediate vicinity of the Chance Find? ☐ Yes ☐ No			
Was a buffer zone created to protect the Chance Find? ☐ Yes ☐ No			
NOTIFICATION			
Municipality contacted ☐ Yes ☐ No			
CHANCE FIND DETAILS			
GPS coordinates		Photo record ☐ Yes ☐ No If not, explain why: Other records ☐ Yes ☐ No Specify (drawings, videos, etc.):	
Description of Chance Find:			
Description of site/finding and other specifications of site/finding (e.g. surface sediment type, ground surface visibility, etc.):			

PART B		
NOTIFICATION OF MUSEUM DIRECTORATE		
Contractor contacted museum directorate ☐ Yes ☐ No Date of notification: Name of museum directorate and Name of contact: Contact number of museum directorate representative:		
DECISION OF MUSEUM DIRECTORATE		
Date of site visit:		
☐ Site/Finding of no significance - Construction to proceed with no further action – End of chance find procedure Date of notice to resume work:	☐ Site/Finding of significance - Further actions required Please Fill out Part C	
Name of museum directorate representative/archeologist: Contact information:		
Municipality contacted ☐ Yes ☐ No		
PART C		
FURTHER FIELD INVESTIGATION		
☐ Site/Finding of minor significance	☐ Site/Finding of moderate significance	☐ Site/Finding of major significance
Describe additional work to be conducted:		
Date started:	Date completed:	
Date of notice to resume construction works:		
Name of museum directorate representative/archaeologist: Contact information:		
Municipality contacted ☐ Yes ☐ No		

Annex 9.2 Chance Find Register

Date of Find	Summary of Chance Find	Name of Authority Notified	Action Taken	Chance Find Form Completed	Status Open or Closed	Remarks

ANNEX-8 LABORATORY RESULTS



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ENCON LABORATUVARI A.Ş.
Reşit Galip Caddesi No: 120 Gaziosmanpaşa Çankaya /ANKARA
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AB-0168-T
LR.21.1716
12.21

DENEY RAPORU / TEST REPORT

Müşteri Adı / Adresi Client Name / Address	Encon Cevre Danısmanlık Ltd. Sti. Resit Galip Cad. No:120 Gaziosmanpasa CANKAYA/ANKARA
Rapor Tarihi / Sayfa Sayısı Report Date / Number of Pages	23.12.2021 / 2
Numune Kayıt No Sample Record Number	NUM.21.1716
Numuneyi Alan Kurum / Kuruluş Sampler Institution / Company	ENCON Laboratuvarı A.Ş.
Numune Alınan Yer Sampling Location	Konya
Numune Türü / Numune İşareti Sample Type / Sample Sign	Yüzey Suyu / Derebucak- Akışaltı
Numunenin Alınış Şekli Sampling Type	Anlık Numune
Numuneyi Alan Person Conducted Sampling	Serhad Incedere
Numune Alma / Kabul Tarihi Sampling Date / Date of Samples Received	07.12.2021 / 08.12.2021
Numunenin Teslim Koşulları Delivery Conditions of the Sample	Mühürsüz , Cam Sise, Plastik Sise
Numune Alımında Çevre Şartları Environmental Conditions During Sampling	Açık
Açıklamalar Remarks	Müşteri talebi üzerine özel istek numunesi olarak çalışılmıştır. Bu rapor çevre mevzuatına ilişkin resmi işlemlerde kullanılamaz.
Deneyin Yapıldığı Tarih Date of Test	07.12.2021 - 15.12.2021

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Deney ve /veya ölçüm sonuçları, genişletilmiş ölçüm belirsizlikleri (olması halinde) ve deney metotları bu sertifikanın tamamlayıcı kısmı olan takip eden sayfalarda verilmiştir. The test and/or measurement results, the uncertainties (if applicable) with confidence probability and test methods are given on the following pages which are part of this report

Mühür/Kaşe *Seal*	*Yayımlandığı Tarih* *Date*	*Raporu Hazırlayan* *Person in charge of report*	***Onaylayan/ Approval Tarih/ Date***
encon 29 Aralık 2021 ENCON LABORATUVARI A.Ş. Reşit Galip Cad. No:120 06700 G.O.P. / ANKARA Tel: (0312) 447 71 22 Fax: (0312) 447 69 88 Cumhuriyet V.D. 334 054 3432 Tic.Sic.No:373087 Islak İmza No: 4282-5658-6859-2628 www.enconlab.com.tr	29 Aralık 2021	Dildar SÜSLÜ Lab. Sorumlusu	Hüseyin TEKİN Laboratuvar Müdürü 29 Aralık 2021

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-Bu rapor ve sonuçları ENCON Laboratuvarı A.Ş.' nin izni olmadan ticari ve reklam amaçlı tamamen veya kısmen çoğaltılamaz veya yayınlanamaz. / This report and results given in this report cannot be reproduced for commercial or advertising purposes without prior consent of ENCON Laboratory Inc.
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Doküman No / Document No	İlk Yayın Tarihi / First Release Date	Revizyon No / Tarihi Revision No / Date	Sayfa No Page No
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TÜRKAK Test TS EN ISO/IEC 17025 AB-0168-T

AB-0168-T
LR.21.1716
12.21

DENEY RAPORU / TEST REPORT

Parametre Parameter	Birim Unit	Analiz Sonucu Test Result	Analiz Metodu Method of Analysis
Amonyum	mg/L	13.9824	SM 4500-NH3 B SM 4500-NH3 F
Askıda Katı Madde	mg/L	<15.00	S.M. 2540-D
Biyolojik Oksijen İhtiyacı	mg/L	10.10	S.M. 5210- B
Bulanıklık	NTU	1.47	S.M. 2130-B
Çözünmüş oksijen	mg/L	5.6	S.M. 4500-O_G
Escherichia Coli (E.coli)(*)	kob/100 mL	0.0	SM9222 H
Fekal Koliform(*)	kob/100 mL	0.0	SM 9222 D
İletkenlik	µS/cm	850.0	S.M. 2510_B
Kimyasal Oksijen İhtiyacı	mg/L	33.67	SM 5220 B
Nitrat	mg/L	0.6616	S.M. 4110-B
Nitrit	mg/L	0.0756	S.M. 4500-NO2_B
pH	---	7.99	S.M. 4500-H+B
Sıcaklık	°C	9.8	S.M. 2550-B
Toplam Çözünmüş Katı Madde	mg/L	430	S.M. 2540-C
Toplam Fosfor	mg/L	1.42	S.M. 4500-P B S.M. 4500 P-E
Toplam Kjeldahl Azotu	mg/L	13.94	SM 4500-Norg B
Toplam Koliform(*)	kob/100 mL	>100000	SM 9221 B
Tuzluluk	‰	0.42	S.M. 2520-B

Su numunesi TS EN ISO 5667-6. TS ISO 5667-4. TS ISO 5667-11. atıksu numunesi TS ISO 5667-10. deniz suyu numunesi TS ISO 5667-9. çamur numunesi TS EN ISO 5667-13. katı atık numunesi TS 12090. toprak numunesi TS 9923 ve sediment numunesi TS 9547 ISO 5667-12 standartlarına gore alınmaktadır. ENCON Laboratuvarı A.Ş. tarafından alınmayan numuneler için belirtilen ölçüm belirsizliği değerlerine numune almadan kaynaklanan belirsizlik değerleri dahil edilmemektedir.
Laboratuvar yetkili personel tarafından alınmayan ve/veya uygun koşullarda teslim alınmayan numunelerden teknik ve hukuki olarak sorumluluk kabul etmemektedir. Müşteri tarafından sağlanan bilgilerin hukuki sorumluluğu müşteriye aittir. firmamız bu bilgilerden kaynaklanacak sonuçlardan feragat eder.
Water Samples are sampled according to the standards of TS EN ISO 5667-6. TS ISO 5667-4. TS ISO 5667-11. whereas wastewater. sea water. sludge. solid. soil and sediment samples are sampled according to the standard of TS ISO 5667-10. TS ISO 5667-9. TS EN ISO 5667-13. TS 12090. TS 9923 and TS 9547 ISO 5667-12. respectively.
For the samples not taken by the ENCON laboratory Inc.. uncertainty values indicated dc not cover the uncertainties arising from the sampling.
The Laboratory does not accept technical and legal responsibility for samples that are not sampled by authorized personnel and/or received under inappropriate conditions. The legal responsibility of the information provided by the customer belongs to the customer. our company waives the consequences arising from this information.

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ENC.P.14.F.67.A	04.05.2007	21 / 10.08.2021	2/2