TÜRKİYE ORGANIZED INDUSTRIAL ZONES PROJECT

Kahramanmaraş Türkoğlu Organized Industrial Zone

Wastewater Treatment Plant Project

Environmental and Social Management Plan (ESMP)

OCTOBER 2024

Table I Key Experts and Roles

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REVISION HISTORY

Ver	Date of Issue	Issue Reason	Client	Project Owner	Consultant
1	November 2023	First submission	Ministry of Industry and Technology	Türkoğlu OIZ	ENCON Cevre Danismanlik Ltd. Sti
2	January 2024	Second submission	Ministry of Industry and Technology	Türkoğlu OIZ	ENCON Cevre Danismanlik Ltd. Sti
3	January 2024	Comments of MoIT are incorporated	Ministry of Industry and Technology	Türkoğlu OIZ	ENCON Cevre Danismanlik Ltd. Sti
4	February 2024	Comments of MoIT are incorporated	Ministry of Industry and Technology	Türkoğlu OIZ	ENCON Cevre Danismanlik Ltd. Sti
5	March 2024	Comments of WB are incorporated	Ministry of Industry and Technology	Türkoğlu OIZ	ENCON Cevre Danismanlik Ltd. Sti
6	March 2024	Comments of MoIT are incorporated	Ministry of Industry and Technology	Türkoğlu OIZ	ENCON Cevre Danismanlik Ltd. Sti
7	April 2024	Comments of MoIT are incorporated	Ministry of Industry and Technology	Türkoğlu OIZ	ENCON Cevre Danismanlik Ltd. Sti
8	April 2024	Comments of MoIT are incorporated	Ministry of Industry and Technology	Türkoğlu OIZ	ENCON Cevre Danismanlik Ltd. Sti
9	May 2024	Comments of MoIT are incorporated	Ministry of Industry and Technology	Türkoğlu OIZ	ENCON Cevre Danismanlik Ltd. Sti
10	July 2024	Incorporation of SCM documents	Ministry of Industry and Technology	Türkoğlu OIZ	ENCON Cevre Danismanlik Ltd. Sti
11	October 2024	Comments of WB are incorporated	Ministry of Industry and Technology	Türkoğlu OIZ	ENCON Cevre Danismanlik Ltd. Sti

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LIST OF ABBREVIATIONS

AFAD	Disaster and Emergency Management Presidency
AoI	Area of Influence
AZE	Alliance for Zero Extinction
BOD	Biological Oxygen Demand
CCTV	Closed-circuit television
COD	Chemical Oxygen Demand
CR	Critically Endangered
dBA	Decibels adjusted
DLP	Defects Liability Period
DSI	State Hydraulic Works
E&S	Environmental and Social
EBSO	Aegean Region Chamber of Industry
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EN	Endangered
ENCON	Encon Çevre Danışmanlık Ltd. Şti.
EUNIS	European Nature Information System
EPA	Environmental Protection Agency
ESCOPs	Environmental Codes of Practice
ESF	Environmental and Social Framework
ESHS	Environmental, Social Health, and Safety
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
ESMF	Environmental and Social Management Framework
ESMR	Environmental and Social Monitoring Report
ESRs	Environmental and Social Reports
ESS	Environmental and Social Standards
EU	European Union
FI	Financial Intermediary
GIS	Geographic Information Systems
GBV	Gender Based Violence
GHG	Green House Gas
IAPCR	Industrial Air Pollution Control Regulation
IBA	Important Bird Area
IBRD	International Bank for Reconstruction and Development
IFC	International Finance Corporation
IUCN	International Union for Conservation of Nature

KBA	Key Biodiversity Area
LMP	Labor Management Procedures
NT	Near Threatened
N/A	Not Applicable
MESBEM	Vocational Certification Center
MoEUCC	Ministry of Environment, Urbanization and Climate Change
MoIT	Ministry of Industry and Technology
MSDS	Material Safety Data Sheet
OHS	Occupational Health and Safety
OIZ	Organized Industrial Zone
OSE	Occupational Safety Expert(s)
PGA	Peak Ground Acceleration
PGV	Peak Ground Velocity
PID	Project Identification Document
PIU	Project Implementation Unit
PM_{10}	Particles with aerodynamic diameter smaller than 10µm
$PM_{2.5}$	Particles with aerodynamic diameter smaller than 2.5µm
PM	Particulate Matter
PMU	Project Management Unit
PS	Performance Standards
PVC	Polyvinyl Chloride
RAMAQ	Regulation on the Assessment and Management of Air Quality
RfP	Request for Proposal
RENC	Regulation on Environmental Noise Control
SCM	Stakeholder Consultation Meeting
SEA/SH	Sexual Exploitation Abuse / Sexual Harassment
SEP	Stakeholder Engagement Plan
TDF	Fish Bioassay
TDS	Total Dissolved Solids
TN	Total Nitrogen
TKN	Total Kjeldahl Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids
TurkStat	Turkish Statistical Institute
ToR	Terms of Reference
TOIZ	Türkiye Organized Industrial Zone
TOIZsP	Türkiye Organized Industrial Zones Project
UNESCO	United Nations Educational, Scientific and Cultural Organization

UV	Ultraviolet
VOCs	Volatile Organic Compounds
VU	Vulnerable
WB	World Bank
WBG	World Bank Group
WHO	World Health Organization
WWTP	Wastewater Treatment Plant
WW	Wastewater

EXECUTIVE SUMMARY

Türkiye Organized Industrial Zones Project (TOIZsP) will be financed by the World Bank/ International Bank for Reconstruction through a loan for which Ministry of Industry and Technology (MoIT) has been designated as responsible for project implementation by the Ministry of Treasury and Finance. The project aims to increase the efficiency, environmental sustainability, and competitiveness of Organized Industrial Zones (OIZs) in Türkiye. With a total budget of EUR 250.3 million, the Project will be implemented by the Ministry of Industry and Technology (MoIT) through the General Directorate of Industrial Zones.

The main responsible organization for the implementation of this ESMP is Türkoğlu OIZ. A PMU will be established to carry out operational and administrative tasks. The PMU staff will be the Türkoğlu OIZ's own staff who has previous WB Project experience. Besides, on different phases of the Project (pre-construction, construction and operation), different parties (Consultant, Contractors, Construction Supervision Consultant, MoIT/PIU) will take responsibility for various works in the scope of the ESMP. All mentioned works will be coordinated by the Türkoğlu OIZ. The roles and responsibilities of these parties are detailed in Section 8.

Presently, the industrial wastewater generated by the active firms within the Türkoğlu Organized Industrial Zone is discharged into Aksu Stream through a dry stream channel. This method of disposal poses environmental challenges and underscores the urgency for a more sustainable approach. Post-implementation of the WWTP, all industrial wastewater will be systematically conveyed to the designated WWTP facility, strategically situated at the lowest elevation point within the OIZ.

Upon the commissioning of the WWTP, the treated industrial wastewater will be efficiently channeled through the existing collector line, ensuring a controlled and environmentally responsible discharge into Aksu Stream. This strategic shift in wastewater management is not only aligned with regulatory standards but also represents a significant step towards enhancing environmental sustainability within the Türkoğlu OIZ.

The design of the planned WWTP is for a 2,000 m³/ day capacity, which is to be implemented in two stages of 1000+1000 m³/day. Only stage 1 will be studied within the scope of this sub-project. The project is exempt from EIA and the EIA exemption certificate is presented in the ANNEX-4.

It is estimated that the pre-construction phase of the project will be 1 month, the construction phase will be 12 months and the operation phase will be 35 years on average. Local people will be given priority in personnel employment during the pre-construction and construction phases of the Project. It is anticipated that 5 people will be employed for the pre-construction phase, 30 people for the construction phase and 7 people for the operation.

The WWTP has been designed to address the treatment needs of predominantly industrial wastewater generated by both existing and prospective enterprises. This wastewater treatment facility will encompass various units, including physical treatment units (screening mechanisms, pumping station, compact treatment unit, neutralization unit), chemical treatment units (coagulation, flocculation and chemical sedimentation tank), biological treatment units (Bio-P tanks, aeration tank, chlorination tank, sedimentation tank) and sludge treatment units (return activated sludge, surplus activated sludge, pumping station for sludge handling and decanter, among other components).

The project will be constructed on the existing WWTP and which is in the existing OIZ's built-up industrial area. The allocated area for the WWTP is 25 ha. The Project does not require land acquisition. The Project land is owned by the Türkoğlu OIZ (Parcel no: 499/15) and allocated only for the construction of the wastewater treatment plant in line with the approved revised OIZ land use plan. The expropriation process was completed by the OIZ in 2011.

The Project will be in compliance with the good international practice, including WB Environmental and Social Standards (ESSs), the ESMF of the TOIZ project, guidelines, standards and best practices documents alongside the national legislation. In addition, the Project and the social and environmental elements in the Area of Influence (AoI) of the Project include elements or activities that

are related to the scope of ESS1, ESS2, ESS3, ESS4, ESS6 and ESS10. The main objectives of these standards within the scope of the Project are presented below.

- ESS1: Assessment and Management of Environmental and Social Risks and Impacts,
- ESS2: Labour and Working Conditions,
- ESS3: Resource Efficiency and Pollution Prevention and Management,
- ESS4: Community Health and Safety,
- ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources,
- ESS10: Stakeholder Engagement and Information Disclosure.

The Project's anticipated environmental and social impacts/risks will be in terms of air quality, soils, water resources, noise, biological environment, landscape, resources and waste, socioeconomic environment and occupational health and safety, cultural heritage and community health, safety and security. Summary of the mitigation measures are provided in Table 1.

Table 1 Summary of the Significant Impacts and Mitigation Measures

Potential Environmental and Social (E&S) Impacts/Risks	Mitigation Measures
Pre-Construction Phase	
Air Quality and Odor	Dust and exhaust emissions management Speed limitations will be applied
Soils and Contaminated Land	Topsoil preservation and storage Prevention of soil contamination Prevention of erosion
Noise and Vibration	Regular maintenance of the construction machinery, equipment and vehicles Noise monitoring Coordinate the working schedule with sensitive receptors Establishment of a robust grievance mechanism
Resources and Wastes	Waste management in accordance with the waste management hierarchy Selection of most appropriate raw materials by evaluating clean production options
Biological Environment	Measures to further avoid and minimize the construction footprint
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 mechanism Preparation of information materials Managing and monitoring the performance of contractors in relation to the requirements of prohibition of child labor, unregistered employment and forced labor Proper adaptation of human rights policy and labor rights Provision of written contracts to all project workers incl. job description, working hours and wages and rights and duties
Community Health, Safety and Security	Usage of appropriate traffic signage
Occupational Health and Safety	Awareness raising, training for workers Code of Conduct Preparation of procedures, methods statements and work instructions Emergency Preparedness and Response (EPR) Plan for a possible accident and emergency and emergency teams will be established, and drills and trainings will be carried out in line with the emergency scenarios
Archaeological and Cultural Heritage	Informing related Civilian Authority or Museum Directorate
Construction Phase	
Air Quality and Odor	Dust and exhaust emissions management Air quality and odor monitoring Speed limitations will be applied
Soils and Contaminated Land	Prevention of soil contamination Erosion control measures
Water Resources	Proper storage of chemicals Prevention of surface runoff Effluent discharge consistent with the Project Standards

Noise	Regular maintenance of the construction machinery, equipment and vehicles Noise monitoring Coordinate the working schedule with sensitive receptors Establishment of a robust grievance mechanism
Biological Environment	Re-vegetation, where possible Measures to further avoid and minimize the construction footprint
Landscape and Visual	Painting the planned WWTP in colors that suit the background
Resources and Wastes	Waste management in accordance with the waste management hierarchy Selection of most appropriate raw materials by evaluating clean production options
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 mechanism Preparation of information materials Managing and monitoring the performance of contractors in relation to the requirements of child labor, unregistered employment and forced labor Proper adaptation of human rights policy and labor rights Provision of written contracts to all project workers incl. job description, working hours and wages and rights and duties
Community Health, Safety and Security	Usage of appropriate traffic signage
Occupational Health and Safety	Awareness raising, training for workers Code of Conduct Preparation of procedures, methods statements and work instructions Emergency Preparedness and Response (EPR) Plan for a possible accident and emergency and emergency teams will be established, and drills and trainings will be carried out in line with the emergency scenarios
Archaeological and Cultural Heritage	Informing related Civilian Authority or Museum Directorate
Operation Phase	
Air Quality and Odor	Exhaust emissions management Air quality and odor monitoring Speed limitations will be applied
Soils and Contaminated Land	Prevention of soil contamination
Water Resources	Proper storage of chemicals Effluent discharge consistent with Project Standards
Noise and Vibration	Regular maintenance of the operation machinery, equipment and vehicles
Resources and Wastes	Waste management in accordance with the waste management hierarchy Selection of most appropriate resources/machinery/equipment by evaluating clean production options for operation
Biological Environment	Measures to further avoid and minimize the operation footprint
Infrastructure and Services	Prompt compensation of any damage to infrastructure
Employment and Procurement Opportunities	Providing transparent, non-discriminatory, equal recruitment opportunities with respect to ethnicity, religion, language, gender and sexuality
Labor Force	A grievance mechanism Preparation of information materials Managing the requirements of laws/regulations against child labor, unregistered employment and forced labor Proper adaptation of human rights policy and labor rights Provision of written contracts to all project workers incl. job description, working hours and wages and rights and duties
Community Health, Safety and Security	Usage of appropriate traffic signage during operation phase vehicle traffic
Occupational Health and Safety	Awareness raising, training for workers Code of Conduct Preparation of procedures, methods statements and work instructions Emergency Preparedness and Response (EPR) Plan for a possible accident and emergency and emergency teams will be established, and drills and trainings will be carried out in line with the emergency scenarios

As a part of the mitigation measures, this site-specific Environmental and Social Management Plan (ESMP) has been developed. The ESMP includes management plans and procedures for both phases of the Project, which are given in Table 2 along with guidelines for preparation of the

management plans to be prepared by the contractor. The ESMP will be included in the bidding documents.

Table 2 Required Management Plans and Procedures for the Project

Management Plans/Procedure	Stage to be Prepared	Responsible Party	Monitoring & Reporting Party	Approving Party
Pre-construction and Construction Phase				
Soil Management Plan	Prior to pre-construction	Contractor	Construction Supervision Consultan	MoIT PIU
Air Quality and Emissions Management Plan	Prior to pre-construction	Contractor	Construction Supervision Consultant	MoIT PIU
Water Resources Management Plan	Prior to pre-construction	Contractor	Construction Supervision Consultant	MoIT PIU
Noise and Vibration Management Plan	Prior to pre-construction	Contractor	Construction Supervision Consultant	MoIT PIU
Waste Management Plan	Prior to pre-construction	Contractor	Construction Supervision Consultant	MoIT PIU
Oil and Chemical Spill Contingency Management Plan	Prior to pre-construction	Contractor	Construction Supervision Consultant	MoIT PIU
Community Health, Safety, and Security Management Plan	Prior to pre-construction	Contractor	Construction Supervision Consultant	MoIT PIU
Traffic Management Plan	Prior to pre-construction	Contractor	Construction Supervision Consultant	MoIT PIU
Occupational Health and Safety Management Plan	Prior to pre-construction	Contractor,	Construction Supervision Consultant	MoIT PIU
Contractor Management Plan	Prior to pre-construction	Türkoğlu OIZ		MoIT PIU
Operation Phase				
Odor Management Plan	Prior to operation	Türkoğlu OIZ		MoIT PIU
Water Resources and Effluent Management Plan	Prior to operation	Türkoğlu OIZ		MoIT PIU
Waste Management Plan	Prior to operation	Türkoğlu OIZ		MoIT PIU
Sludge Management Plan	Prior to operation	Türkoğlu OIZ		MoIT PIU
Occupational Health and Safety Management Plan	Prior to operation	Türkoğlu OIZ		MoIT PIU

In order to clearly determine the management plan execution responsibilities of the Constructor and the Construction Supervision Consultant, which are given as responsible parties in the table above, the definitions of the responsibility areas of both are summarized below:

- Contractor's responsibilities:
  - Implementing the management plans to ensure that all activities on the Project site adhere to the requirements outlined by this ESMP, and Construction Supervision Consultant.
  - Allocating any required resources, manpower, and equipment necessary for the successful implementation of the management plans.
  - Managing subcontractors and suppliers to ensure their compliance with the management plans.
  - Documenting activities, inspections, and any deviations from the plans for reporting purposes.

- Construction Supervision Consultant:
  - Reviewing and providing guidance/advice to the Contractor and the Project Sponsor regarding the implementation of management plans.
  - Conducting audits/inspections/visits and reporting any deviations or issues and recommending corrective actions.
  - Monitoring progress and performance against the plans and providing feedback to the client.

Main impacts presented in Chapter 7 for the pre-construction, construction and operation phases of the project and the mitigation measures taken to manage these impacts are presented in Chapter 8.

In Chapter 9, details of all necessary monitoring activities for monitoring of ESMP implementation conditions and the effectiveness of the mitigation measures are defined for relevant impacts and environmental factors. The monitoring activities for pre-construction, construction and operation phases are defined.

1 INTRODUCTION

1.1 Project Background and Rationale

The World Bank/International Bank for Reconstruction and Development (IBRD) is funding the Turkiye Organized Industrial Zones Project (TOIZsP) via a loan. The Ministry of Industry and Technology (MoIT), appointed by the Ministry of Treasury and Finance, will oversee the project's execution. This initiative aims to enhance the efficiency, environmental sustainability, and competitiveness of Turkiye's Organized Industrial Zones (OIZs). To measure progress, the project has identified specific indicators:

- Measuring energy savings resulting from OIZ spending on essential and eco-friendly infrastructure.
- Assessing water conservation achieved through OIZ investments in eco-friendly infrastructure.
- Tracking the decrease in CO_2 emissions resulting from the funded investments.
- Evaluating the proportion of OIZs successfully attracting new investments.

The primary project, with a total budget of EUR 250.3 million, will be managed and implemented by the Ministry of Industry and Technology (MoIT) through the General Directorate of Industrial Zones.

The Ministry of Industry and Technology (MoIT) has a significant track record in enhancing Organized Industrial Zones (OIZs). These zones in Turkey are strategically located to comply with specific regulations (Organized Industrial Zones Law No. 4562) and receive backing from the MoIT. The primary aim of the Turkey Organized Industrial Zones Project is to enhance the effectiveness, eco-friendliness, and competitiveness of chosen OIZs in Turkey

Sub-projects within the framework of the "Türkiye Organized Industrial Zones Project" (TOIZsP) are subject to an initial screening process based on three primary criteria: the project's nature, size, and location, particularly considering sensitive areas. This screening aims to identify sub-projects that may have noteworthy environmental or social impacts at an early stage, necessitating a comprehensive Environmental and Social Impact Assessment, in accordance with the World Bank's Environmental and Social Framework (ESF) and TOIZ project's Environmental and Social Management Framework (ESMF) guidelines.

Environmental and social screening processes have been completed for the subject projects of these OIZs in line with the World Bank's requirements. The screening processes utilized Environmental and Social Screening Forms, along with accompanying annexes, to address pertinent questions aimed at identifying potential environmental and social consequences arising from the execution of the sub-project. Overall environmental and social risks of the sub-projects of these OIZs have been rated as "Moderate".

The Project will be financed by the World Bank (WB). Ministry of Industry and Technology (MoIT) is the Borrower of the loan and the monitoring agency, serving as a Financial Intermediary (FI) to Kahramanmaraş Türkoğlu Organized Indusrty Zone (OIZ). Türkoğlu OIZ will be responsible for the implementation of the Project at the local level.

Kahramanmaraş Türkoğlu OIZ Wastewater Treatment Plant Project (''the Project'') is one of the sub-projects within the scope of increasing the capacity of wastewater treatment needed in Türkiye Organized Industrial Zones (TOIZs) within the Ministry of Industry and Technology. Within the scope of the project, the capacity of the wastewater treatment plant will be increased in line with the needs of the industrial zone. Location of the Türkoğlu OIZ Wastewater Treatment Plant Project in Türkiye is shown in Annex-3 Figure- 3.

1.2 Purpose and Scope of ESMP

The project classified as Moderate Risk according to WB'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.). The risk characterization of the Project is given below:

- The capacity of the planned WWTP is 2,000 m³/day and the Project is exempt from EIA Regulation.
- There is no nationally protected area or 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 environment will be prevented. Therefore, the Project will have a positive impact on both the environment and public health.

One of the tasks under the scope of the Project is the preparation of an ESMP in accordance with the both national regulations and WB ESF standards, including its ESSs, the ESMF of the TOIZP, WBG General EHS Guidelines and Industrial Sector Guidelines and the national legislation in force in Türkiye. Accordingly, this ESMP has been prepared by ENCON Çevre Danışmanlık Ltd. Şti (ENCON) 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 social commitments associated with the Project are duly implemented during the construction and operation phases of the Project and are effectively managed. The specific objectives of this ESMP are as follows:

- To conduct all project activities in accordance with the applicable national legislation and in compliance with the ESMF, WB's Environmental and Social Safeguard Policies and procedures;
- To identify anticipated adverse environmental and social risks and impacts;
- To adopt the mitigation hierarchy and identify mitigation measures, which anticipate and avoid, minimize, and, where residual impacts remain, compensate or offset risks and impacts;
- To prevent or compensate any loss of the affected person;
- To prevent environmental degradation as a result of either individual sub-projects or their cumulative effects;
- To enhance positive environmental and social outcomes;
- To ensure maximizing efficiency and minimizing costs in complying with environmental and social legislation and standards;
- To act as an Action Plan in order to ensure that the project impact mitigation measures are properly implemented and monitored; and
- To ensure that all stakeholders' concerns are addressed.

In the scope of the Project, Stakeholder Engagement Plan (SEP) is prepared by ENCON for Türkoğlu OIZ Wastewater Treatment Plant. The SEP encompasses identification of stakeholders and planned stakeholder consultation activities and the process of stakeholder engagement.

This report was structured around the below main headings. The information provided in the report was detailed under these headings to the extent that the best available data allowed. Accordingly, the chapters included in the ESMP can be briefly explained as the following:

- Chapter 1 Introduction; introduction to the project and ESMP Report, providing project details.
- Chapter 2 Project Description; is a description of the project including its location, components, technical specifications, associated construction and operation activities, and a proposed schedule for implementation.
- Chapter 3 Legal Framework; explains national and international legal requirements, analyzes gaps between national legislation and WB ESF and identifies environmental agreements, and other relevant international agreements that are relevant to the project.
- Chapter 4 Methodology; describes ESMP preparation methodology
- Chapter 5 Environmental Baseline of the Project; describes the baseline conditions in and around the proposed Project Area, including physical, biological conditions.
- Chapter 6 Social Baseline of the Project; describes the baseline conditions in and around the proposed Project Area, including socio-economic conditions.
- Chapter 7 Environmental and Social Risks and Impacts of the Project; assesses the potential negative risks and impacts of the project, identifying mitigation measures.
- Chapter 8 Environmental and Social Aspects; this chapter include the ES management plan for the various phases of the project specific.
- Chapter 9 Environmental and Social Monitoring Plan; monitoring activities.
- Chapter 10 Institutional Arrangements and Training; gives the information about environmental and social management structure and environmental and social monitoring reports.
- Chapter 11 Stakeholder Management under ESMP; explains the needs, expectations and concerns of these stakeholders to ensure that the project's impacts and risks on the stakeholder or organization are positive.

2 PROJECT DESCRIPTION

2.1 Objectives of the Project

The Türkoğlu OIZ currently accommodates 15 operational industries across 30 parcels, primarily engaged in textile, machinery, and food production. As of 2021, three comprehensive analyses have been conducted on the existing wastewater within the OIZ to assess actual pollutant concentrations and load. This data served as the foundation for assumptions made by the design consultant preceding the commencement of the design study. The conclusive inference drawn from these analyses is the imperative necessity for the establishment of an Industrial WWTP.

Presently, the industrial wastewater generated by the active firms within the OIZ is discharged into Aksu Stream through a dry stream channel. This method of disposal poses environmental challenges and underscores the urgency for a more sustainable approach. Post-implementation of the WWTP, all industrial wastewater will be systematically conveyed to the designated WWTP facility, strategically situated at the lowest elevation point within the OIZ.

Upon the commissioning of the WWTP, the treated industrial wastewater will be efficiently channeled through the existing collector line, ensuring a controlled and environmentally responsible discharge into Aksu Stream. This strategic shift in wastewater management is not only aligned with regulatory standards but also represents a significant step towards enhancing environmental sustainability within the Türkoğlu OIZ.

The design of the planned WWTP is for a 2,000 m³/ day capacity, which is to be implemented in two stages of 1000+1000 m³/day. Only stage 1 will be studied within the scope of this sub-project.

2.2 Project Location

The Türkoğlu OIZ (Organized Industrial Zone) is situated in the OIZ Neighborhood of Türkoğlu district within Kahramanmaraş. Türkoğlu district itself spans an area of 705 square kilometers and has an elevation of 500 meters above sea level. Türkoğlu OIZ, which was placed on an area of 128 ha, has a total of 39 plots and is adjacent to the Türkoğlu-Nurdağı connection road.

The Project will be constructed on the existing WWTP land which is in the existing OIZ's built-up industrial area. The allocated area for the WWTP is 25 ha. The Project does not require land acquisition. The Project land is owned by the OIZ (Parcel no: 499/15) and allocated only for the construction of the wastewater treatment plant in line with the approved revised OIZ land use plan (02.06.2022). The expropriation process was already completed by the OIZ in 2011. A figure showing the discharge point and nearby surface waters is given as Figure- 1 in Annex 3, and the project area is given as Figure- 2 in Annex 3. Nearby schools and sensitive receptors with their distances to the Project area are given in Annex 3 Figure- 13.

The site location map is presented in Annex 3 Figure- 3. Since the project beneficiary will be all the facilities in the Organized Industrial Zone, the impact area has been determined to be the entire OIZ. The project area is not currently used and there are bushes in the area. Photos taken during the field work carried out on 18.09.2023 are presented in Annex-6 Figure- 16. Project Area of Influence Map is presented in Figure 2.1.

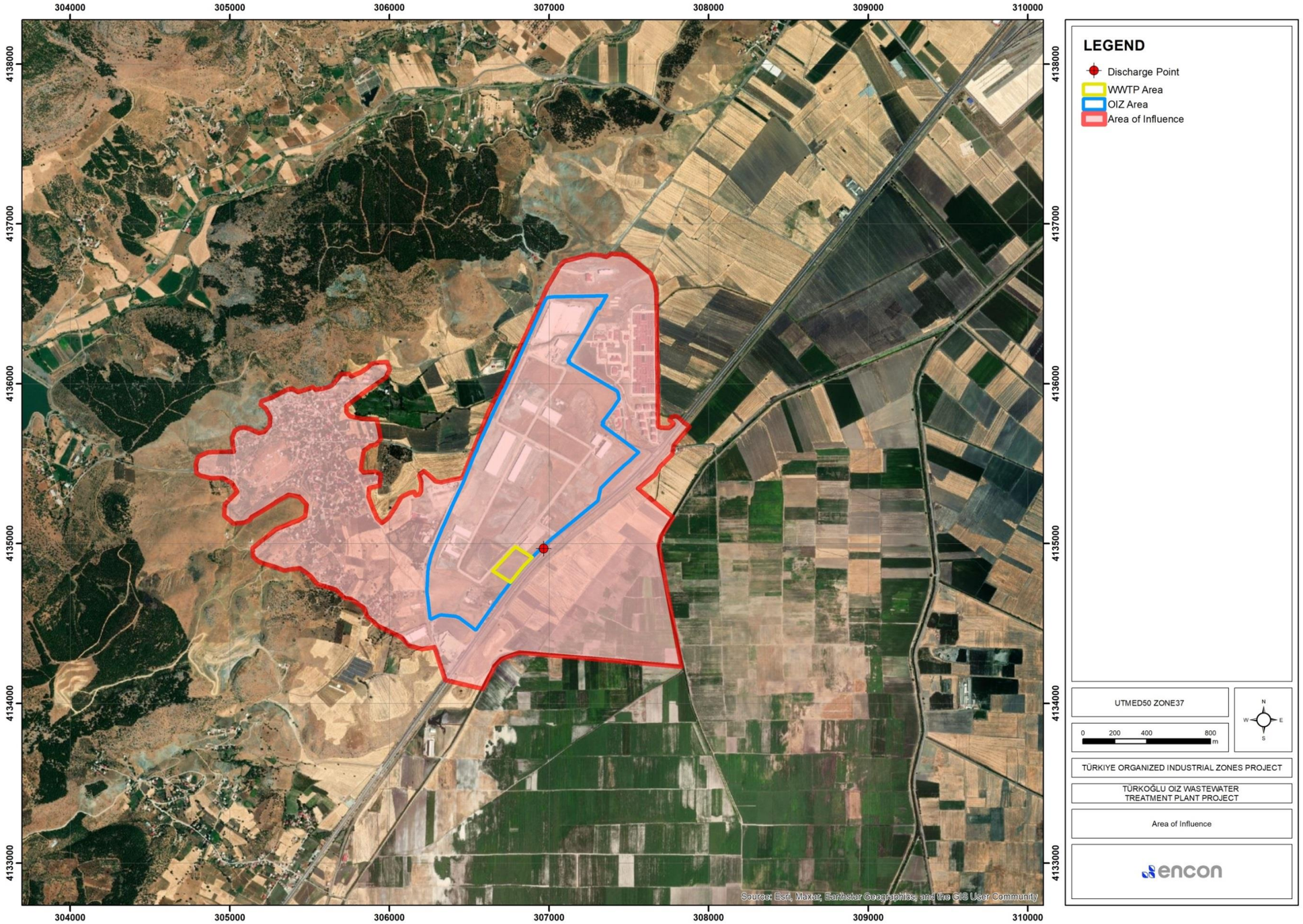

Figure 2.1 Area of Influence

2.3 Project Components and Timeline

Stage 1 of this sub-project will primarily focus on the Türkoğlu OIZ Wastewater Treatment Plant (WWTP). The WWTP has been designed to address the treatment needs of predominantly industrial wastewater generated by both existing and prospective enterprises. This wastewater treatment facility will encompass various units, including:

- Physical Treatment Units
  - Screening mechanisms
  - Pumping station
  - Compact treatment unit
  - Neutralization tank
- Chemical Treatment Units
  - Coagulation processes
  - Flocculation processes
  - Chemical sedimentation tank
- Biological Treatment Units
  - Bio-P tanks
  - Aeration tank
  - Chlorination Tank
  - Sedimentation tank
- Sludge Treatment Units
  - Return activated sludge (RAS)
  - Surplus Activated Sludge (SAS)
  - Pumping station for sludge handling
  - Decanter, among other components

The flow chart for the planned WWTP and map showing Project components are given in ANNEX-2 and Annex 3 Figure- 4.

Project Schedule

According to the information obtained from Türkoğlu OIZ, the consultancy tender phase of the Project will last for three months. After the consultancy period, the design review and revisions by consultant, which will take five months for the project. The bid preparation, bidding and bid evaluation phase are planned to last six months. After these phases, contract signing and construction phase will last 12 months. After construction phase and commissioning of the WWTP, the Defect Liability Period (DLP) will last 12 months. The anticipated schedule of the Project is provided in Table 2.1.

Table 2.1 Time Schedule of the Project

Time Schedule for Türkoğlu OIZ Implementation																																				
Months	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**
Consultant Selection for Design Review and Construction Control																																					
Design Review and Revisions (by Consultant)																																					
Bid preparation, bidding and bid evaluation																																					
Contract signing and Construction																																					
Commissioning of the WWTP																																					
Defect Liability Period																																					

2.4 Permits and Management System of the OIZ

2.4.1 Management Systems of the OIZ

According to the Organized Industrial Zones (OIZs) Implementing Regulation (Official Gazette No. 30674 dated 02.02.2019), OIZ managements are the highest regional authority that are responsible for the construction, maintenance and operation of wastewater infrastructure plants within OIZs. In this regard, OIZ managements are responsible for the compliance with the requirements ofthe Water Pollution Control Regulation published in the Official Gazette No. 25687 dated 31.12.2004.

Organized Industrial Zones WWTP Project Approval is given by the Ministry of Environment, Urbanization and Climate Change (MoEUCC). It is mandatory to obtain an environmental permit as of April 1, 2010 for the discharge of industrial wastewater into the receiving environment.

There are three partners of Türkoğlu OIZ, the governorship, the Chamber of tTade and Industry, and Türkoğlu Municipality. There are 15 representatives from these partners at the OIZ. There are five board members accordingly. The total number of personnel of OIZ Zone Directorate is 10: One Regional Manager, one electrical-electronics engineer, one topographical engineer, one accountant and four security staff, two service staff. OIZ plans to hire one environmental engineer for the WWTP project. This Project is the first World Bank funded project.

Waste management is done by the municipality. The nearest settlement is Ceceli at a distance of 1.41 km. OIZ provides significant job opportunities to the local community. Before the earthquake, there were 15 operational facilities at 31 industrial parcels at the OIZ, after this disaster, currently 12 operational facilities are running. Before the earthquake, the total number of employees was 1900 and currently, there are 1200 employees. Mainly, the textile industry is dominant at the OIZ, but only yarn production, and weaving without any dying or other chemical processes. Türkoğlu OIZ currently has a Zero Waste Certificate and the last inspection of its existing facilities within the scope of this certificate was carried out by the Ministry of Environment and Urbanization on February 2, 2021 (see ANNEX-15). The validity period of the certificate is 5 years.

2.4.2 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 (in planning phase of the Project, obtained on 24th of June, 2021; given in ANNEX-12),
- Project Base Map (Plankote) Approval from the Industrial Zones Ministry of Industry and Technology, General Directorate (in planning phase of the Project, obtained on 24th of October, 2023; given in ANNEX-13).
- Construction License from Kahramanmaraş Metropolitan Municipality (in pre-construction phase of the Project),
- Building License from Kahramanmaraş Metropolitan Municipality (in pre-construction phase of the Project),
- Operation License from Provincial Directorate of Environment, Urbanization and Climate Change (before operation phase of the Project),
- Discharge Permit Letter from State Hydraulic Works (DSI) (before operation phase of the Project, obtained on 21st of January, 2021; given in ANNEX-14).
- Temporary Certificate of Operation from Provincial Directorate of Environment, Urbanization and Climate Change (after construction phase of the Project),
- Environmental Permit and License from Provincial Directorate of Environment, Urbanization and Climate Change (in commissioning phase of the Project),
- Wastewater Treatment Plant Identity Card from MoEUCC,
- Hazardous Waste Liability Insurance by insurance companies,
- Three-year Industrial 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.

3 LEGAL FRAMEWORK

This chapter presents the main aspects of the legal and administrative framework followed in the design of this ESMP. In this project, in addition to determining which standards to follow, a gap analysis is conducted between national legislation and ESF. Various national legislation and international conventions and standards explained in the following sections are also to be complied with during different stages of the Project, including pre-construction, construction and operation.

3.1 National 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 pre-construction, construction and operational activities of the Project. National Legislation related to the Project is presented in the following sections under relevant subtopics.

3.1.1 National 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.

Occupational Health and Safety Law No. 6331, which is ratified June 2012 (Official Gazette dated 30.06.2012 and numbered 28339), is other principal legislation related to the Project. Occupational Health and Safety Law enforces various by-laws and decrees to regulate and uphold health and safety standards.

Türkoğlu OIZ Wastewater Treatment Plant Project within the capacity 2,000 m^3/day, planned by Türkoğlu Organized Industrial Zone in Türkoğlu Kahramanmaraş was evaluated as “outside the scope of the EIA regulation” due to capacity by Kahramanmaraş Governorship Provincial Directorate of Environment and Urbanization on 15/01/2021 (see ANNEX-4).

Türkoğlu OIZ shall comply with the requirements of the current national legislation and codes of practice and fulfil all other legal requirements. Therefore, during each stage 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 laws and regulations attached in ANNEX-5 and any license and/or permit required for the upcoming stages of the Project will be acquired accordingly.

3.2 International Agreements and Standards

3.2.1 World Bank Environmental and Social Framework (ESF)

Since the main finance source of the Project is WB, the Project must be in compliance with the good international practice, including WB ESF, guidelines, and best practices documents alongside the national legislation.

The project is classified as Moderate Risk according to WB’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.).

Reasons regarding to the risk characterization of the Project is given below:

- The capacity of the planned WWTP is a 2,000 m³/day.
- There is no nationally protected area or 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 a positive impact on both the environment and public health.

The World Bank Group (WBG) Environmental, Health and Safety (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, the 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.

3.2.2 Comparison of Turkish EIA Regulation and WB ESSs

Since the main finance source of the Project is WB, the Project must be in compliance with the good international industry practice, including WB Safeguard Policies, WB Group's Environmental, Health and Safety (EHS) guidelines, ESF standards, including its ESSs and best practices documents alongside the national legislation.

The World Bank (WB) Environmental and Social Framework reflects the World Bank's commitment to sustainable development through ten Environmental and Social Standards (ESS) that are designed to support Borrowers' environmental and social (E&S) risk management.

The Project and the social and environmental elements in the Area of Influence (AoI) of the Project include elements or activities that are related to the scope of ESS1, ESS2, ESS3, ESS4, ESS6 and ESS10. The main objectives of these standards within the scope of the Project are presented below.

- ESS1: Assessment and Management of Environmental and Social Risks and Impacts,
- ESS2: Labour and Working Conditions,
- ESS3: Resource Efficiency and Pollution Prevention and Management,
- ESS4: Community Health and Safety,
- ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources,
- ESS10: Stakeholder Engagement and Information Disclosure.

The gap analysis between the WB ESSs triggered by the Project and Turkish EIA Regulation is presented in ANNEX-5.

3.3 Project Standards[1]

Table 3.1 Project Standards

Environmental Standards						
No	**Topic**	**National Standards/ Requirements**	**Limit Values in National Legislation**	**International Standards/ Requirements**	**Limit Values in International Legislation**	**Project Standards**
1	Noise	• Regulation on Environmental Noise Control (Official Gazette Date/Number: 30.11.2022/32029) • Annex- 2 "Table-1 Limit Values for ambient noise level"	Noise source: Industrial Facilities, Transportation: Day time (07:00-19:00): $LA_{eq,\ 5\ min.}$< 65 dB(A) Evening time (19:00-23:00): $LA_{eq,\ 5\ min.}$< 60 dB(A) Night time (23:00-07:00): $LA_{eq,\ 5\ min.}$< 55 dB(A)	WBG General EHS Guidelines: Environmental Noise Management Table 1.7.1 – Noise Level Guidelines Noise impacts should not exceed the levels specified in the Table 1.7.1, or result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site.	• Residential; institutional, educational: • Day time (07:00-22:00): • One Hour L_{Aeq} dB(A) < 55 dB(A) • Night time (22:00-07:00): • One Hour L_{Aeq} dB(A) < 45 dB(A) • Industrial, commercial: • Day time (07:00-22:00): • One Hour L_{Aeq} dB(A) < 70 dB(A) • Night time (22:00-07:00): • One Hour L_{Aeq} dB(A) < 70 dB(A)	Receptor: Residential, industrial, commercial: Day time (07:00-19:00): $LA_{eq,\ 5\ min.}$< 65 dB(A) Evening time (19:00-23:00): $LA_{eq,\ 5\ min.}$< 60 dB(A) Night time (23:00-07:00): $LA_{eq,\ 5\ min.}$< 55 dB(A)
2	Air Quality	• Regulation on the Assessment and Management of Air Quality (Official Gazette Date/Number: 06.06.2008/26898) Annex-1	PM_{10} 1-Year: 40 µg/m3 24-Hour: 50 µg/m3 (not to be exceedance more than 35 times per year)	WBG General EHS Guidelines: Environmental Air Emissions and Ambient Air Quality Table 1.1.1.: WHO Ambien Air Quality Guidelines	PM_{10} 1-Year: 20 µg/m3 24-Hour: 50 µg/m3 (99th percentile (i.e. 3-4 exceedance days per year) $PM_{2.5}$ 1-Year: 10 µg/m3 24-Hour: 25 µg/m3 (99th percentile (i.e.3-4 exceedance days per year)	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. PM_{10} 1-Year: 20 µg/m3 24-Hour: 50 µg/m3 (99th percentile (i.e. 3-4 exceedance days per year) $PM_{2.5}$1-Year: 10 µg/m3 24-Hour: 25 µg/m3 (99th percentile (i.e. 3-4 exceedance days per year)
		• Industrial Air Pollution Control Regulation (Official Gazette Date/Number: 03.07.2009/27277 revised in the Official Gazette Date/Number: 06.11.2020/31296) Annex- 2.1 "Table-2 Mass Flows"	Non-stack Mass Flow CO: 50 kg/h Dust: 1 kg/h NOx: (as NO_2) 4 kg/h SOx: 6 kg/h TOC: 3 kg/h	WBG General EHS Guidelines: Environmental Air Emissions and Ambient Air Quality	WBG General EHS Guidelines: Environmental Air Emissions and Ambient Air Quality mention that: "Emissions do not result in pollutant concentrations that reach or exceed relevant ambient quality guidelines and standards by applying national legislated standards, or in their absence, the current WHO Air Quality Guidelines" Since National Standards exist, compliance with National Standards will be ensured.	The limit values for exhaust gas defined in Industrial Air Pollution Control Regulation will be complied in Project. Non-stack Mass Flow CO: 50 kg/h Dust: 1 kg/h NOx: (as NO_2) 4 kg/h SOx: 6 kg/h TOC: 3 kg/h
3	Effluent Water Quality	Regulation on Water Pollution Control (Official Gazette Date/Number: 31.12.2004/25687 and revised in the Official Gazette Date/Number 12.05.2023/32188) Wastewater Discharge Standards Defined in Table 19-Discharge Standards of Mixed Industrial Wastewater to The Receiving Environment (Small and Large Organized Industrial Zones and Other Industries for Which Sector cannot be Determined)	Discharge Standards for the Treated Process Water to Receiving Environment in the Regulation on Water Pollution Control for planned WWTP: COD: 250 mg/L TSS: 200 mg/L Oil and grease: 20 mg/L Total Phosphorus (P): 2 mg/L	WBG General EHS Guidelines: Environmental Wastewater and Ambient Water Quality	WBG General EHS Guidelines Environmental-Wastewater and Ambient Water Quality mention that: "Compliance with national or local standards for sanitary wastewater discharges or, in their absence, the indicative guideline values applicable to sanitary wastewater discharges shown in Table 1.3.1." Since National Standards exist, compliance with National Standards will be ensured.	The discharge criteria of the WWTP have been decided on the basis of the Water Pollution Control Regulation, Urban Wastewater Treatment Regulation, EU directives and WBG EHS Guidelines: Environmental Wastewater and Ambient Water Quality. Limit values of Surface Water Quality. COD: 250 mg/L TSS: 200 mg/L

[1] *All parameters were evaluated based on the most stringent one.*

Environmental Standards

<table>
<tr><th>No</th><th>Topic</th><th>National Standards/ Requirements</th><th>Limit Values in National Legislation</th><th>International Standards/ Requirements</th><th>Limit Values in International Legislation</th><th>Project Standards</th></tr>
<tr><td></td><td></td><td></td><td>Total Chrome: 2 mg/L
Chrome (Cr^{+6}): 0.5 mg/L
Lead (Pb): 2 mg/L
Total Cyanide (CN-): 1 mg/L
Cadmium (Cd): 0.1 mg/L
Ferrous (Fe): 10 mg/L
Fluoride (F-): 15 mg/L
Copper (Cu): 3 mg/L
Zinc (Zn): 5 mg/L
Mercury (Hg): 0.05 mg/L
Sulphate (SO_4^{-2}): 1500 mg/L
Total Kjeldahl Nitrogen (TKN): 20 mg/L
Fish Bioassay (TDF): 10
Color: 280 Pt-Co
pH:6-9</td><td></td><td></td><td>Oil and grease: 20 mg/L
Total Phosphorus (P): 2 mg/L
Total Chrome: 2 mg/L
Chrome (Cr+6): 0.5 mg/L
Lead (Pb): 2 mg/L
Total Cyanide (CN-): 1 mg/L
Cadmium (Cd): 0.1 mg/L
Ferrous (Fe): 10 mg/L
Fluoride (F-): 15 mg/L
Copper (Cu): 3 mg/L
Zinc (Zn): 5 mg/L
Mercury (Hg): 0.05 mg/L
Sulphate (SO4-2): 1500 mg/L
Total Kjeldahl Nitrogen (TKN): 20 mg/L
Fish Bioassay (TDF): 10
Color: 280 Pt-Co
pH:6-9</td></tr>
<tr><td>4</td><td>Surface Water Quality</td><td>Regulation on Surface Water Quality-Water Quality Classes (Official Gazette Date/Number: 30.11.2012/ 28483) Annex – 5)</td><td>
<table>
<tr><th rowspan="2">Parameter</th><th rowspan="2">Unit</th><th colspan="3">Surface Water Quality Regulation
Water Quality Classes</th></tr>
<tr><th>I
(very good)</th><th>II
(good)</th><th>III
(moderate)</th></tr>
<tr><td>Ammonium (NH_4^+)</td><td>mg/L</td><td><0.2</td><td>1</td><td>>12</td></tr>
<tr><td>Colour</td><td>m^{-1}</td><td>RES 436 nm: ≤ 1,5
RES 525 nm: ≤ 1,2
RES 620 nm: ≤ 0,8</td><td>RES 436 nm: 3
RES 525 nm: 2,4
RES 620 nm: 1,7</td><td>RES 436 nm: > 4,3
RES 525 nm: > 3,7
RES 620 nm: 2,5</td></tr>
<tr><td>Oil and Grease</td><td>mg/L</td><td><0.2</td><td>0.3</td><td>>0.3</td></tr>
<tr><td>Biological Oxygen Demanded BOD(BOD_5)</td><td>mg/L</td><td><4</td><td>8</td><td>>8</td></tr>
<tr><td>Dissolved Oxygen (DO)</td><td>mg/L</td><td>>8</td><td>6</td><td><6</td></tr>
<tr><td>Conductivity</td><td>µS/cm</td><td><400</td><td>1000</td><td>>1000</td></tr>
<tr><td>Chemical Oxygen Demanded (COD)</td><td>mg/L</td><td><25</td><td>50</td><td>>50</td></tr>
<tr><td>Nitrate (NO_3^-)</td><td>mg/L</td><td><3</td><td>10</td><td>>10</td></tr>
<tr><td>pH</td><td>-</td><td>6-9</td><td>6-9</td><td>6-9</td></tr>
<tr><td>Total Phosphorus, (TP)</td><td>mg/L</td><td><0.08</td><td>0.2</td><td>>0.2</td></tr>
<tr><td>Ortophosphate (o-PO_4)</td><td>mg/L</td><td><0.05</td><td>0,16</td><td>>0.16</td></tr>
<tr><td>Total Kjeldahl Nitrogen(, TKN)</td><td>mg/L</td><td><0.5</td><td>1.5</td><td>>1.5</td></tr>
<tr><td>Total Nitrogen, (TN)</td><td>mg/L</td><td><3.5</td><td>11.5</td><td>>11.5</td></tr>
<tr><td>Floride</td><td>µg/L</td><td>≤1000</td><td>1500</td><td>>1500</td></tr>
<tr><td>Manganese</td><td>µg/L</td><td>≤100</td><td>500</td><td>>500</td></tr>
<tr><td>Selenium</td><td>µg/L</td><td>≤10</td><td>15</td><td>>15</td></tr>
<tr><td>Sulphur</td><td>µg/L</td><td>≤2</td><td>5</td><td>>5</td></tr>
</table>
</td><td>WBG General EHS Guidelines: Environmental Wastewater and Ambient Water Quality</td><td>WBG General EHS Guidelines Environmental-Wastewater and Ambient Water Quality mention that: " Discharges to surface water should not result in contaminant concentrations in excess of local ambient water quality criteria or, in the absence of local criteria, other sources of ambient water quality.”

Since National Standards exist, compliance with National Standards will be ensured.</td><td>
<table>
<tr><th rowspan="2">Parameter</th><th rowspan="2">Unit</th><th colspan="3">Surface Water Quality Regulation
Water Quality Classes</th></tr>
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(very good)</th><th>II
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<tr><td>Colour</td><td>m^{-1}</td><td>RES 436 nm: ≤ 1,5
RES 525 nm: ≤ 1,2
RES 620 nm: ≤ 0,8</td><td>RES 436 nm: 3
RES 525 nm: 2,4
RES 620 nm: 1,7</td><td>RES 436 nm: > 4,3
RES 525 nm: > 3,7
RES 620 nm: 2,5</td></tr>
<tr><td>Oil and Grease</td><td>mg/L</td><td><0.2</td><td>0.3</td><td>>0.3</td></tr>
<tr><td>Biological Oxygen Demanded BOD(BOD_5)</td><td>mg/L</td><td><4</td><td>8</td><td>>8</td></tr>
<tr><td>Dissolved Oxygen (DO)</td><td>mg/L</td><td>>8</td><td>6</td><td><6</td></tr>
<tr><td>Conductivity</td><td>µS/cm</td><td><400</td><td>1000</td><td>>1000</td></tr>
<tr><td>Chemical Oxygen Demanded (COD)</td><td>mg/L</td><td><25</td><td>50</td><td>>50</td></tr>
<tr><td>Nitrate (NO_3^-)</td><td>mg/L</td><td><3</td><td>10</td><td>>10</td></tr>
<tr><td>pH</td><td>-</td><td>6-9</td><td>6-9</td><td>6-9</td></tr>
<tr><td>Total Phosphorus, (TP)</td><td>mg/L</td><td><0.08</td><td>0.2</td><td>>0.2</td></tr>
<tr><td>Ortophosphate (o-PO_4)</td><td>mg/L</td><td><0.05</td><td>0,16</td><td>>0.16</td></tr>
<tr><td>Total Kjeldahl Nitrogen(, TKN)</td><td>mg/L</td><td><0.5</td><td>1.5</td><td>>1.5</td></tr>
<tr><td>Total Nitrogen, (TN)</td><td>mg/L</td><td><3.5</td><td>11.5</td><td>>11.5</td></tr>
<tr><td>Floride</td><td>µg/L</td><td>≤1000</td><td>1500</td><td>>1500</td></tr>
<tr><td>Manganese</td><td>µg/L</td><td>≤100</td><td>500</td><td>>500</td></tr>
<tr><td>Selenium</td><td>µg/L</td><td>≤10</td><td>15</td><td>>15</td></tr>
<tr><td>Sulphur</td><td>µg/L</td><td>≤2</td><td>5</td><td>>5</td></tr>
</table>
</td></tr>
<tr><td>5</td><td>Groundwater Quality</td><td>Regulation on the Protection of Groundwater Against Pollution and Deterioration (Official Gazette Date/Number: 07.04.2012/ 28257) (Annex – 3)</td><td>Nitrate: 50 mg/L
Total Pesticide: 0.5 µg/L

For the other parameters given below (included in Annex-3 of the Regulation) no limit value is defined.

Ammonium
Arsenic</td><td>WBG General EHS Guidelines: Environmental Wastewater and Ambient Water Quality</td><td>Environmental-Wastewater and Ambient Water Quality mention that: Properly designed and installed in accordance with local regulations and guidance to prevent any hazard to public health or contamination of land, surface or groundwater.
Although there is a national regulation, no limit value is set in the regulation. So, limit values for surface water are used for the assessment.</td><td>Nitrate: 50 mg/L
Total Pesticide: 0.5 µg/L

For the other parameters (Ammonium, Arsenic, Mercury, Conductivity, Cadmium
Chloride, Lead, Sulfate, Tetrachloroethylene, Trichloroethylene, Salinity) limit values defined for the surface waters will be used.</td></tr>
</table>

Environmental Standards						
No	**Topic**	**National Standards/ Requirements**	**Limit Values in National Legislation**	**International Standards/ Requirements**	**Limit Values in International Legislation**	**Project Standards**
			Mercury Conductivity Cadmium Chloride Lead Sulfate Tetrachloroethylene Trichloroethylene Salinity			
6	Soil Quality	The Regulation on Soil Pollution Control and Point Source Contaminated Fields (Official Gazette Date/Number: 08.06.2010/27605, revised in the Official Gazette Date/Number 11.07.2013/28704), Annex-2).	[2]Antimony: 31 mg/kg Arsenic: 0.4 mg/kg Boron: - Cadmium: 70 mg/kg Chromium (VI): 235 mg/kg Copper: 3129 mg/kg Lead: 400 mg/kg Mercury: 23 mg/kg Nickel: 1564 mg/kg Selenium: 391 mg/kg Silver: 391 mg/kg Zinc: 23464 mg/kg Tin: 46929 mg/kg Titanium: 312857 mg/kg Total Petroleum Hydrocarbons (TPH): - Total Organic Halogens (TOX): -	WBG General EHS Guidelines: Environmental	Since limit values regarding soil quality are not given at WBG General EHS Guidelines: Environmental, compliance with National Standards will be ensured.	Antimony: 31 mg/kg Arsenic: 0.4 mg/kg Boron: - Cadmium: 70 mg/kg Chromium (VI): 235 mg/kg Copper: 3129 mg/kg Lead: 400 mg/kg Mercury: 23 mg/kg Nickel: 1564 mg/kg Selenium: 391 mg/kg Silver: 391 mg/kg Zinc: 23464 mg/kg Tin: 46929 mg/kg Titanium: 312857 mg/kg Total Petroleum Hydrocarbons (TPH): - Total Organic Halogens (TOX):-

Social Standards						
No	**Topic**	**National Laws / Regulations**	**International Standards**	**Project Standards**	**Non-Compliances /Corrective Actions**	**Targets**
1	Labor and working conditions	Labor Law (No. 4857), published in the Official Gazette no. 25134 dated 10 June 2003	**ESS2** Labor and Working Conditions	**ESS2** Labor and Working Conditions ESF Guidance Note 2 Labor and Working Conditions Labour Management Procedures of the OIZ project	Turkish national laws and regulations regarding labour and working conditions satisfies ESS2 requirements. Worker grievance mechanism is the main gap between national legislative requirement and ESS2. Labor Management Procedures (LMP) is developed as a part of E&S documents of the main project (TOIZP). LMP will also provide guidance on the required mitigations or management implementations such as workers.	Comply with national laws / regulations, international standards
2	Labor and working conditions	Law on Occupational Health and Safety (No. 6331), published in the Official Gazette no. 28339 dated 30 June 2012	**ESS2** Labor and Working Conditions	**ESS2** Labor and Working Conditions ESF Guidance Note 2 Labor and Working Conditions WBG "Environmental, Health, and Safety Guidelines for Water and Sanitation"	Occupational Health and Safety plan, risk assessment, emergency response plan, explosion protection document will be prepared.	Comply with national laws / regulations, international standards.
3	Labor and working conditions	Regulation on Contractors and Sub-contractors, published in the Official Gazette no. 27010 dated 27 September	**ESS2** Labor and Working Conditions	**ESS2** Labor and Working Conditions WBG "Environmental, Health, and Safety	Labor Management Procedures (LMP) is developed as a part of E&S documents. LMP will also provide guidance on the required	Comply with national laws / regulations, international standards.

[2] The parameters are selected by considering the classification given in Regulation on Soil Pollution Control and Point Source Contaminated Fields Annex-2, Table-2. NACE Code:1089, NACE Code: 1330, NACE Code:2511 (defined in Pollution Control and Point Source Contaminated Fields). Also limit values given in Regulation on Soil Pollution Control and Point Source Contaminated Fields Annex-1 are taken into consideration.

Social Standards						
No	**Topic**	**National Laws / Regulations**	**International Standards**	**Project Standards**	**Non-Compliances /Corrective Actions**	**Targets**
		2008		Guidelines for Water and Sanitation” Labour Management Procedures of the OIZ project	mitigations or management implementations such as workers.	
4	Community Health and Safety	Law on Occupational Health and Safety (No. 6331), published in the Official Gazette no. 28339 dated 30 June 2012	**ESS4** Community Health and Safety	**ESS4** Community Health and Safety ESF Guidance Note 4 Community Health and Safety English WBG “Environmental, Health, and Safety Guidelines for Water and Sanitation”	Project level management of specific risks such as labour influx, sexual exploitation and abuse and sexual harassment are the key gaps. The plans such as Traffic Management Plan and Community Health and Safety Plan etc. will be prepared.	Comply with national laws / regulations, international standards.
5	Stakeholder engagement	Laws on Right to Information (No. 4982), published in the Official Gazette no 25269 dated 24 October 2003	**ESS1**0 Stakeholder Engagement and Information Disclosure	**ESS2** Labor and Working Conditions ESS 10 Stakeholder Engagement and Information Disclosure ESF Guidance-Note 10 Stakeholder Engagement and Information Disclosure English	Effective and transparent stakeholder engagement is the main gap in terms of ESS10 requirement. Within this scope, a Stakeholder Engagement Plan required to identify the different stakeholders (project-affected parties and other interested parties including disadvantaged or vulnerable groups). Stakeholder engagement should be a continuous process.	Comply with national laws / regulations, international standards.
6	Environmental and Social Risks and Impacts	Regulation on the Environmental Impact Assessment (EIA) published in the official Gazette no. 31907 dated 29 July 2022	**ESS1** Assessment and Management of Environmental and Social Risks and Impacts	**ESS1** Assessment and Management of Environmental and Social Risks and Impacts	Robust social risk assessments and required plans addressing relevant mitigations are the main gaps between Turkish regulation and ESS1.	Comply with national laws / regulations, international standards.

4 METHODOLOGY

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 ESF. Also, although ESMP is not a requirement of national legislation, compliance with national legislation requirements is also considered while making the assessment in relevant parts of the plan. Accordingly, this ESMP has been prepared to assess and identify the adverse potential venvironmental and social impacts and risks arising from 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 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 the following mitigation.

While making the impact assessment, collected data from desk study and outcomes of site visits were taken into consideration. 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 4.1 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 4.1 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.*

An ESMP development methodology involves a systematic process to ensure comprehensive assessment, management and mitigation of environmental and social impacts throughout the life cycle of a project.

Desk Study: It starts with a desk study in which preliminary information is collected by examining the existing literature, reports and data regarding the project area and its surroundings.

Data Collection: Conducting comprehensive data collection involving a variety of sources, including environmental, social and geographic data. This phase includes data from government agencies, existing studies, and private research.

Site-Specific Data Collection Approach: The choice of measurement points is justified by various factors. This includes consideration of proximity to project activities, potential impact zones, and ecological significance. The rationale lies in ensuring representative coverage of critical areas for accurate assessment of potential impacts.

Area of Influence Definition and Justification: Defining the project's impact area includes determining the geographical area likely to be affected by project activities. The justification is based on scientific methodologies and knowledge of the project's potential impacts on the environment and surrounding communities.

Site Visits and Surveys: Field visits are crucial to make first-hand observations and verify existing data. Surveys conducted during visits help understand local conditions, verify data accuracy, and identify potential environmental and social impacts.

Stakeholder Consultations: Direct stakeholders, such as local communities and businesses, are consulted to understand their concerns and needs. Indirect stakeholders, such as NGOs or government bodies, provide valuable insight into wider social and environmental outcomes.

Impact Assessment Methodology: A comprehensive impact assessment methodology is used to assess potential environmental and social impacts. A comprehensive methodology is used to assess environmental and social impacts, taking into account factors such as air and water quality, biodiversity, socio-economic aspects, etc.

Mitigation Measures Definition: Once impacts are identified, mitigation measures are designed based on the severity and nature of these impacts. The approach involves recommending specific actions to minimize, prevent or compensate for adverse impacts. Mitigation measures are designed to ensure compliance with local regulations and international standards in accordance with stakeholders' concerns and project feasibility.

This structured approach within an ESMP ensures a thorough understanding of potential impacts and the implementation of effective mitigation strategies for sustainable project development.

5 ENVIRONMENTAL BASELINE OF THE PROJECT

5.1 Project Location

The Türkoğlu OIZ (Organized Industrial Zone) is situated in the OIZ Neighborhood of Türkoğlu district within Kahramanmaraş. Türkoğlu district itself spans an area of 705 square kilometers and has an elevation of 500 meters above sea level. Türkoğlu OIZ, which was placed on an area of 128 ha, has a total of 39 plots and is adjacent to the Türkoğlu-Nurdağı connection road.

The project will be constructed on the existing WWTP land which is in the existing OIZ's built-up industrial area. The allocated area for the WWTP is 25 ha. The project does not require land acquisition. The project land is owned by the OIZ (Parcel no: 499/15) and allocated only for the construction of the wastewater treatment plant in line with the approved revised OIZ land use plan. The expropriation process was completed by the OIZ in 2011 (see ANNEX-1). Project location map presented in Annex-3 Figure- 3.

The Area of Influence (AoI) refers to the area significantly affected, influenced, or impacted by a particular project, development, or activity. In the context of wastewater treatment plants (WWTP), the AoI encompasses areas that may experience direct or indirect effects resulting from the construction and operation of the facility. For this specific project, the chosen AoI extends to include the entirety of the Türkoğlu OIZ, Ceceli Village settlement area (north-west of the project area), the Public service buildings (north-east of the project area), and the field parcels directly across the discharge point. This deliberate selection is based on determining the potential of project activities to directly and indirectly affect environmental conditions, and the stakeholders within the surrounding areas. The public service buildings, Türkoğlu OIZ, and Ceceli Village settlement area are included in the AoI considering the wind direction and potential impacts during construction phase such as noise, dust emissions, and vehicle traffic. On the other hand, the fields located across the discharge point are included in the AoI considering the potential impacts during operational phase of the project. The Project's Area of Influence is given in Annex-3 Figure- 14.

5.2 Land Use

According to information found in the PID Report, 36% of the total land area in Kahramanmaras is covered by forests. Among these forests, 61% are identified as damaged, while the remaining 39% are classified as normal forest land. The city also boasts an extensive agricultural landscape, comprising 375,309 hectares of agricultural land. Of this, 74% is utilized as fields, while the remaining portion is allocated for fruit orchards, vegetable fields, and fallow lands. The Türkoğlu OIZ situated on a 128 hectares area adjacent to the Türkoğlu-Nurdağı connection road. Before the earthquake, there were 15 operational facilities at 31 industrial parcels at the OIZ, after this disaster, currently 12 operational facilities are running. The remaining vacant parcels are slated for allocation to industries in the near future. The wastewater treatment plant project area, designated to treat Türkoğlu OIZ's wastewater, occupies a net usable area (parcel no: 499/15) of 25,671.95 m^2. The legal entity overseeing the land is the OIZ, and no expenses for land acquisition or expropriation are necessitated for this project

According to land use map prepared based on Environmental Master Plan for Kahramanmaraş planning area, the Project Area shows Organized Industrial Zone. The land use map according to Environmental Master Plan is presented in Annex-3 Figure- 5. The planned WWTP will be constructed at the lowest part of the OIZ to collect wastewater. There are annual herbaceous plants in the area.

5.3 Topography

The Türkoğlu OIZ (Organized Industrial Zone) is situated in the OIZ Neighborhood of Türkoğlu district within Kahramanmaraş. In order to better understand the topography, a regional Digital Elevation Model (DEM) was generated. The Digital Elevation Model (DEM) map including the A-A'

section profile in SW-NE direction is also shown in Annex-3 Figure- 6. According to the Digital Elevation Model created, the highest point of the region is approximately 746 m and the lowest point is located at an altitude of approximately 473 m.

5.4 Geology

The project area is located within the Ceyhan Basin which is among the water basins allocated throughout Turkiye. Approximately 100 m northeast of the project area, there is a creek flows. There is Kızıliniş Dam approximately 3 km northwest of the planned wastewater treatment plant area.

The Ceyhan Basin, which enters the interior of Central Anatolia from the Gulf of Iskenderun, is located in the Eastern Mediterranean Region of Turkey. Ceyhan Basin, which consists of steep mountainous lands and wide alluvial bases, includes the water collection areas of the Ceyhan River and its tributaries. It covers 2.73% of Turkey with its surface area of 21,391 km^2.

The area is situated in the western section of the Eastern Taurus Mountains and forms part of the Amonos Mountains. It is divided by the East Anatolian Fault (EAF) and encompasses distinct geological units, each exhibiting diverse stratigraphic and structural characteristics, and covered by transgressive upper Cretaceous-Tertiary sediments. These units include the Late Senonian ophiolitic Akçalı-Bozkaya mélanges, Late Cretaceous Tekirova ophiolitic nappe, Early Cambrian – Late Cretaceous Bahçe nappe, Infracambrian-Late Cretaceous Uludaz nappe characterized by low-grade metamorphism, and Jurassic-Late Cretaceous Kabaktepe nappe. Sediments and volcanic rocks from the Late Cretaceous-Tertiary İslahiye-Sakçagöz-Türkoğlu basin and Misis Andırın-Yenicekale basin overlay these nappes. Late Miocene Burgaçlı basalt, Yavuzeli basalt, and Quaternary Örtülü basalt have intruded into all these rock formations.

Recent deposits in the region include Old Alluvial Fan, Lacustrine Swamp Deposits, Travertine, Terrace, Slope debris, alluvial fan, River-Channel Deposits, and Alluvium.

Nappe settlement persisted in this area until the conclusion of the Late Cretaceous, and subsequent lateral movement during the Late Miocene led to the development of an imbricated structure.

The generalized stratigraphic column section of the project area and its surroundings is given in Annex-3 Figure- 7.

The project area which is wastewater treatment plant located entirely on Quternary aged alluvium, consisting unconsolidated block, gravel, sand, silt and shale. Geology map of project area and its surroundings is given in Annex-3 Figure- 8.

5.5 Climate

Kahramanmaraş experiences the influence of a Mediterranean climate, with the southern part of the region affected by Mediterranean conditions, while the northern part is characterized by a Continental climate. The summers are hot, and the winters are cold, with temperature variations typically ranging from 1 to 36 °C throughout the year. August registers the highest average temperature at 36.1 °C, while January records the lowest at 1.4 °C. The overall annual average temperature is 16.7 °C.

The city witnesses distinct precipitation patterns, with the highest monthly total precipitation occurring in December, reaching 130.6 mm. In contrast, the lowest precipitation is recorded in August, amounting to 2.2 mm. The annual average precipitation for Kahramanmaraş is 721.6 mm, contributing to the region's overall climate characteristics (Turkish Meteorological Service, 2023).

In addition, the prevailing wind direction in the province is northeast. Detailed meteorological statistics are presented in Table 5.1.

Table 5.1 Long Term Meteorological Data of Kahramanmaraş Province (1957-2021)

Parameter	January	February	March	April	May	June	July	August	September	October	November	December	Annual
	Last Climate Period (1957-2022)												
Avg. Temperature (°C)	4.8	6.2	10.4	15.2	20.1	24.9	28.3	28.4	25.0	18.9	11.8	6.7	16.7
Highest Avg. Temperature (°C)	9.3	11.1	15.9	21.3	26.8	32.0	35.7	36.1	32.6	26.1	17.9	11.2	23.0
Lowest Avg. Temperature (°C)	1.4	2.5	5.7	9.9	14.1	18.7	22.2	22.3	18.5	13.0	7.1	3.3	11.6
Avg. Sunshine Duration (hour)	3.3	4.0	5.5	6.6	8.1	10.0	10.5	9.8	8.7	6.6	4.5	3.2	6.7
Average Number of Rainy Days	10.44	10.60	10.40	9.36	6.96	2.14	0.41	0.37	1.81	5.59	7.17	10.17	75.4
Average Monthly Amount of Rain (mm)	124.0	112.2	95.1	73.0	38.8	8.6	2.7	2.2	11.0	45.4	78.0	130.6	721.6
Measurement Period (1957-2022)													
Highest Temperature (°C)	18.7	25.3	29.8	36.0	39.3	42.0	45.2	44.4	42.5	38.6	29.6	24.0	45.2
Lowest Temperature (°C)	-9.0	-9.6	-7.6	-1.8	4.7	6.6	12.4	12.5	4.0	0.0	-4.4	-7.6	-9.6

Source: Turkish State Meteorological Service, 2023.

5.6 Soil Quality

Turkish General Directorate for Rural Services database defines the land use capabilities in eight (8) different classes as summarized in Table 5.2. These classes represent the agricultural potential of the soil. 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 5.2 (*Former Ministry of Agricultural and Rural Services, July 2008*).

Table 5.2 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 is 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

Class	Agricultural Potential	Definition of Land Use Capability
		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 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 major soil groups and land use capability classes for the Project Area is represented in ANNEX-3. According to the former Turkish General Directorate for Rural Services database analysis (1993), the major soil groups of the Project Area include colluvial soils. In terms of land use capability, the Project Area is evaluated under the categories of Class II. During the field study conducted on 18.09.2023, no pollution was detected by visual observation.

5.7 Air Quality and Odor

OIZs emit large amounts of greenhouse gases, especially carbon dioxide (CO_2), methane (CH_4), nitrogen oxides (NO_x), sulfur dioxide (SO_2) and fugitive VOCs that contribute to climate change. Since the project area is in the organized industrial zone, there are many companies generating air emissions.

To understand the baseline air quality of the project area, data from continuous monitoring studies by MoEUCC were examined. In the air quality analysis, the data of the station located in Onikişubat district, which is the closest monitoring station to the project area, was used. Data obtained from Onikişubat Air Quality Monitoring Station, WBG EHS Guidelines Limit Values and limit values according to Turkish Legislation are presented in Table 5.3. According to table, the air quality results are generally below the limit values. Only the NO_2 result was calculated above the limit value, but the result is very close to the limit value. This gas is produced by the combustion of solid and liquid fuels.

Table 5.3 Air Quality Measurements Result

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$_3$	Onikişubat District Air Measurement Station
NO_2	24-Hour	20	40	40.79
	10-Minute	500		
PM_{10}	1-Year	20	-	46.32
	24-Hour	50	50	
$PM_{2.5}$	1-Year	10	-	-

	24-Hour	25	25**	
O_3	8-Hour daily maximum	100	120	34.43

Source: https://sim.csb.gov.tr/STN/STN_Report/StationDataDownloadNew

Since wastewater is currently discharged without treatment, untreated wastewater consisting of all kinds of pollutants and screening materials is released into the receiving environment and creates odor-causing water pollution.

5.8 Noise

Environmental noise in Türkiye is regulated by the Regulation on Environmental Noise Control (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 defined in the RENC Annex II Table 4 are presented in Table 5.4.

Table 5.4 Environmental Noise Limits in RENC

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

WBG General EHS Guideline Standards

Noise limit levels are described under, WBG Environmental, Health and Safety (EHS) Guidelines, General EHS Guidelines: Environmental Noise. The noise limit values are based on the World Health Organization Guidelines for Community Noise. Noise levels defined by WBG EHS Guidelines are presented in Table 5.5 WBG EHS Guidelines require that noise impacts should not exceed the levels presented in Table 5.5 or result in a maximum increase in background noise levels of 3 dB at the nearest receptor location off-site.

Table 5.5 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

The facilities located in Türkoğlu OIZ will comply with the specified limit values given in the Table 5.5. The baseline studies within the scope of ESMP, noise monitoring was not carried out.

5.9 Water Resources and Use

The water resources within Kahramanmaraş include reservoirs such as Sır, Menzelet, Kılavuzlu, Ayvalı, and Kartalkaya, all located within the city. The important rivers of Türkoğlu district are Aksu River and İmalı Stream. Kızıliniş Pond on İmalı Stream was built for irrigation purposes and is still in use. İmalı Stream passes through the center of the district and reaches the Aksu River. The OIZ is situated within the Gavur Lake-Sağlık Plain and Ceyhan River Basin. Interviews with local residents indicate that there has been no ponding in the Gavur Lake KBA since 2015, and the area affected in previous years does not align with the current project area. The current agricultural zones were identified as the former ponding area. According to the Regulation on Identification of Sensitive Water Bodies and the Areas affecting this Water Bodies (Official Gazette No.29927 Date 23.12.2016), the region that includes project area which is in the OIZ is defined as an urban sensitive water area region and nitrate sensitive area region. The ultimate receiving body is Aksu Stream, which flows 11 km away from the OIZ is a sensitive water body. The hydrogeology map of the Project is presented in Annex-3 Figure- 14.

A creek passes through the OIZ and a few creek branches pass near the eastern border of the OIZ. Presently, wastewater discharge is directed to the dry creek bed without a wastewater treatment plant (WWTP), posing potential risks to the river, particularly with the introduction of new businesses in the zone. Without any treatment, untreated water comprising all types of pollutants and screening materials would be released into the receiving body, posing a major environmental burden. According to observations, there is water in the discharged channel and it is surrounded by reeds.

The OIZ fulfills the water requirements of its firms through four water wells situated within its boundaries. Water quality analyzes of these wells are presented in the ANNEX-10. Additionally, well permit letters are also presented in ANNEX-11.

5.10 Wastewater Management

Türkoğlu OIZ does not have a wastewater treatment plant to handle the industrial wastewater generated in the OIZ. Presently, the industrial wastewater from operational businesses is released into the dry creek bed, linked to the Aksu Stream, adjacent to the project area, via the existing collector line within the OIZ boundaries. The current wastewater discharge flow rate is estimated as 600-700 m^3/day. There is no measurement of the flows. There has been water accumulation once during the wet season and the farmers have complained about wastewater discharge. These agricultural lands are located at the old Gavur Lake which has been dried for agricultural activities. It is obvious that discharging all kinds of wastewater into receiving environments without treatment is harmful and the OIZ need an industrial WWTP. OIZ management is aware of this environmental aspect. Following the implementation of the WWTP, it is anticipated that the OIZ will comply with the required environmental conditions for discharge.

With this Project, all wastewater will be directed to the planned WWTP, positioned at the lowest elevation point in the OIZ, and treated water will be released accordingly. Treated wastewater will be discharged to the receiving environment below the legislation limit values. Treatment plant effluent standards will be discharged according to the limit values given for the 24-hour composite sample in "Water Pollution Control Regulation Table 19 - Discharge Standards of Mixed Industrial Wastewater to the Receiving Environment".

5.11 Waste Management

Pursuant to the Environmental Law No. 2872, it is prohibited directly or indirectly to 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. Wastes generated in Türkoğlu OIZ are managed in accordance with the requirements of the Waste Management Regulation.

Wastes generated in Türkoğlu OIZ are temporarily stored within the borders of OIZ and collected by Türkoğlu Municipality. Waste is separated according to waste codes and stored on impermeable grounds. There is no hazardous waste storage area in the OIZ.The waste collected by the municipality is sent to Türkoğlu Municipality according to the waste type.

5.12 Natural Disaster Potential

The project area was taken as the center point and the epicenter distribution of earthquakes with magnitude M≥4 that occurred between 1900 and 2023 within a circle with a radius of 50 km is shown in Annex-3 Figure- 10. The project area was examined on the interactive earthquake hazard map published by AFAD and it was determined that the maximum ground acceleration (PGA 475) of the project area was 0.454 g and the ground velocity (PGV 475) was 29.084 cm/s for a Recurrence Period of 475 years. Earthquake hazard map of turkey where the project area is marked is shown in the Annex-3 Figure- 11.

5.13 Biodiversity and Protected Areas

Field studies of the biological environment of this Project Area and the potential impact area were carried out on 18 September 2023 and details of the studies are given in ANNEX-6. The studies covered terrestrial and aquatic environments, including flora and fauna species, vegetation and habitat descriptions. The study results are given in detail in ANNEX-6.

As a result of the flora-fauna studies carried out in and around the project area, terrestrial flora and fauna species have been determined and presented in tables with their Latin-English names, protection and endemism status in ANNEX-6. Additionally, EUNIS habitat classification has been made, and the map is shown in ANNEX-6.

As a result of these studies including site observations, widespread species adapted to anthropogenic effects in and around the Project Area have been identified. No species in the threatened category, according to IUCN, protected by BERN and CITES lists and/or regionally-widespread endemic species have been found among the identified species. The Project Area is located in an industrial area and is a modified habitat.

National protected areas and internationally recognized areas in the project area and its immediate surroundings have been researched and mapped (ANNEX-6). As a result, according to research conducted with current databases, there is no nationally protected area in and around the Project Area.

The Project Area is located in the Gavur Lake KBA/IBA area. Gavur Lake is located in the Sağlık Plain in the south of Kahramanmaraş. There are hills covered with steppes in the east of the area and agricultural areas in the north and south. While KBA was once a large lake surrounded by reeds and swamps, today, it is a seasonal wetland with water levels rising during the winter months. The lake system was drained into the Asi River and converted mainly into agricultural land, and levees surround the north of the area.

According to the map data, although the Project Area is within the KBA, the entire OIZ area is also within the KBA. As a result of the field studies, it was determined that the area is a modified habitat within the OIZ. As a result of the meetings with OIZ employees in the Project Area, it was stated that there has been no ponding in the area where Gavur Lake is located since 2015 and that the area where there was ponding in the past (i.e. the area considered as Gavur Lake KBA) is the region with agricultural areas on the opposite side of the Project Area. Species and habitats that trigger KBA do not exist in the Project Area. In addition, the wastewater currently discharged without treatment will be treated after the Project is in the operation phase, and it is expected to impact the Gavur Lake basin positively.

6 SOCIAL BASELINE OF THE PROJECT

The overall Study Area for the social impact assessment represents the potential Area of Influence (AoI) of the Project. This is 'the area over which significant effects of the Project could reasonably occur, either on their own or in combination with those of other developments and projects'.

The project will be constructed in the existing OIZ's built-up industrial area. The WWTP area is owned by Türkoğlu OIZ (parcel no: 499/15) and allocated only for the construction of a wastewater treatment plant in line with the approved revised OIZ land use plan (02.06.2022). The expropriation process was already completed by OIZ in 2011. The project does not require land acquisition and the nearest settlement to WWTP construction site is about 1 km. The Area of Influence (AoI) for the social impact assessment is identified as users and owners of the lands downstream of the discharge point mainly Ceceli neighbourhoods. The Project's social Area of Influence is given in Figure 6.1.

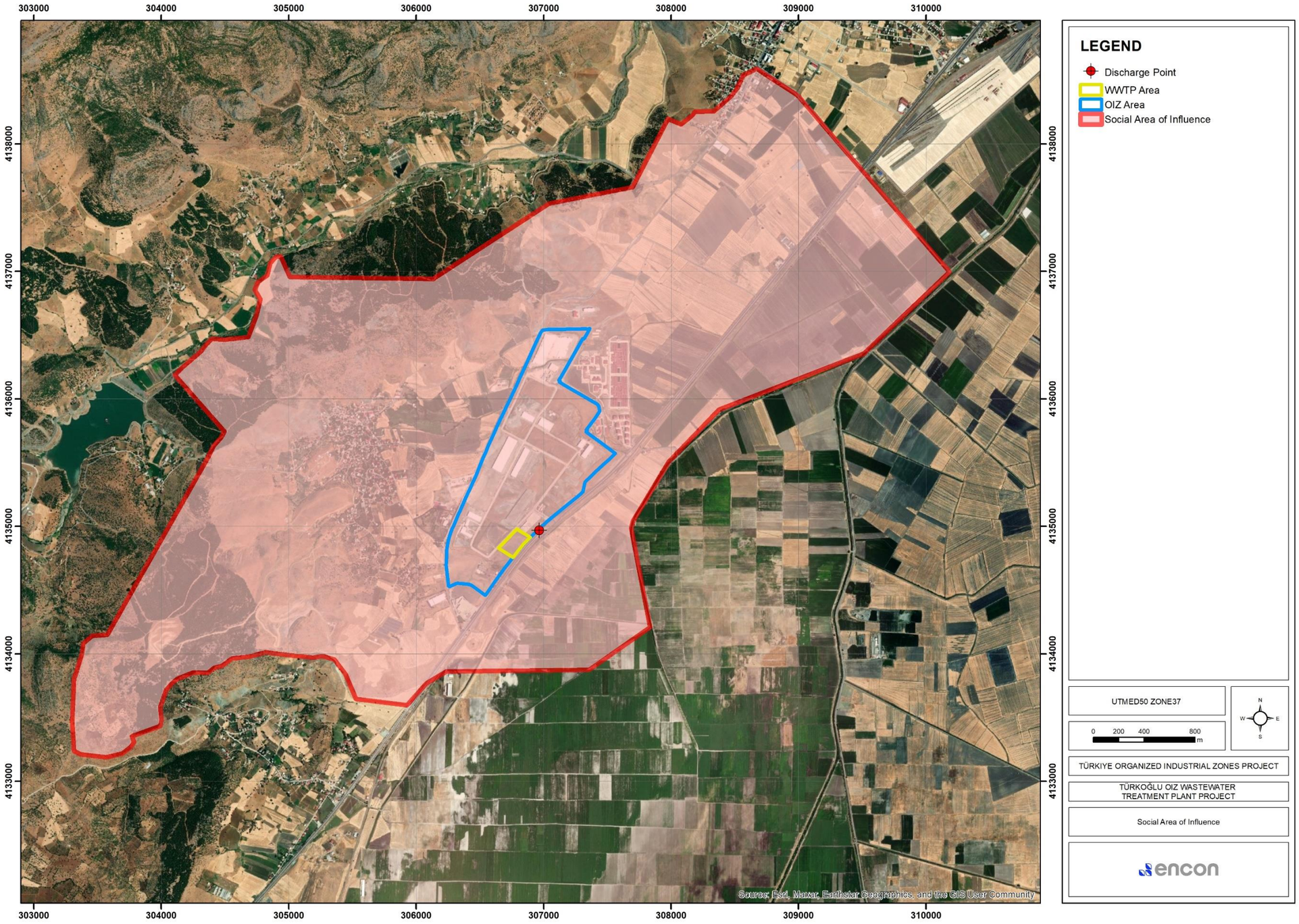

Figure 6.1 Project's Social Area of Influence

6.1 Demography and Population

The project area is located in the Türkoğlu district of Kahramanmaraş. On 6 February 2023, two major earthquakes hit south-eastern Türkiye. The magnitude of the destruction was unprecedented and 11 cities were affected including Kahramanmaraş. Besides many aftershocks in the following weeks, on 20 February 2023, two other big earthquakes hit the same region during which many of the damaged buildings from the first quakes collapsed. More than 50,000 people lost their lives; 3,3 million people have been displaced; and approximately 2,5 million people have been provided with temporary shelters in tent camps and container settlements cities and other public accommodation facilities as well as hotels.

There is one settlement in the project's social Area of Influence (AoI): Ceceli. There are Türkoğlu prisons with a capacity of 1,350 and lodging buildings within the border of Ceceli. The total population of Ceceli is 5,786 (Table 6.1). The population of Ceceli in 2018 when the prison was not in operation was 2,243. In Ceceli neighbourhood, the female population is very low around 19.1% of the total population (TurkStat, 2023a). This anomaly is also related to the existence of prisons.

Table 6.1 Population of Settlements at AoI

Settlement	Total	Female	Male	Female %	Male %
Kahramanmaraş	1,177,436	579,432	598,004	49.2	50.8
Türkoğlu	78,976	36,830	42,146	46.6	53.4
Ceceli	5,786	1,108	4,678	19.1	80.9

Source: TurkStat, 2023

Türkoğlu district was most affected by the Earthquake Disaster in Kahramanmaraş. Ceceli neighbourhood was also significantly affected. According to information provided by the headmen, 38 buildings in Ceceli were destroyed due to the earthquake. The number of deaths in Ceceli due to the earthquake is 4. After the earthquake, about 50 residents migrated from the neighbourhood and about 60 people immigrated to the neighbourhood from Türkoğlu Center and Kahramanmaraş Center.

6.2 Cultural Heritage

There are no known cultural heritage sites or cultural resources in the project area. There are a tumulus (Sivrimine) and a rock tomb located at the north and south of Kahramanmaraş - Osmaniye Road), outside the OIZ boundaries at a distance of 150 meters and 850 meters from the WWTP area respectively. Those sites are under the protection of the Law on the Protection of Cultural and Natural Assets No. 2863 with 1st degree Archaeological Site decision. Archaeological Protected Areas are given in Annex-3 Figure- 12.

6.3 Livelihood and Employment

Socio-Economic Development Index studies allow for determining the development index and trends of districts, provinces and regions as well as benchmarking. Socio-Economic Development Index studies allow for determining the development index and trends of districts, provinces and regions as well as benchmarking. According to the Socio-Economic Development List of Provinces and Regions Study (2017), Kahramanmaraş is listed as the 58th most developed province out of 81 provinces and located within the 5th degree-developed level (Acar, et al., 2019).

According to Provincial Gross Domestic Product (2021) data (TurkStat, 2023b), the industry sector has the largest share (50.7%) in Kahramanmaraş. The industry sector is followed by services (39.4%) and agriculture (9.9%). In terms of sectoral shares of Gross Domestic Product Kahramanmaraş differs from Turkey where the share of the service sector is the highest.

According to the Socio-Economic Development Index of Districts Study (2022), Türkoğlu district is listed as the 6th most developed district of Kahramanmaraş (612 out of 973 districts of Türkiye) and located within the 4th-degree development level (Acar, et al., 2022).

Agricultural and husbandry activities have a significant role in Kahramanmaraş, Türkoğlu and Ceceli. Various products such as wheat, corn and cotton from fruits; pistachios, persimmons and strawberries; cucumber, gherkin and Maraş pepper are grown in Türkoğlu and Ceceli.

6.3.1 Major Economic Activities in Settlements Located in the Project AoI

Information on major economic activities located in Project AoI was obtained from the headmen of the Ceceli Neighbourhood. Major economic activities in the settlement are given in Table 6.2.

Table 6.2 Major Economic Activities in the Settlement Located in the Project AoI

Settlement	Primary Economic Activity	Secondary Economic Activity	Tertiary Economic Activity
Ceceli	Paid employment	Agriculture	Animal Husbandry

According to information provided by Türkoğlu OIZ management, Türkoğlu OIZ efforts to allocate employment opportunities to the local settlements.

6.4 Education and Health Services

There are one primary school and one Community Health Center in Ceceli neighbourhood. There is no school in Çoraklar neighbourhood.

The Community Health Center in Ceceli neighbourhood was slightly damaged in the earthquake. But local people contacted the district health department and repaired it. It is currently available, but there is no doctor.

Education and health centres at the social AoI are shown in Annex-3 Figure- 13.

6.5 Vulnerable Groups and Social Equity

Vulnerable groups refer to people who may be more affected by the potential negative impacts of the project or are less able to access information or get their voices heard and concerns raised. The characteristics of persons belonging to vulnerable groups are as follows:

- Individuals over 65 years of age living alone,
- Physically or mentally handicapped,
- Those who have a chronic illness or are bedridden,
- Women-headed households,
- Poor people who live on state or association aid,
- Refugees,
- Ethnic minority groups,
- Nomads.

According to information provided by the headmen of the neighbourhood, after the earthquake, half of the village was left unemployed and almost everyone is receiving aid due to the earthquake, but the headmen of the neighbourhood informed that aid is not enough. According to the headmen of the neighbourhood, two women over the age of 65 need more support.

According to the information provided by the headmen of the neighbourhood, information about vulnerable/disadvantaged individuals/groups is presented in Table 6.3.

Table 6.3 Vulnerable Groups at AoI

Settlement	Individuals over 65 years of age living alone	Poor families*	Physically / Mentally disabled	Refugee
Ceceli	2	0	3	0

** Households, which are depended on social and economic support are defined as Poor Families by headmen.*

6.6 Infrastructure Services

The following table presents the infrastructure services in the neighbourhoods in the social AoI.

Table 6.4 Infrastructure Services of the neighbourhoods in the social AoI

Settlement	Water Resource	Irrigation Resource	Sewerage System	Domestic Waste Management	Mass Transportation Vehicle
Ceceli	Well water	Well water	Sewage system (not exist in some places due to the earthquake)	Collected by the municipality	Private cars

According to information provided by the headmen of the neighbourhood, there were problems in the drinking water and sewage system after the earthquake, and the drinking water lines are expected to be changed. Plumbing bursts in 4-5 places daily. Well water is used as drinking water.

6.7 Traffic and Transportation

The project area is located within Türkoğlu OIZ. It is possible to access Türkoğlu OIZ via Kahramanmaraş – Osmaniye State Highway.

According to the 2022 state highways traffic volume map published by the General Directorate of Highways, the annual average daily traffic on the Kahramanmaraş – Osmaniye State Highway traffic segment passing through the east of the OIZ is 11,741 vehicles. Of these vehicles, 8,245 are automobiles, 1,243 are medium goods vehicles, 83 are buses, 691 are trucks and 1.479 are articulated trucks (KGM, 2023).

7 ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS OF THE PROJECT

7.1 Environmental Risks and Impacts of the Project

The main purpose of an Environmental and Social Management Plan (ESMP) 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 well-being 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. And finally, planned monitoring activities for checking effectiveness of the proposed mitigation measures are identified. In Table 7.2, identification of the level of environmental and social impacts for three Project phases (pre-construction, construction and operation phases) is presented. The area of influence map of the project is presented in Annex-3, Figure- 14.

Determining the significance of impacts is a crucial step in assessing the environmental and social aspects of a project. The process typically involves a systematic evaluation of various factors to gauge the magnitude and importance of potential impacts. Populating the impact significance matrix is done by utilizing the collected data (baseline studies), assessments (determination of impact criteria, identification and categorization of potential impacts, quantitataive and qualitative assessments), and stakeholder input (stakeholder consultations). Before populating the matrix, all impacts are evaluated by factors like severity, duration, reversibility, and cumulative effects to determine their significance.

The anticipated impacts for each phase of the project are presented in this section. The project has been prepared according to IFC ESS requirements and the relevant ESSs are listed in the Table 7.1.

Table 7.1 ESS List Concerning the Project

Physical and Biological Environment	**Relevant ESS**
7.1.1 Land Use	ESS1, ESS3
7.1.2 Geology	ESS1, ESS3
7.1.3 Hydrogeology	ESS1, ESS3
7.1.4 Climate and Vegetation	ESS1, ESS3
7.1.5 Soil Quality	ESS1, ESS3
7.1.6 Air Quality and Odor	ESS1, ESS3
7.1.7 Noise	ESS1, ESS3
7.1.8 Water Resources and Use	ESS1, ESS3
7.1.9 Wastewater Management	ESS1, ESS3
7.1.10 Waste Management	ESS1, ESS3
7.1.11 Pesticide Use and Management	ESS1, ESS3
7.1.12 Natural Disaster Potential	ESS 1
7.1.13 Biodiversity and Protected Areas	ESS1, ESS6
Socio-Economic Environment	**Relevant ESS**
7.2.1 Population/Demography	ESS1

7.2.2 Cultural Heritage	ESS1, ESS8
7.2.3 Economy/Employment	ESS1
7.2.4 Vulnerable/Disadvantaged Groups	ESS1
7.2.5 Land Requirement	ESS1,
7.2.6 Working Conditions and Labor Management	ESS1, ESS2
7.2.7 Community Health and Safety	ESS1, ESS4
7.2.8 Traffic and Transportation	ESS1
7.2.9 Occupational Health and Safety	ESS1, ESS2

Table 7.2 Environmental and Social Attributes Impact Levels Identification Matrix

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. PRE-CONSTRUCTION PHASE																					
1. Air Quality																					
1	Increase in dust concentration		✓	✓			✓				✓				✓			**Medium**	**Low**	**Low**	**Low**
2	Exhaust emissions (SO_2 PM, NO_x)		✓	✓			✓				✓				✓			**Medium**	**Low**	**Low**	**Low**
3	GHG emissions (CO_2, CH_4, N_2O)		✓	✓					✓		✓				✓			**Medium**	**Low**	**Low**	**Low**
2.Soils and Contaminated Lands																					
1	Loss of topsoil at the WWTP area		✓	✓			✓							✓		✓		**Low**	**Low**	**Low**	**Negligible/ None**
2	Erosion potential		✓	✓			✓						✓			✓		**Low**	**Low**	**Low**	**Low**
3	Contamination of soil		✓	✓			✓						✓			✓		**Medium**	**Low**	**Low**	**Low**
4	Pesticide Use		✓	✓			✓						✓			✓		**Medium**	**Low**	**Low**	**Low**
3. Water Resources																					
1	Change in surface water quality		✓	✓				✓			✓						✓	**Medium**	**Low**	**Low**	**Low**
2	Change in groundwater quality		✓	✓			✓				✓						✓	**Medium**	**Low**	**Low**	**Low**
4. Noise and Vibration																					
1	Increase in noise level		✓	✓				✓			✓				✓			**Medium**	**Low**	**Low**	**Low**
5. Resources and Waste																					
1	Resources used during works		✓	✓				✓			✓				✓			**Low**	**Low**	**Low**	**Negligible/ None**
2	Improper waste management		✓	✓				✓			✓					✓		**Medium**	**Low**	**Low**	**Low**
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**	**Low**	**Low**	**Low**
7. Biological 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	Damage or loss of terrestrial habitats and flora species		✓	✓				✓			✓					✓		**Low**	**Low**	**Low**	**Negligible/ None**
2	Disturbing/harming of terrestrial fauna species		✓		✓			✓			✓					✓		**Low**	**Low**	**Low**	**Negligible/ None**
3	Damage or loss of aquatic habitat and/or aquatic species		✓		✓			✓			✓					✓		**Low**	**Low**	**Low**	**Negligible/ None**
8. Socioeconomic Environment																					
1	Infrastructure damage		✓	✓				✓			✓					✓		**Low**	**Low**	**Low**	**Negligible/ None**
9. Community Health and Safety and Security																					
1	Trespassing and community encroachment		✓	✓			✓				✓						✓	**Low**	**Low**	**Low**	**Negligible/ None**
2	Gender Based Violence (GBV), Sexual Exploitation Abuse / Sexual Harassment (SEA/SH)		✓	✓				✓					✓			✓		**Low**	**Low**	**Low**	**Negligible/ None**
10. Labor Force and Working Conditions																					
1	Working conditions and protecting the workforce		✓	✓			✓				✓				✓			**Medium**	**Low**	**Low**	**Low**
2	Workers' exposure to work-related occupational health and safety (OHS) risks		✓	✓			✓				✓				✓			**Medium**	**Low**	**Low**	**Low**
3	Workers Engaged by Third Parties and the Supply Chain		✓	✓			✓				✓				✓			**Medium**	**Low**	**Low**	**Low**
B. CONSTRUCTION PHASE																					
1. Air Quality																					
1	Increase in dust concentration		✓	✓			✓				✓				✓			**Medium**	**Low**	**Low**	**Low**
2	Exhaust emissions (SO_2 PM, NO_x)		✓	✓			✓				✓				✓			**Medium**	**Low**	**Low**	**Low**
3	GHG emissions (CO_2, CH_4, N_2O)		✓	✓					✓		✓				✓			**Medium**	**Low**	**Low**	**Low**
2. Soils and Contaminated Land																					

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	Loss of topsoil at the WWTP area		✓	✓			✓							✓		✓		**Low**	**Low**	**Low**	**Negligible/ None**
2	Erosion potential		✓	✓			✓						✓			✓		**Low**	**Low**	**Low**	**Low**
3	Contamination of soil		✓	✓			✓						✓			✓		**Medium**	**Medium**	**Medium**	**Low**
4	Pesticide Use		✓	✓			✓						✓			✓		**Medium**	**Low**	**Low**	**Low**
3. Water Resources																					
1	Change in surface water quality	✓		✓					✓			✓			✓			**Medium**	**Medium**	**Medium**	**Low**
2	Change in groundwater quality		✓		✓			✓			✓						✓	**Medium**	**Low**	**Low**	**Low**
4. Noise and Vibration																					
1	Increase in noise level		✓	✓				✓			✓				✓			**Medium**	**Low**	**Low**	**Low**
2	Increase in vibration level		✓	✓			✓				✓				✓			**Medium**	**Low**	**Low**	**Negligible/ None**
5. Resources and Waste																					
1	Resources used during works		✓	✓				✓			✓				✓			**Low**	**Low**	**Low**	**Negligible/ None**
2	Improper waste management		✓	✓				✓			✓					✓		**Medium**	**Low**	**Low**	**Low**
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**	**Low**	**Low**	**Negligible/ None**
7. Biological Environment																					
1	Damage or loss of terrestrial habitats and flora species		✓		✓			✓			✓					✓		**Low**	**Low**	**Low**	**Negligible/ None**
2	Disturbing/harming of terrestrial fauna species		✓		✓			✓			✓					✓		**Low**	**Low**	**Low**	**Negligible/ None**
3	Damage or loss of aquatic habitat and/or aquatic species		✓		✓			✓			✓					✓		**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
8. Socioeconomic Environment																					
1	Infrastructure damage		✓	✓			✓			✓					✓			**Low**	**Low**	**Low**	**Negligible/ None**
9. Community Health and Safety and Security																					
1	Trespassing and community encroachment		✓	✓				✓			✓				✓			**Low**	**Low**	**Low**	**Negligible/ None**
2	Gender Based Violence (GBV), Sexual Exploitation Abuse / Sexual Harassment (SEA/SH)		✓	✓				✓			✓				✓			**Low**	**Low**	**Low**	**Negligible/ None**
10. Labor Force and Working Conditions																					
1	Working conditions and protecting the workforce			✓			✓				✓					✓		**Medium**	**Low**	**Low**	**Low**
2	Workers' exposure to work-related occupational health and safety (OHS) risks		✓	✓			✓				✓					✓		**Medium**	**Low**	**Low**	**Low**
3	Workers Engaged by Third Parties and the Supply Chain		✓	✓				✓			✓					✓		**Medium**	**Low**	**Low**	**Low**
B. OPERATION PHASE																					
1. Air Quality and Odor																					
1	Odorous gas emission		✓	✓				✓					✓		✓			**Medium**	**Low**	**Low**	**Low**
2	Exhaust emissions (SO_2 PM, NO_x)		✓	✓			✓						✓		✓			**Medium**	**Low**	**Low**	**Low**
3	GHG emissions (CO_2, CH_4, N_2O)		✓	✓					✓				✓		✓			**Medium**	**Low**	**Low**	**Low**
2. Geology, Soils and Contaminated Land																					
1	Contamination of Soil		✓		✓		✓					✓					✓	**Low**	**Low**	**Low**	**Negligible/ None**
3. Water Resources																					
1	Change in overall physicochemical water quality of Aksu Stream	✓		✓					✓				✓		✓			**Positive**			
2	Change in groundwater quality		✓		✓			✓			✓						✓	**Medium**	**Low**	**Low**	**Low**
4. Noise and Vibration																					

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	Increase in Noise Levels		✓	✓			✓							✓		✓		**Low**	**Low**	**Low**	**Negligible/ None**
5. Resources and Waste																					
1	Resources used for operation		✓	✓				✓					✓		✓			**Low**	**Low**	**Low**	**Negligible/ None**
2	Generation of different types of waste in the WWTP site		✓	✓				✓					✓			✓		**Medium**	**Low**	**Low**	**Low**
3	Sludge generation		✓	✓				✓					✓		✓			**Medium**	**Medium**	**Medium**	**Low**
6. Landscape and Visual (Aesthetics)																					
1	The existence of the WWTP		✓	✓				✓						✓		✓		**Low**	**Low**	**Low**	**Low**
7. Biological Environment																					
1	Damage or loss terrestrial habitats and flora-fauna species		✓		✓			✓			✓					✓		**Low**	**Low**	**Low**	**Negligible/ None**
2	Damage or loss of aquatic habitat and/or aquatic species		✓		✓			✓			✓					✓		**Low**	**Low**	**Low**	**Negligible/ None**
8. Socioeconomic Environment																					
1	Infrastructure damage		✓	✓				✓			✓					✓		**Low**	**Low**	**Low**	**Negligible/ None**
9. Community Health and Safety																					
1	Trespassing and community encroachment		✓	✓			✓										✓	**Low**	**Medium**	**Low**	**None/ Negligible**
2	Community's exposure to disease due to improper handling of wastes, including sludge		✓	✓				✓			✓						✓	**Low**	**Medium**	**Low**	**Negligible/ None**
3	Failure of operation		✓	✓					✓		✓					✓		**Medium**	**Medium**	**Medium**	**Low**
10. Labor Force and Working Conditions																					
1	Working conditions and protecting the workforce		✓	✓			✓				✓				✓			**Medium**	**Low**	**Low**	**Low**
2	Gender Based Violence (GBV), Sexual Exploitation Abuse / Sexual Harassment (SEA/SH)		✓	✓				✓					✓			✓		**Low**	**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
3	Workers' exposure to work-related occupational health and safety (OHS) risks		✓	✓			✓				✓				✓			**Medium**	**Medium**	**Medium**	**Low**
4	Workers Engaged by Third Parties and the Supply Chain		✓	✓			✓				✓				✓			**Medium**	**Low**	**Low**	**Low**

7.1.1 Land Use

The Project area is located in Kahramanmaraş Province, Türkoğlu District, Ceceli Neighborhood, parcel 149/15. The area of the parcel is 25,671.95 m^2. The property owner of the Project area is Türkoğlu OIZ.

Changes in land use happen often and on a variety of sizes, and they can have distinct and cumulative effects on air and water quality, watershed function, waste production, extent and quality of wildlife habitat, climate, and human health (*Land use | U.S. Environmental Protection Agency* 2021).

According to their potential effects on the environment and human health, land use activities are examined under two main topics: land development and agricultural uses. Since the allocated area is in the organized industrial zone, therefore, does not have any importance/value for wildlife or agricultural use, only the land development part will be given in this report.

For this Project, the impacts related to land development are due to the impermeable surfaces to be constructed within the scope of the Project. Three possible impacts for this Project are as follows:

- contributing to non-point source water pollution by limiting the soil's capacity to filter water flow, resulting in the accumulation of rainwater and the release of more pollutants into water bodies,
- blocking of the groundwater aquifers' ability to renew, and
- higher concentrations of certain air pollutants due to increased vehicle and energy use.

In addition to the possible impacts defined above, legal obligations regarding land use, and visual effects of landscaping are assessed in the following sub-sections for the pre-construction, construction and operation phases of the Project. All phases of the project will meet the requirements of ESS1 and ESS3 in terms of land use.

7.1.1.1 Pre-Construction Phase

Proper planning, monitoring, and adherence to environmental and safety regulations are critical for minimizing the risks associated with land use during pre-construction activities in a wastewater treatment plant.

Permit Violations: Failure to obtain the necessary permits and/or non-compliance with permit conditions can result in regulatory fines and delays. Environmental Regulations: Violations of environmental regulations can lead to legal consequences and additional costs for remediation and mitigation.

Topsoil stripped during the pre-construction phase of the project will be used in green areas within the boundaries of the Türkoğlu OIZ.

During the pre-construction phase, no significant sized impermeable surface will be constructed, thus any impacts related to impervious areas are not expected at this stage. Impacts on air quality are given in Air Quality and Odor section of this report. As a result, impacts related to land use for pre-construction phase are short term, direct, and low severity thus assessed as negligible in significance.

7.1.1.2 Construction Phase

During the construction phase of the Project, since the facilities, WWTP units, and utility roads consist of impermeable materials (concrete, asphalt, cobblestone, metal etc.), the creation of

impermeable surfaces is expected in the Project area. However, Türkoğlu OIZ has an existing storm water collection line. After the completion of the construction phase, the impact of impermeable areas will be minimized by connecting the storm water collection channels of the Project facility, units, and roads to the existing Türkoğlu OIZ storm water collection line.

In addition to this operation of construction machinery and equipment may disturb the landscape of the Project area. The removal of vegetation, excavation of soil, trenching, etc. can cause landscape and visual effects. As a result, impacts related to land use for construction phase are short term, direct, and low severity thus assessed as negligible in significance.

7.1.1.3 Operation 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.

Since Türkoğlu OIZ has an existing storm water collection line that the Project's components will be connected to, the impact of impermeable areas will be minimal in operation phase as well. As a result, impacts related to land use for operation phase are short term, direct, and low severity thus assessed as negligible in significance.

7.1.2 Geology

7.1.2.1 Pre-Construction Phase

Necessary measures should be taken against the risk of ground liquefaction. Construction of the units would be in accordance with the Building Earthquake Regulations. Impacts caused by the project, related to geology for pre-construction phase are minimal thus assessed as negligible in significance. Pre-construction phase of the project will meet the requirements of ESS1 and ESS3 in terms of geology.

7.1.2.2 Construction Phase

Necessary measures should be taken against the risk of ground liquefaction. Construction of the units would be in accordance with the Building Earthquake Regulations. Impacts caused by the project, related to geology for construction phase are minimal thus assessed as negligible in significance. Consruction phase of the project will meet the requirements of ESS1 and ESS3 in terms of geology.

7.1.2.3 Operation Phase

Necessary measures should be taken against the risk of ground liquefaction. Impacts caused by the project, related to geology for operation phase are minimal thus assessed as negligible in significance.

Operation phase of the project will meet the requirements of ESS1 and ESS3 in terms of geology.

7.1.3 Hydrogeology

7.1.3.1 Pre-Construction Phase

Construction activities may create the potential for accidental release/leak of petroleum-based products such as lubricants, hydraulic fluids or fuels during storage, transportation or use in equipment. All chemical storage containers, including diesel fuel and hazardous liquid waste drums/containers, should be located to minimize the risk of soil, surface water, and groundwater contamination during construction. On the other hand, there are no discharges into groundwater resources. As a result, impacts related to hydrogeology for pre-construction phase are short term, indirect, and low severity thus assessed as negligible in significance. Pre-construction phase of the project will meet the requirements of ESS1 and ESS3 in terms of hydrogeology.

7.1.3.2 Construction Phase

Construction activities may create the potential for accidental release/leak of petroleum-based products such as lubricants, hydraulic fluids or fuels during storage, transportation or use in equipment. All chemical storage containers, including diesel fuel and hazardous liquid waste drums/containers, should be located to minimize the risk of soil, surface water, and groundwater contamination during construction. On the other hand, there are no discharges into groundwater resources. As a result, impacts related to hydrogeology for construction phase are short term, indirect, and low severity thus assessed as negligible in significance. Construction phase of the project will meet the requirements of ESS1 and ESS3 in terms of hydrogeology.

7.1.3.3 Operation Phase

It may create the potential for accidental release/leak of petroleum-based products such as lubricants, hydraulic fluids or fuels during maintenance work. All chemical storage containers, including diesel fuel and hazardous liquid waste drums/containers, should be located to minimize the risk of soil, surface water and groundwater contamination. On the other hand, there is no discharge to underground water resources. As a result, impacts related to hydrogeology for operation phase are long term, direct, and low severity thus assessed as negligible in significance. Operation phase of the project will meet the requirements of ESS1 and ESS3 in terms of hydrogeology.

7.1.4 Climate and Vegetation

The impacts on climate and vegetation before construction of a project can vary depending on the nature of the development, the specific location, and the environmental conditions.

The impacts on vegetation of wastewater treatment projects (compared to discharging it directly) are accepted as overall positive due to their benefits to the environment, and human health. These projects are crucial in lowering water pollution, preserving water supplies, and promoting sustainability. Moreover, the Project area is a confined area that is located within the organized industrial zone limiting the negative impacts on the vegetation; thus, no significant long-term negative impacts on vegetation are expected.

On the other hand, consumption of resources and energy usage during the all phases of the Project will result in increase in greenhouse gases emissions.

Assessments on the Project's impacts on climate change and vegetation during the pre-construction, construction and operation phases is given in the following sub-sections. All phases of the project will meet the requirements of ESS1 and ESS3 in terms of climate and vegetation.

7.1.4.1 Pre-Construction Phase

Land clearing for construction generally involves the removal of vegetation, which may lead to the loss of plant species and habitat disruption for local wildlife. The removal of vegetation leaves the soil vulnerable to erosion, as plants help stabilize the soil. Erosion carries waste and sediments (soil, pebbles etc.) to nearby water bodies and may harm aquatic ecosystems.

The Project's impacts on climate change during the pre-construction phase are due to the energy usage (fuel for construction machinery and generators, electricity for utilities, equipment and heating, LPG for construction machinery and heating), and resource consumption for the Project which will result in increase of greenhouse gases (CO_2, CH_4, N_2O) emissions. The Project's contribution to climate change through GHG emissions during pre-construction phase is assessed as a negative, short term and direct impact while impacts on vegetation is assessed as negative, short term and direct.

7.1.4.2 Construction Phase

The land cleared during pre-construction phase still poses risk of erosion until the land restoration process is completed which is one of the final works that is carried out during the construction phase. In addition to this heavy construction equipment can compact the soil, making it less suitable for plant growth. This can affect the ability of vegetation to regenerate after construction.

The Project's impacts on climate change during the construction phase are due to the energy usage (fuel for construction machinery and generators, electricity for utilities, equipment and heating, LPG for construction machinery and heating), and resource consumption for the Project which will result in increase of greenhouse gases (CO_2, CH_4, N_2O) emissions. The Project's contribution to climate change through GHG emissions during construction phase is assessed as a negative, short term and direct impact while impacts on vegetation is assessed as negative, short term and direct.

7.1.4.3 Operation Phase

The Project's contribution to climate change during the operation phase will be similarly originated from energy usage and resource consumption. GHG generation in the operation phase will be caused by WWTP energy and material consumption, service vehicles and waste disposal trucks' fuel consumption, and maintenance works of these vehicles, utilities and the WWTP. According to that, usage of fossil fuel burning equipment/machinery (including procurement of materials) usage will be limited. The Project's contribution to climate change through GHG emissions during operation phase is assessed as a negative, long term and direct impact while impact significance on vegetation is assessed as negligible. With the realization of proper mitigation measures proposed in Chapter 8 in Table 8.3 impacts of GHG emissions will be minimized.

7.1.5 Soil Quality

Construction projects could have various impacts on the soil environment including disturbances to the natural soil structure due to activities like soil stripping, levelling, and excavation. The mixing of soil layers, contamination risks from construction machinery fuels and materials, potential soil pollution from waste mismanagement, and improper replacement of soil are common concerns.

The possible impacts mentioned above are assessed in the following sub-sections for the pre-construction, construction and operation phases. All phases of the project will meet the requirements of ESS1 and ESS3 in terms of soil quality.

7.1.5.1 Pre-Construction Phase

The impacts on the soil environment are restricted to the construction site. These impacts that could occur on the soil environment during pre-construction phase are listed below:

- 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 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.

There is no temporary storage area for hazardous waste in the OIZ. The waste accumulated in non-hazardous waste storage areas is disposed of by the Türkoğlu Municipality. Hazardous and non-hazardous wastes may occur from the Project. These impacts can be easily managed and mitigated to negligible from low in significance with the implementation of the mitigation measures presented in Chapter 8.

7.1.5.2 Construction Phase

The impacts on the soil environment are restricted to the construction site. These impacts that could occur on the soil environment during construction phase are listed below:

- Mixing of soil layers as a result of 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.

These impacts can be easily managed and mitigated to low in significance with the implementation of the mitigation measures presented in in Chapter 8.

7.1.5.3 Operation Phase

In the operation phase of the Project, the activities will have a limited physical interaction with the soil 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 the operation phase of the Project are related to the risks that accidental chemical spill/leakage of chemicals that are required for wastewater treatment operations and spillage/leakage of wastewater, oil and chemicals to the soil during repair and maintenance works. 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 Chapter 8.

7.1.6 Air Quality and Odor

7.1.6.1 Pre-Construction Phase

In the pre-construction phase of the project, topsoil stripping will be carried out during the land preparation process. Values showing uncontrolled and controlled dust emissions resulting from topsoil stripping are presented in the ANNEX-7 of this report.

Table 7.3 Air Quality Project Standards and Calculated Emission Values (in Pre-Construction Phase)

Parameter	Unit	Calculated Emission Values	Project Standard*
CO	**kg/h**	0.0245	10.000 µg/m^3
SO_2	**kg/h**	0.0005	60 µg/m^3
NOx	**kg/h**	0.15	-
PM	**kg/h**	0.006	50 µg/m^3

These emission rates are calculated based on the worst-case scenario. It is found that the emission rate for uncontrolled activities is above the limit value defined for non-stack sources in IAPCR, which is 1 kg/hour, while the emission rate for controlled activities is below the limit values. When the calculated CO, SO_2 and PM values are evaluated, it is seen that they are also below the limit value defined for non-stack sources in IAPCR. Therefore, impacts related to dust emissions are in low significance. In addition, with implementation of a set of mitigation measures that are presented in Chapter 8, any related impacts on air environment will be reduced.

Detailed air quality calculations are described in ANNEX-7. These impacts can be easily managed and mitigated to low in significance with the implementation of the mitigation measures presented in Chapter 8. Pre-construction phase of the project will meet the requirements of ESS1 and ESS3 in terms of air quality and odor.

7.1.6.2 Construction Phase

These emission rates are calculated based on the worst-case scenario. It is found that the emission rate for both uncontrolled and controlled activities are above the limit value defined for non-stack sources in IAPCR, which is 1 kg/hour. When the calculated CO, SO_2 and PM values are evaluated, it is seen that they are also below the limit value defined for non-stack sources in IAPCR. Therefore, impacts related to dust emissions are in low significance. In addition, with implementation of a set of mitigation measures that are presented in Chapter 8, any related impacts on air environment will be reduced.

Detailed air quality calculations are presented in ANNEX-7, and these impacts can be easily managed and mitigated to low in significance with the implementation of the mitigation measures presented in Chapter 8. Construction phase of the project will meet the requirements of ESS1 and ESS3 in terms of air quality and odor.

Table 7.4 Air Quality Project Standards and Calculated Emission Values (in Construction Phase)

Parameter	Unit	Calculated Emission Values	Project Standard*
CO	**kg/h**	0.1225	10.000 µg/m3
SO_2	**kg/h**	0.0025	60 µg/m3
NOx	**kg/h**	0.75	-

Parameter	Unit	Calculated Emission Values	Project Standard*
PM	**kg/h**	0.03	50 µg/m3

7.1.6.3 Operation Phase

Considering impact on air quality, odor problem can arise if there is any problem with operation. Occasionally, minimal and local odor formation may occur from physical treatment and sludge treatment units of WWTP. However, if the effective operation will be provided, there would not be any odor problem.

Air quality measurements will be carried out monthly from the beginning of the construction phase. In addition, measurement will be repeated upon grievances. Anyone who has a complaint about odor will be able to use the Grievance Mechanism, which will be active in all phases of the Project.

The impacts on air quality that will occur during the operation phase of the Project will be low and they will be managed/prevented (such as prevention of wastewater influents which exceed treatment plant capacity) with mitigation measures provided in Chapter 8. After all, if unwanted odor will be still generated, additional measures (second level measures) will also be taken (such as preventing anaerobic bacteria with control of pH levels or disinfection). Operation phase of the project will meet the requirements of ESS1 and ESS3 in terms of air quality and odor.

7.1.7 Noise

Construction projects potentially generate noise, impacting both the immediate environment and nearby communities. Common sources of noise include heavy machinery, construction equipment, and activities such as drilling and hammering. The noise can lead to disturbances, affecting the well-being of local residents and wildlife. Potential impacts include increased stress levels, sleep disturbances, and interference with daily activities.

The possible impacts mentioned above are assessed in the following sub-sections for the pre-construction, construction and operation phases. Values showing noise calculations are presented in the ANNEX-8 of this report. All phases of the project will meet the requirements of ESS1 and ESS3 in terms of noise.

7.1.7.1 Pre-Construction Phase

During pre-construction phase of the Project, the noise would be potentially generated by vehicles and machinery to be used during land preparation activities. Since the planned WWTP is in an industrial area, there are no sensitive receptors such as health centers, schools, mosques in the immediate vicinity of the Project Area.

Vibration that will affect humans or the structure in the vicinity is not expected to occur as there will be no blasting activity within the Project.

Therefore, in the pre-construction phase of the Project, the noise 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 presented in Chapter 8.

7.1.7.2 Construction Phase

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. Since the planned WWTP is in an industrial area, there are no sensitive receptors such as health centers, schools, mosques in the immediate vicinity of the Project Area.

Vibration that will affect humans or the structure in the vicinity is not expected to occur as there will be no blasting activity within the Project.

Therefore, in the construction phase of the Project, the noise impacts will be direct and negative with short - term duration and low in significance. 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 which is presented in Chapter 8.

7.1.7.3 Operation Phase

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 with.

These impacts will be mitigated by the implementation of the mitigation measures presented in Chapter 8.

7.1.8 Water Resources and Use

During the pre-construction and construction phases, employees' needs will create water supply requirement. The utility water used will be supplied by obtaining a construction site subscription from the Türkoğlu Municipality network by the Contractor. 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 228 L/cap/day (TurkStat, 2022).

The calculations regarding water usage mentioned above are given in the following sub-sections for the pre-construction, construction and operation phases. All phases of the project will meet ESS1 and ESS3 in terms of water resources and use.

7.1.8.1 Pre-Construction Phase

The average number of personnel required for the pre-construction phase is determined as 5. Therefore, the daily water requirement of employees during the pre-construction phase will be;

5 employees x 0.228 m^3/cap/day= 1.14 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.

During the pre-construction phase, employees' needs will create water supply requirements. The drinking water needs of employees will be met by bottled water to be purchased from the local market.

These impacts will be mitigated by the implementation of the mitigation measures presented in Chapter 8.

7.1.8.2 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 by obtaining a construction site subscription. There will be no accommodation on the construction site, and water use will be limited to the working hours of the employees. The number of personnel required is determined as 30. Therefore, the daily water requirement of employees during the construction phase will be;

30 employees x 0.228 m^3/cap/day= 6.84 m^3/day

During the construction works, there will be dust due to excavation operations and the operation of construction equipment in the field, and the amount of water required to suppress it and irrigate green areas may be 8 m³/day. Water will be provided from the OIZ's network. Accordingly, it is anticipated that a total of 14.84m³ of water will be used per day during the construction period. Since ready-mixed concrete will be used in construction, no additional water is needed for concrete preparation.

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.

During the construction phase, employees' needs and dust suppression will create water supply requirements. 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. It is estimated that 10 m^3 of water will be used daily for dust suppression.

On the other hand, 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 so as to minimize the risk of soil, surface water and groundwater contamination during the construction.

By implementing adequate measures for preventing spills and chemical leaks, it will be ensured that groundwater quality remains unaffected. These impacts will be mitigated by the implementation of the mitigation measures presented in Chapter 8.

7.1.8.3 Operation Phase

During the operation phase of the Project, part of the water supply requirement will arise due to employee needs. The number of personnel required is determined as 7. Therefore, the daily water requirement of employees during the construction phase will be;

7 employees x 0.228 m3/cap/day = 1.6 m^3/day

During the operation phase of WWTP, the facilities will use and store some chemicals such as acids and bases for pH control. In addition, maintenance chemicals will be used at the facility during the maintenance of the machines, engines and pumps. There is a risk of leakage of such chemical liquids. 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.

In the operation phase, generated wastewater will be treated in the proposed WWTP. Additionally, the WWTP discharge will be in compliance with the Project Standards. It is highly unlikely that the plant would need a complete shutdown. The capacity of the plant is sufficient for carrying the flow during short term pauses and necessary mitigation measures will be taken in case of any breakdown or natural disaster that may occur during the operation phase. Türkoğlu OIZ 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.

In the operation phase, the impact on groundwater may be seen due to accidental oil leakages in the areas where the maintenance of WWTP equipment is carried out as well as improper disposal of wastes. This may affect the groundwater quality in the Project Area, and if necessary, mitigation measures will be 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 since the discharge of wastewater into the water body will be done after it is treated. 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.

7.1.9 Wastewater Management

Wastewater will be generated in all phases of the Project. Domestic wastewater resulting from workers will be generated from facilities where the needs of employees are met, such as eating areas, toilets. Portable toilets will be available for workers during pre-construction and construction phases of the Project. Wastewater will be stored on impermeable tanks and will be collected with septic trucks to be sent to the nearest existing wastewater collector line. During the operation phase, the collected wastewater will be connected to the entrance of the wastewater treatment plant.

According to 2020 TurkStat data, the Municipality's Daily Wastewater Amount is 0.189 m^3/day. The calculations regarding wastewater generation mentioned above are given in the following sub-sections for the pre-construction, construction and operation phases. All phases of the project will meet ESS1 and ESS3 in terms of wastewater management.

7.1.9.1 Pre-Construction Phase

The average number of personnel required for the pre-construction phase is determined as 5. Therefore, the daily wastewater generation of employees during the pre-construction phase will be;

5 employees* 0.189 m^3/day = 0.95 m^3/day

Since the number of employees is low and the generated wastewater will be stored in impermeable tanks, this wastewater load will not have a significant impact.

7.1.9.2 Construction Phase

The average number of personnel required for the construction phase is determined as 30. Therefore, the daily wastewater generation of employees during the pre-construction phase will be;

30 employees* 0.189 m^3/day = 5.67 m^3/day

In addition to that 8 m^3 of water usage per day was estimated for dust suppression activities during the construction phase. 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.

7.1.9.3 Operation Phase

During the operation phase of the plant, generated domestic wastewater will be treated and discharged in the existing plant. The daily capacity of the plant will be 1,000 m^3/day. The number of personnel required for the operation phase is determined as 7. Therefore, the daily wastewater generation of employees during the pre-construction phase will be;

7 employees* 0.189 m^3/day = 1.32 m^3/day

The project will not have a negative impact on wastewater management, on the contrary, it will have a positive impact on the Organized Industrial Zone due to newly acquired wastewater treatment capacity.

7.1.10 Waste Management

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 pre-construction 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 Chapteridentifies the waste to be generated in this context and assesses the impacts associated with waste generation.

The possible sources that will generate various 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, 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 from treatment plant.

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 7.1. 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. All phases of the project will meet the requirements of ESS1 and ESS3 in terms of waste management.

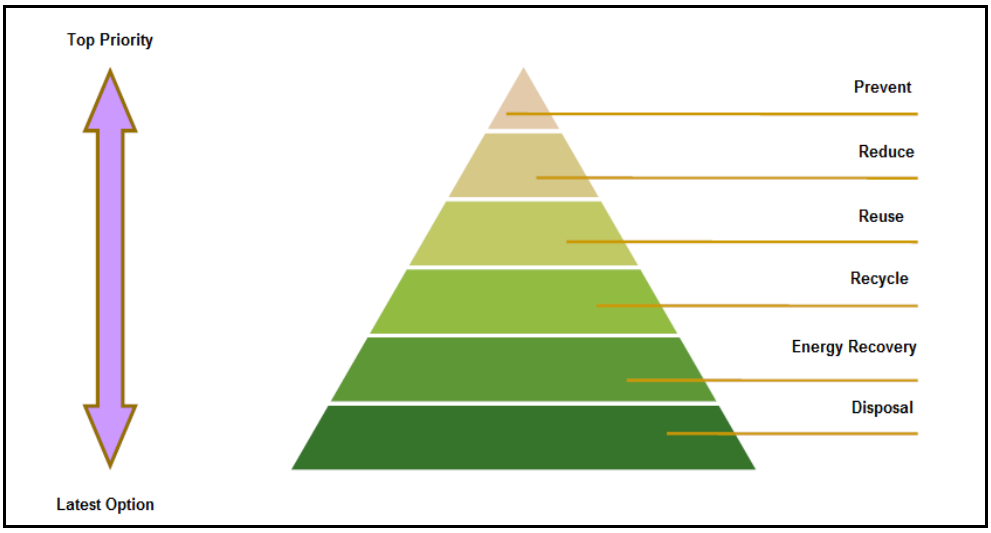

Figure 7.1 Waste Management Hierarchy

7.1.10.1 Pre-Construction Phase

One employee will be responsible for waste management during the pre-construction phase and construction phase of the project. Waste will be managed according to the waste hierarchy. Waste generation in the pre-construction phase is often associated with planning, site preparation, and early material deliveries. Common sources of waste during this phase are:

- Packaging Waste
- Site Preparation Waste
- Demolition or Deconstruction Waste
- Unused or Surplus Materials
- Hazardous Waste
- Municipal Solid Waste

Efforts to minimize waste during the pre-construction phase involve strategic planning, efficient material use, and waste reduction measures. Implementing a waste management plan, as discussed earlier, can help identify, categorize, and manage the various sources of waste generated in the pre-construction stage.

Topsoil stripped during the pre-construction phase of the project will be used in green areas within the boundaries of the Türkoğlu OIZ.

The construction machinery may require oil changes during the pre-construction phase of the Project, since the oil needs to be replaced at least once in every two-months. 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 pre-construction of the Project.

Waste vegetable oil will not be generated at the site during the pre-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 stage 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 hospitals/health centers located in Türkoğlu District will be used for possible medical interventions in case of an incident during the activities.

In order to determine the amount of municipal waste to be generated at site, the average daily municipal waste per person is taken as 1.13 kg according to the municipal waste statistics of TurkStat in year 2014 (TurkStat, 2020). The estimated amount of municipal waste to be generated during the pre-construction phase and 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 wastes.

For pre-construction phase:

5 people x 1.13 kg/person/day=5.65 kg/day

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 Chapter 8.2 in order to prevent and/or minimize likely impacts will be implemented.

7.1.10.2 Construction Phase

To mitigate the negative environmental effects, it's crucial to implement sustainable construction practices, adhere to environmental regulations, and continuously monitor and improve processes throughout the project lifecycle. Environmental impact assessments and comprehensive planning during the pre-construction phase play a key role in achieving a balance between construction needs and environmental conservation.

Hazardous waste will be stored in special compartments in the Temporary Storage Area allocated for this purpose, in containers, separated from the non-hazardous waste as indicated in Waste Management Regulation. 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 wastes will be collected and disposed of by licensed companies. Türkoğlu OIZ will be responsible for selecting a company licensed by the MoEUCC to transfer hazardous wastes.

Table 7.5 lists the types of waste that can be generated during the pre-construction phase and construction phase of the Project and their waste codes according to the waste lists given in the annexes of the Waste Management Regulation.

Table 7.5 List of Possible Waste Types to be generated during Pre-construction and Construction Phase of the Project

Waste Code	Definition of Waste Code
13	**Oil Wastes and Liquid Fuel Waste (Excluding Edible Oils, 05 and 12)**
13 02	Waste Engine, Transmission and Lubrication Oils

Waste Code	Definition of Waste Code
15	**Waste Packages, Unspecified Absorbents, Wipes, Filter Materials and Protective Clothing**
15 01	Packaging Waste (Including Packaging Waste Separately Collected by the Municipality)
15 02	Absorbents, Filter Materials, Cleaning Cloths and Protective Clothing
16	**Waste Not Specified Otherwise in the List**
16 06	Batteries and Accumulators
17	**Construction and Demolition Waste (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 Waste
20	**Municipal Waste Including Separately Collected Fractions (Domestic and Similar Commercial, Industrial and Institutional Waste)**
20 01	Separately Collected Fractions (Except 15 01)
20 03	Other Municipal Waste

Municipal waste within the scope of the Waste Management Regulation is referred to as domestic waste or commercial, industrial and institutional waste similar to domestic waste 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 waste will be stored separately from hazardous waste and recyclable waste and will be collected regularly by the municipality. Municipal waste will be managed in the same way as it is currently managed in Türkoğlu OIZ. Domestic waste will be collected by Türkoğlu Municipality and sent to Kahramanmaraş Metropolitan Municipality Landfill. Other wastes will be given to licensed organizations within the framework of the legislation.

In order to determine the amount of municipal waste to be generated at site, the average daily municipal waste per person is taken as 1.13 kg according to the most recent municipal waste statistics of TurkStat (TurkStat, 2020). 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 wastes:

30 people x 1.13 kg/person/day= 33.9 kg/day

There will be no cafeteria in the construction site. Thus, there will be no waste generation related to food preparation will be expected. The food will be supplied through catering services.

The general composition of the municipal waste in Türkiye is as demonstrated in Figure 7.2 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.

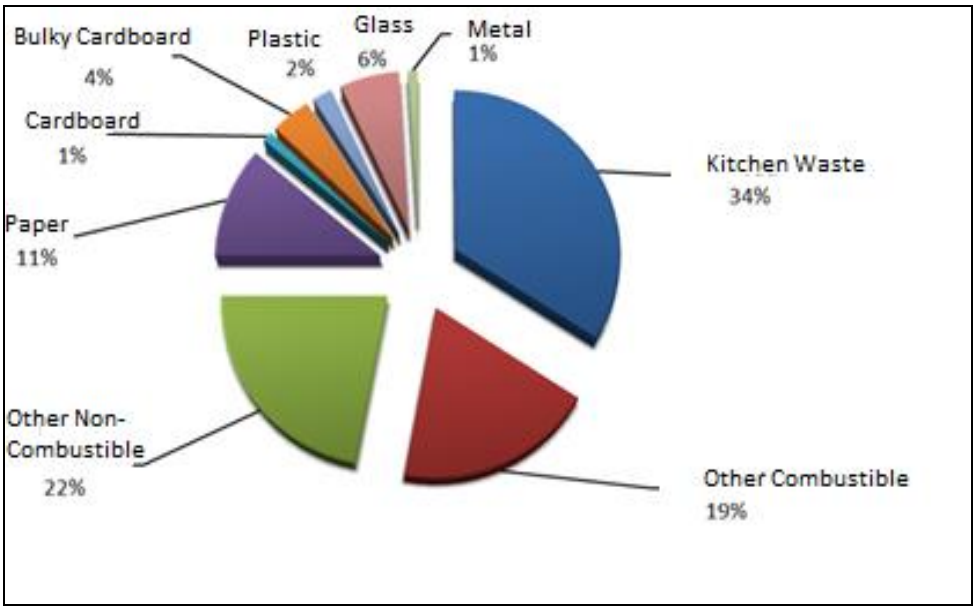

Figure 7.2 Composition of Municipal Waste (former Ministry of Science, Industry and Technology, 2014)

Considering the information provided in Figure 7.2, it is also valid for the municipal waste 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%

With the percentages given above, it is calculated that 1.7 kg of food waste for construction phase and 0.40 kg for the pre-construction phase and 12.54 kg of separately collectable and recyclable waste will be generated daily during the construction phase of the Project. Also, the remaining 19.66 kg of daily produced waste is in the category of other combustible and non-combustible waste. The same calculations are 0.28 kg and 2.93 kg respectively for the pre-construction phase.

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 stage 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 hospitals/health centers located in Türkoğlu District will be used for possible medical interventions in case of an incident during the activities.

Levelling and excavation works will be carried out 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 Waste will be complied with.

The construction machinery will require oil changes during the 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 construction phase of the Project.

The annual amount of waste battery per person in Türkiye is six and this value corresponds to 140 grams (abrogated Ministry of Environment and Forestry, General Directorate of Environmental Management, 2009). According to this, the annual waste battery production of 30 people to be employed during the construction phase of the Project is calculated as: 4.2 kg (1 year x 140 gram/year-person x 30 person = 4.2 kg).

The excavations that will occur during the construction of the WWTP will be used as filling material. Excavation wastes that cannot be used will be disposed of in areas determined by both the Metropolitan Municipality and the District Municipality, as specified in the "Regulation on the Control of Excavation Soil, Construction and Demolition Wastes".

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 Chapter 8.2 in order to prevent and/or minimize likely impacts will be implemented.

7.1.10.3 Operation Phase

In the operation phase, there will 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. Generated wastes during operation phase will be collected by Türkoğlu Municipality as in construction phase.

7 workers are expected to be employed in the Project's operation phase. Therefore, municipal waste generation will be 7.91 kg/day and using the same approach as in pre-construction and construction, it can be determined that the recyclable portion this waste and the amount of food waste will be 2.93 kg/day and 0.4 kg/day, respectively.

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 7.6 lists the waste types and waste codes that may occur during the operational phase of the project, according to the waste lists given in the Waste Management Regulation's Annex. The wastes generated during the operation phase will be stored in a temporary waste storage area.

Table 7.6 List of Possible Waste Types to be generated during Operation Phase

Waste Code	Definition of Waste Code
13	**Oil Wastes and Liquid Fuel Waste (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 Waste Separately Collected by the Municipality)

Waste Code	Definition of Waste Code
15 02	Absorbents, Filter Materials, Cleaning Cloths and Protective Clothing
16	**Waste 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 Waste Not Described otherwise
20	**Municipal Waste 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 planned 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 planned WWTP. The resulting sludge cake with amount of 6 m^3/day will be stored in the Hazardous/Non-Hazardous Temporary Storage Area to be built within the borders of Türkoğlu OIZ. After sludge is analyzed in an accredited laboratory, it will be disposed of in licensed companies according to the waste class of the sludge.

The impact is assessed as direct and negative with long term duration, local and low in significance. However, mitigation measures proposed in Chapter 8 in order to prevent and/or minimize likely impacts will be implemented.

7.1.11 Pesticide Use and Management

In accordance with ESS3, WB attaches importance to the use and management of pesticides in projects. According to WB ESF, the Borrower will ensure that all pesticides used will be manufactured, formulated, packaged, labeled, handled, stored, disposed of, and applied according to relevant international standards and codes of conduct, as well as the EHSGs.

The following criteria apply to the selection and use of such pesticides: (a) they will have negligible adverse human health effects; (b) they will be shown to be effective against the target species; and (c) they will have minimal impact on nontarget species and the natural environment. The methods, timing, and frequency of pesticide application are aimed to minimize damage to natural enemies.

In addition, for any project involving significant pest management issues or any project contemplating activities that may lead to significant pest and pesticide management issues, the Borrower will prepare a Pest Management Plan (PMP). A pest management plan will also be prepared when proposed financing of pest control products represents a large component of the project. All phases of the project will meet the requirements of ESS1 and ESS3 in terms of pesticide use and management.

No pesticide use is planned at any stage of the Project activities. Thus, no impact is expected in this regard in any phase of the Project.

7.1.11.1 Pre-Construction and Construction Phases:

There will be soil removal and relocation during the land preparation and construction phases. Therefore, pesticide control during these phases on formerly agricultural land involves management and mitigation requirement for environmental and health risks if there is a historical pesticide use because pesticides will not be used in these phases. Pesticide-free construction practices are adopted to prevent the introduction of new pesticides, accompanied by worker training on safety and proper handling. Ongoing monitoring and testing of soil and water quality, coupled with transparent communication with regulatory authorities and the local community, contribute to a proactive and compliant approach. Overall, the goal is to facilitate the responsible transformation of the land for non-agricultural purposes and construction of WWTP while minimizing environmental impact.

Since there is no pesticide use in the area, there will be no impact due to pesticide use during the pre-construction and construction phases.

7.1.11.2 Operation Phase:

Industrial area includes green areas or landscaping, it may be necessary to employ pest control methods, which might include the use of pesticides. Pesticides from the industrial zone could be transported by stormwater runoff into adjacent water bodies. Mitigating this risk can be achieved by implementing efficient stormwater management practices. The upkeep of roads, utilities, and other infrastructure might entail the application of herbicides for vegetation control. Spills of pesticides used in landscaping or for other purposes may occur during transportation.

Excessive accumulation of active sludge and/or sludge cake during operation phase may cause problems with insects, flies or rodents. For this reason, the sludge and sludge cake that will be transported by licensed companies and will be sent for disposal without too much sludge/sludge cake accumulation, or if it the wait is necessary, precautions will be taken such as adding lime to the activated sludge to prevent formation of odor and accumulation of insects, flies and rodents. Türkoğlu OIZ stated that the planned WWTP pesticides will not be used. This approach reflects the organization's dedication to environmentally friendly practices throughout the entire lifecycle of the wastewater treatment plant. As a result, the community and the environment are expected to remain unaffected by the use of pesticides in the operation phase of the project.

7.1.12 Natural Disaster Potential

7.1.12.1 Pre-Construction Phase

Kahramanmaraş province is located in an area of high earthquake risk. Construction of the units will be in accordance with the Building Earthquake Regulations. Considering the project's scale, the project's impacts alone are not sufficiently affecting its environment to trigger or significantly contribute to another trigger of any natural disaster, therefore assessed as negligible in significance on natural disasters. Pre-construction phase of the project will meet the requirements of ESS1 in term of natural disaster potential.

7.1.12.2 Construction Phase

Kahramanmaraş province is located in an area of high earthquake risk. Construction of the units will be in accordance with the Building Earthquake Regulations. Considering the project's scale, the project's impacts alone are not sufficiently affecting its environment to trigger or significantly contribute to another trigger of any natural disaster, therefore assessed as negligible in significance on natural disasters. The construction phase of the project will meet the requirements of ESS1 in terms of natural disaster potential.

7.1.12.3 Operation Phase

Kahramanmaraş province is located in an area of high earthquake risk. Considering the project's scale, the project's impacts alone are not sufficiently affecting its environment to trigger or significantly contribute to another trigger of any natural disaster, therefore assessed as negligible in significance on natural disasters. The operation phase of the project will meet the requirements of ESS1 in terms of natural disaster potential.

7.1.13 Biodiversity and Protected Areas

In this section, the sensitivity of terrestrial and aquatic ecosystems, as well as the identified flora and fauna species within the project and impact areas will be assessed, followed by a magnitude impact on biodiversity and impact assessment.

The Project Area is located in the Gavur Lake KBA/IBA area. As a result of the meetings with OIZ employees in the Project Area, it was stated that there has been no ponding in the area where Gavur Lake is located since 2015 and that the area where there was ponding in the past (i.e. the area considered as Gavur Lake KBA) is the region with agricultural areas on the opposite side of the Project Area. Species and habitats that trigger KBA do not exist in the Project Area. In addition, the wastewater currently discharged without treatment will be treated after the Project is in the operation phase, and it is expected to impact the Gavur Lake system positively.

Significance Criteria

The WB ESS6, Biodiversity Conservation and Sustainable Management of Living Natural Resources criteria were used to identify Critical Living Areas in the Study Area. WB criteria for identifying Critical Habitats include: rules were used to identify Critical Living Areas in the Study Area. WB criteria for identifying Critical Habitats include:

a) Habitat of significant importance to Critically Endangered or Endangered species, as listed in the IUCN Red List of threatened species or equivalent national approaches;
b) Habitat of significant importance to endemic or restricted-range species;
c) Habitat supporting globally or nationally significant concentrations of migratory or congregatory species;
d) Highly threatened or unique ecosystems; and
e) Ecological functions or characteristics that are needed to maintain the viability of the biodiversity values described above in (a) to (d).

The level of sensitivity of species and habitats are determined according to Table 7.7, and for the evaluation of the significance of the impacts on biodiversity of pre-construction, construction and operation phases of the project, the categorization matrix given in Chapter 4 is used.

Determining the ecological sensitivity criteria, the criteria used in defining critical habitat in WB ESS6 Guidance Note are considered. Accordingly, if a biodiversity component meets the critical habitat criteria; its sensitivity is evaluated as "High". Habitats and species that are globally widespread but locally or nationally protected species are assessed as "Medium" sensitivity. Natural habitats that do not meet the criteria for either medium or high sensitivity are assessed as low sensitivity. The criteria are also explained in Table 7.7.

Table 7.7 Criteria for Sensitivity/Value of Resource/Receptor (Ecology and Biodiversity)

Ecosystem Component	Sensitivity/Value Level		
	High (3)	Medium (2)	Low (1)
Designated Areas	Areas that meet the criteria of the	Nationally designated areas	N/A

Ecosystem Component	Sensitivity/Value Level		
	High (3)	**Medium (2)**	**Low (1)**
	IUCN's Protected Area Categories Ia, Ib and II. Key Biodiversity Areas (KBAs), which encompass Important Bird and Biodiversity Areas (IBAs). UNESCO Natural and Mixed World Heritage Sites. Sites that fit the designation criteria of the Alliance for Zero Extinction (AZE).		
Habitats	Habitats that trigger critical habitat under the (d) and (e) criteria. 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 (a), (b) and (c) criteria	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 / rangerestricted species. Populations of migratory species that represent >1 % of the national 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.

As a result, in assessment according to Table 7.7, terrestrial and aquatic habitats and flora and fauna species determined in the Project Area are considered not sensitive. All phases of the project will meet the requirements of ESS1 and ESS6 in terms of biodiversity and protected areas.

7.1.13.1 Pre-Construction Phase

Terrestrial Habitats and Flora Species

The primary impact of the Project on habitats and flora species will be in the pre-construction period. Topsoil stripping will be carried out during the pre-construction phase, and this will cause the populations and habitats of the flora species lost from the area.

Since the habitat of the area is currently modified, the abundance and number of species in the area are low, and the species in question are not of critical or endemic importance, the threat status of these species is not expected to change due to the Project.

Aside from the loss of habitat in the Project Area, the overall impact of pre-construction activities, such as waste and effluent generation and air emissions, on vegetation and flora species is considered minimal. It is known that dust emissions that may occur, especially during the land preparation phase, will prevent plants from photosynthesizing by closing their stomata. In this context, the mitigation measures given in Chapter 8 will be followed.

As explained in the previous title, the habitat and flora species identified in the Project Area are not considered sensitive. As a result, the Project's impact on terrestrial flora species and habitats during the pre-construction phase is considered low.

Terrestrial Fauna Species

Terrestrial fauna species in the Project Area and its vicinity will be affected by disturbance from pre-construction activities because of topsoil stripping and habitat loss.

The fauna species that depend partly or totally on the habitats to be lost are the ones that will be mainly affected by the Project. The fauna determination studies were carried out, and no sensitive species were determined in the Project and impact area.

The impacts of pre-construction activities on fauna can be considered as follows: First is the direct impacts because of the degradation and loss of habitats due to pre-construction activities. Indirect impacts are disturbances from noise, dust and human activity in the pre-construction area. Secondly, impact of the pre-construction phase will be the vehicle traffic. The fauna species which have limited mobility will be prone to fauna mortality. All these effects can be eliminated by taking appropriate measures (see Chapter 8).

Most fauna species will leave the construction sites due to pre-construction impacts and move towards similar habitats in the immediate vicinity.

As a result, the Project's impact on terrestrial fauna species during the pre-construction phase is considered low.

Aquatic Biodiversity

Controlled disposal of the waste generated during the land preparation works to be carried out during the pre-construction phase is very important to prevent the creek from being negatively affected by the project-related works.

No pre-construction work will be done in the creek. Avoiding interfering with the stream during work to be carried out on the stream edge will prevent excessive sediment and residue formation.

As a result, the Project's impact on aquatic biodiversity during the pre-construction phase is considered low.

7.1.13.2 Construction Phase

Terrestrial Habitats and Flora Species

The primary impact that may occur on flora and habitats during the construction works to be carried out within the scope of the Project is waste and air emissions. In this context, the mitigation measures given in Chapter 8 will be followed.

As a result, the Project's impact on terrestrial habitats and flora species during the construction phase is considered low.

Terrestrial Fauna Species

The impacts of construction activities on fauna are disturbances from noise, dust and human activity in the construction area. Another impact will be the vehicle traffic.

Most fauna species will leave the construction sites due to impacts and move towards similar habitats in the immediate vicinity.

As a result, the Project's impact on fauna species during the construction phase is considered low.

Aquatic Biodiversity

Controlled disposal of the wastes generated during construction is essential to prevent reek from being negatively affected by the project-related works. No construction work will be done in the creek.

As a result, the Project's impact on aquatic biodiversity during the construction phase is considered low.

7.1.13.3 Operation Phase

Terrestrial Habitats and Flora-Fauna Species

The operation activities of the Project are not anticipated to have an adverse impact on terrestrial species and habitats. Terrestrial fauna species that have already adapted to anthropogenic influences are expected to persist in similar habitats near the Project Area once the construction works are concluded. The impact of the Project's operation phase on terrestrial biodiversity has been assessed as negligible.

As a result, the Project's impacts on terrestrial habitats and flora-fauna species during the operation phase are considered negligible.

Aquatic Biodiversity

It has been determined that the aquatic environment is currently under anthropogenic influences. With the planned WWTP, treated water will be discharged into the creek, local and national legislation regarding wastewater discharge will be complied with, and the water quality in the creek will be monitored regularly during the operation phase. That can be a step towards conserving biodiversity and improving the water quality of the receiving bodies. That is considered the most significant positive impact of the Project on the aquatic environment.

As a result, the Project's impacts on aquatic biodiversity during the operation phase are considered positive.

The impact of the Project on biodiversity has been evaluated as low/negligible/positive and the mitigation measures given in Chapter 8 will be followed.

7.2 Social Impacts of the Project

7.2.1 Population/Demography

7.2.1.1 Construction Phase

It is foreseen that the Project will create temporary employment. It is planned to employ thirty (30) personnel during the construction phase of the project. The construction of the wastewater treatment plant is planned to take twelve (12) months from the date of project approval.

As the construction activities of the Project will be carried out in Türkoğlu OIZ which is about 7 km from Türkoğlu City centre, it is anticipated by Türkoğlu OIZ that no accommodation facilities will be constructed for the workers within the scope of the Project. Rental accommodation residences in the city centre will be considered. No negative impact is expected from the Project in terms of population level in the settlements expected to be affected during the construction phase of the Project.

However, containers can be placed in the Project area for those who will work on the Project to rest, eat and for sanitary facilities.

Labour influx as a result of construction is not expected during the project. The construction activities do not require additional/skilled labour from outside the locality. To avoid any negative impact on the local community due to the presence of workers during the construction phase and their potential interaction with the local community, contractors will be responsible for providing code of conduct training to each worker. The contractor will inform all workers orally and in writing about the code of conduct during the recruitment phase and the code of conduct document will be signed. The Türkoğlu OIZ will ensure that the contractors establish the code of conduct and check that the workers have received training on communication with the public before starting work. In order to avoid the negative impacts of any workforce influx, Türkoğlu OIZ aims to at least 70% of recruitment from the local people, and this will be added to the terms of the contracts of the Contractor and possible subcontractors to ensure this.

As a result, no change in the population is expected due to the project.

7.2.1.2 Operation Phase

In the operation phase, 7 personnel are expected to be employed by Türkoğlu OIZ. Türkoğlu OIZ plans to employ all the required personnel locally. As a result, no change in the population is expected due to the project.

7.2.2 Cultural Heritage

The project area is within the boundaries of Türkoğlu OIZ. Necessary evaluations were made by the authorized institutions and organizations related to Cultural Assets during the selection of the OIZ location. Therefore, the project will not cause alteration, damage or removal of any known cultural heritage assets and constrain access to cultural sites for the communities.

If any cultural property is found during construction (excavation) works ("chance find"), the Chance Find Procedure will be implemented, and any findings will be reported to the local authorities. Chance Finds Procedure is given in ANNEX-9. In such cases, construction works will be stopped immediately, the area will be taken under protection, and the Gaziantep Cultural Heritage Conservation Regional Board Directorate will be notified. The construction works will not resume unless permitted by the relevant authority.

7.2.3 Economy/Employment

7.2.3.1 Construction Phase

It is foreseen that the Project will create temporary employment. The construction of the wastewater treatment plant is planned to take twelve (12) months from the date of project approval. The construction activities do not require additional/skilled labour from outside the locality and do not attract forced labour and/or child labour. During the construction phase, it is planned to employ 30 (thirty) people. Türkoğlu OIZ plans to employ all of the required personnel locally.

Regarding procurements of goods and services, priority will be given to contributing to the local economy through the use of local materials during the construction period and paying attention to procuring various goods and services locally.

Work permits of the workers to be employed within the operational scope of the Project will be monitored by Türkoğlu OIZ and recruitment will be carried out within the framework of legal practices. Legal work permits will be checked, and recruitment will be carried out in accordance with the working conditions detailed in Section 7.2.6 during construction and operation phases. Unregistered, child or forced labour will not be allowed.

7.2.3.2 Operation Phase

In the operation phase, 7 personnel are expected to be employed by Türkoğlu OIZ. It is expected that the jobs that will be employed not directly in the facility but in the factories that will benefit from the facility will create economic development in the region. Installing the WWTP will increase the interest in the OIZ and attract new investments.

The project will provide benefits for local communities through new employment opportunities during the construction phase and, to a lesser extent, at the operating phase, and opportunities for local businesses.

7.2.4 Vulnerable/Disadvantaged Groups

Vulnerable groups according to the information provided by the headman of neighbourhoods are presented in Section 6.5. Construction works for the Project will have a short-term and temporary impact. The Project does not require any relocation or land acquisition.

The project does not involve access restriction, resettlement, or physical displacement of any persons. No damage to livelihood income for the vulnerable groups is foreseen. Therefore, vulnerable/disadvantaged groups within the Project impact area are not expected to be adversely affected by the Project. Considering the social benefits (e.g. increased employment opportunities, prevention of environmental pollution) of the Project, the Project has the potential to benefit vulnerable/disadvantaged groups.

7.2.5 Land Requirement

The project will be constructed in the existing OIZ's built-up industrial area. The WWTP area is owned by Türkoğlu OIZ (parcel no: 499/15) and allocated only for the construction of a wastewater treatment plant in line with the approved revised OIZ land use plan (02.06.2022). The expropriation process was completed by OIZ in 2011. The project does not require additional land.

7.2.6 Working Conditions and Labour Management

Labor Management Procedures (LMP) have been prepared for Turkey Organized Industrial Zones Project. It aims to protect workers' rights and ensure the management and control of activities that may pose labour-related risks. It describes how MoIT will comply with the requirements of World Bank Environmental and Social Standard 2 (ESS 2), "Labor and Working Conditions", and with Turkish labour, employment and occupational health and safety laws.

Labour relations are governed by the provisions of the Turkish Labor Law (4857 numbered). The Law of Turkish on Occupational Health and Safety (numbered 6331) provides for provisions on occupational health and safety and applies to direct and contracted workers, including foreign workers. Social Security and General Health Insurance Law (Law No: 5510) regulates social insurance and general health insurance.

Türkoğlu OIZ will be responsible for human resources during the construction and operation phases. The Project will comply with national labour, social security and occupational health and safety laws and the principles and standards. The Project will comply with national labour, social security and occupational health and safety laws and the principles and standards of the International Labour Organization convention. The Project Owner is responsible for providing minimum legal labour standards as per International Labor Organization (ILO) regulations (child/forced labour, no discrimination, working hours, minimum wages). Full compliance with all Turkish Laws and International Labor Organization Conventions regarding child labour, forced labour, discrimination, freedom of association, collective bargaining, working hours and minimum wages.

Türkoğlu OIZ will be responsible for the followings:

- Not use or employ children during the construction phase under 18 years of age,
- Not use or employ forced labour and ensure a Human Resources Policy in compliance with the European Convention on Human Rights and the Turkish Constitution,
- Elimination of discrimination based on language, race, sex, political opinion, philosophical belief, and religion in labour relations,
- Ensuring workers' access to the right to collective bargaining (Law No. 6356 on Trade Unions and 4857 Labour Law on Collective Bargaining),
- Ensure access to an effectively functioning Project grievance mechanism.
- Ensure workers are provided with written contracts containing i.a. job description, working hours, information about their rights and duties, code of conduct and information of workers' GM.
- In order to reduce the possible impacts on the neighbourhoods, facilities such as food, sanitary facilities and resting areas will be provided within the Project Area in accordance with the use of the employees.
- Review and approve the contractor's labour management plans that should be in line with the LMP prior to the construction phase,
- Review and approve the contractor's OHS plan prior to the construction phase,
- Monitor that contractors/subcontractors fulfil their obligations to contracted workers as set out in relevant procurement documents in accordance with ESS2, LMP, national labour and OHS laws,
- Keeping records of recruitment and employment processes of direct reports,
- Monitor the potential risks of child labour, forced labour and serious safety issues in relation to primary support workers,
- Monitor the training of relevant project staff,
- Ensure that a grievance mechanism for project workers is established and implemented and that workers are informed about it,
- Monitor the training of employees on Code of Conduct and to monitor their compliance,
- Monitor that occupational health and safety standards are met in workplaces in line with national occupational health and safety legislation, ESS2 OHS requirements, occupational health and safety plan,
- Monitoring employees' compliance with work behaviour rules,
- Establish and implement a procedure for documenting specific project-related incidents such as occupational accidents, illnesses and time-loss accidents.
- In cases of severe, fatal and mass accidents, informing law enforcement, Labor Inspectorate and MoIT,

In addition to legal requirements and the Labor Management Procedure, the contractor will be responsible for the followings:

- Employ or engage qualified social, labour and occupational safety experts to implement the project-specific labour management plan, occupational health and safety plans and manage the performance of subcontractors,
- Develop a labour management procedure for review and approval of Türkoğlu OIZ,
- Develop an OHS plan for review and approval of Türkoğlu OIZ,
- Ensure labour management plan and OHS plan are in place and applied by all contract and subcontracted workers,

- Supervise subcontractors' adherence to the labour management procedure and OHS plans,
- Keeping records of the recruitment and employment processes of contracted employees,
- Follow up the employment process of subcontracted workers to ensure that it is carried out in accordance with this labour management procedure and national labour law,
- Developing and implementing a grievance mechanism for employees, evaluating complaints from contracted and subcontracted workers,
- Provide written contracts to the contracted workers with job descriptions, wages, working hours, rights and duties fully described,
- Provide regular induction training to employees, including but not limited to OHS, social familiarization, Code of Conduct, Sexual Harassment/Sexual Abuse prevention training,
- Ensure that all contractor and subcontractor employees understand and sign the Code of Conduct before starting work,
- Establish and implement a procedure for recording/ documenting specific project-related incidents such as occupational accidents, illnesses and time-loss accidents,
- Notify law enforcement, Labor Inspectorate and OIZ in case of severe, fatal and mass accidents.

7.2.6.1 Construction Phase

Personnel will be employed by the Contractor during the construction phase of the Project. During the project construction, it is anticipated that 30 workers will be mobilized. Where possible, options for employment of local labour will be considered. Child labour and forced labour shall be prohibited. All Turkish Laws and International Labor Organization (ILO) Conventions on child labour, forced labour, discrimination, freedom of association and the right to collective bargaining will be complied with.

Labour flow is a risk arising from the prolonged stay of workers during construction. A labour force of thirty personnel shall be required during the construction phase of the project. However, since the number of personnel to work on the project is limited, no labour flow is expected. To the extent possible, labour and other employees shall be recruited locally. However, there may be employees who are experts in their fields and come from outside the city, and they will require accommodation. Rental accommodation residences in the city centre will be considered.

7.2.6.2 Operation Phase

A labour force of 7 personnel shall be required during the operation phase of the project. Türkoğlu OIZ plans to employ all of the required personnel locally.

7.2.6.3 Training

On-the-job and OHS training of all employees will be given and recorded within the scope of the Regulation on the Procedures and Principles of Occupational Health and Safety Trainings of Employees published in the Official Gazette numbered 30430 and dated 05.2018.

According to LMP, project workers will receive OHS training at the beginning of their employment, as induction, and regularly thereafter, to cover legislative requirements. Training will cover the relevant aspects of OHS associated with daily work, including the ability to stop work without imminent danger and respond to emergencies.

The consultant will also provide training to the personnel about environmental and social standards of the project, ESMP and SEP. The Contractor shall inform its personnel, subject to the

supervision of the Türkoğlu OIZ, on the implementation of all measures to prevent and/or minimize environmental and social impacts during construction.

Training on the code of conduct will be provided to workers. The scope of the Code of Conduct will be:

- General conditions
- Human rights and labour rights
- International humanitarian law
- Protection of the environment
- Anti-corruption
- Gender-Based Violence (GBV), Sexual Harassment, Sexual Exploitation and Abuse (SH/SEA)
- Grievance Mechanism

The contractor will also provide GBV, SEA/SH and GM trainings to the employees. The scope of this training will be:

- Gender-Based Violence (GBV), Sexual Harassment, Sexual Exploitation and Abuse
- Grievance Mechanism.

Training will be repeated at regular intervals, taking into account the changing and emerging new risks specified in the Regulation on the Procedures and Principles of Occupational Health and Safety Trainings of Employees. Information and training activities will be carried out not only for employees but also on measures to be taken for public health and safety.

Measurement and evaluation should be carried out at the end of the training. According to the results of the evaluation, it can be determined whether the training is effective or not and if necessary, changes can be made in the training programme or trainers, or the training can be repeated.

Training records will be kept on file. These records will include a description of the training, the number of hours of training provided, training attendance records, and results of evaluations.

7.2.7 Community Health and Safety

Community Health and Safety is covered under the WB ESF ESS4. ESS4 addresses the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable.

7.2.7.1 Construction Phase

Public health and safety issues are associated with risk factors that may arise from the construction and operation periods of the Project. The following potential impacts were identified during the construction phase of the Project.

- Increased traffic and road traffic accidents and injuries,
- Impact of the project area on accessibility for the community
- Damage to existing infrastructure, increased demand on existing infrastructure and disruption of services,
- Noise and vibration,

- Threat to community culture, safety and security linked to the presence of construction workers and business opportunists
- Risk of infectious diseases such as sexually transmitted diseases due to labour flows and interaction of temporary workers with host communities,

Kahramanmaraş – Osmaniye State Highway and OIZ internal roads will be used for transportation and traffic to the project area. Local roads that are used to access settlements will not be used. Therefore, negative impacts related to transportation and traffic will not be caused.

The project does not involve access restriction; therefore, the project will not have an impact on accessibility for the community.

The project area is within the OIZ and the OIZ has infrastructure, there is no situation that will disrupt public services in the project area.

The Project activities within the construction phase are associated with a range of activities that generate noise. Since the planned WWTP is in an industrial area, the nearest settlement to the WWTP construction site is 1 km. There exist industries in the neighbouring parcels. There are no sensitive receptors such as health centres, schools, or mosques near the Project Area.

There will be no impact on community culture and safety as there will be no interaction with society and no impact on community transportation and sensitive groups is expected. As the Project area is located within the OIZ and the OIZ is currently surrounded by fences, warning signs and additional security measures will be implemented so that access and negative impacts on public health will be prevented.

As mentioned above, the contractor will also provide GBV, SEA/SH and GM trainings to the employees. Besides awareness-raising activities will be organized for workers and security personnel to prevent cultural problems due to rude behaviour of workers and/or security personnel towards the population of the area related to gender-based violence (GBV) and sexual exploitation and abuse and sexual harassment and attitudes that disrupt the environment such as noise.

7.2.7.2 Operation Phase

During the operation phase of the project, there will be no potential. Entry to the project area will be prevented except for authorized persons. Wire fences for this purpose will be checked. Thus, the negative effects that may occur due to uncontrolled entry will be prevented.

During the operation phase of the project, it is not expected to be an activity that will create emissions. On the other hand, in case suitable operating conditions are not provided, odour problems may occur.

If odour generation is observed in the future operations staff will check and revise operational conditions.

7.2.8 Traffic and Transportation

Kahramanmaraş – Osmaniye State Highway and OIZ internal roads will be used for transportation and traffic to the project area. Local roads that are used to access settlements will not be used. Therefore, negative impacts related to transportation and traffic will not be caused. Considering the current traffic and capacity of the state highway, the project will not bring additional traffic load to the state highway.

However general measures such as driver training, speed limits, limiting unnecessary use of noisy equipment, etc. will be implemented.

7.2.8.1 Construction Phase

Kahramanmaraş – Osmaniye State Highway and OIZ internal roads will be used for transportation and traffic to the project area. Local roads used to access settlements will not be used. Therefore, negative impacts related to transportation and traffic will not be caused. However general measures such as driver training, speed limits, limiting unnecessary use of noisy equipment, etc. will be implemented. Maintenance of the construction machinery will be followed and contractor will install all signs, barriers and control devices needed to ensure the safe use of the road by traffic and pedestrians.

7.2.8.2 Operation Phase

In the operation phase, 7 workers are expected to be employed by Türkoğlu OIZ. No traffic impact is expected during the operation phase of the Project.

7.2.9 Occupational Health and Safety

For the construction period, emergency plans and procedures will be implemented by the Contractor according to the national legislation. The OIZ will prepare its emergency plans to support the establishments for the operation phase.

National laws/ regulations and international conventions/ standards related with Occupational Health and Safety are;

- Law on Occupational Health and Safety (No. 6331, Published on Official Gazette dated: 30.06.2012),
- Labor Law (No. 4857, Published on Official Gazette dated: 10.06.2003),
- Law of Obligations (No. 6098, Published on Official Gazette dated: 04.02.2011)
- General Health Law (No. 1590, on Official Gazette dated: 06.05.1930)
- Social Insurance and General Health Insurance Law (No. 5510, Published on Official Gazette dated: 16.06.2006)
- Regulation on Occupational Safety and Health Services (No: 28512, Published on Official Gazette dated: 29.12.2012)
- Regulation on Duties, Rights and Responsibilities of OSEs (No: 28512, Published on Official Gazette dated: 29.12.2012),
- Regulation on Occupational Health and Safety in Construction Works (No: 28786, Published on Official Gazette dated: 05.10.2013),
- Regulation on the Use of Personal Protection Equipment at Workplaces (No: 28695 Published on Official Gazette dated: 02.07.2013),
- Regulation on Emergency Situations in Workplaces (No: 28681, Published on Official Gazette dated: 18.06.2013),
- Regulation on the Procedures and Principles of Occupational Health and Safety Training of Employees (No: 18371, Published on Official Gazette dated: 15.05.2013),
- Regulation on Health and Safety Precautions Regarding Working with Chemicals (No: 28733, Published on Official Gazette dated: 12.08.2013),
- Regulation on the Protection of Workers from Noise Related Risks (No: 28721, Published on Official Gazette dated: 28.07.2013),
- Regulation on the Protection of Workers from Vibration Related Risks (No: 28743, Published on Official Gazette dated: 22.08.2013),

- Regulation on Protection of Workers from Explosive Hazards (Published on Official Gazette dated: 30.04.2013, numbered: 28633)
- Regulation on Management of Dust (Published on Official Gazette dated: 05.11.2013, numbered: 28812),
- Regulation on Health and Safety Signs (Published on Official Gazette dated: 11.09.2013, numbered: 28762),
- Regulation on the Occupational Health and Safety for Temporary or Fixed Term Jobs (Published on Official Gazette dated: 23.08.2013, numbered: 28744),
- First Aid Regulation (Published on Official Gazette dated: 29.07.2015, numbered: 29429),
- Regulation on Personal Protection Equipment (Published on Official Gazette dated: 01.05.2019, numbered: 30761),
- Manual Handling Operations Regulation (Published on Official Gazette dated: 24.07.2013, numbered: 28717),
- Regulation on the Procedures and Principles of Employment of Children and Young Workers (Published on Official Gazette dated: 06.04.2004, numbered: 25425),
- Regulation on Risk Assessment for Occupational Health and Safety (Published on Official Gazette dated: 29.12.2012, numbered: 28512),
- Regulation on Health and Safety Conditions Regarding Use of Work Equipment (Published on Official Gazette dated: 25.04.2013, numbered: 28628),
- Communiqué on Occupational Health and Safety Hazard Classes List (Published on Official Gazette dated: 26.12.2012, numbered: 28509),
- ILO Conventions including Occupational Safety and Health Convention (No. 155), Occupational Health Services Convention (No. 161), and Safety and Health in Construction Convention (No. 167),
- WB ESS2,
- WB EHS Guidelines for Water and Sanitation,
- WB EHS Guidelines for Waste Management Facilities,
- Türkiye Organized Industrial Zones Project Labor Management Procedure.

7.2.9.1 Pre-Construction Phase

During the pre-construction phase (before construction works start), the contractor will prepare a Risk Assessment Report, Emergency Preparedness and Response Plan and Occupational Health and Safety Management Plan in accordance with Turkish legislation, WB ESS 2 and WB EHS Guidelines for Water and Sanitation, WBG General EHS Guidelines: Occupational Health and Safety, and ILO standards.

Occupational Health and Safety Management Plan will include the assessment of below topics as applicable:

- General Facility Design and Operation
- Communication and Training
- Physical Hazards
- Chemical Hazards
- Biological Hazards
- Radiological Hazards
- Personal Protective Equipment (PPE)
- Special Hazard Environments
- Monitoring

Specifically, the objectives associated with the Occupational Health and Safety Management Plan are:

- Minimize the risk of occupational health and safety hazards to the workers,
- Prevention of work-related accidents, reporting near misses, personnel injuries and occupational illnesses,
- Ensure compliance with all applicable occupational health and safety regulations and other legal and contractual requirements,
- Integrate health and safety procedures and safe work practices into every operational activity,
- Encourage employees to maintain a healthy and safe workplace through periodic reviews of operational procedures, and provision of training,
- Ensure the availability of resources to fully implement the Health and Safety policy.

According to the relevant provision of the national laws/ regulations and international conventions/ standards, all contractors and sub-contractors shall manage the construction site in such a way that the workers and communities are properly protected against possible OHS risks. The following OHS standard requirements should as a minimum be included in the OHS Plan to be prepared by the contractors:

- Risk assessment procedure,
- Work permitting for hazardous work (working at heights, hot work, work on energized lines, work within confined spaces),
- Golden rules for life-threatening works,
- Emergency response procedure,
- Fall prevention and working at heights procedure,
- Excavations safety, ladders and scaffolders safety; welding and cutting safety; Cranes, Derricks, and forklifts safety; power and hand tools safety,
- Respiratory prevention of chemical and airborne hazards procedure (including dust, silica and asbestos);
- Electrical safety procedure (hazardous energies control, lock out tag out, energy verification, safe distance work, wiring and design protection, grounding, circuit protection, arc fault protection, PPE and dielectric tools);
- Hazards communication procedure; noise and vibration safety; steel erection safety; fire safety; material handling safety; concrete and masonry safety,
- Using PPE procedure,
- OHS training procedure, and
- Refuse to work policy.

The Occupational Health and Safety Management Plan shall be periodically revised by the contractor whenever there is a major accident, changes in organization, processes, procedures, approved materials (including risk assessment), legislation, and work patterns. In addition, the Occupational Health and Safety Management Plan will, among other issues, also include roles and OHS responsibilities. The contractor will appoint its own OHS staff that will be responsible for the implementation and supervision of the OHS.

For a possible accident and emergency, an Emergency Preparedness and Response Plan shall be prepared by the contractor, emergency teams shall be established, and drills and trainings shall be conducted in accordance with emergency scenarios. The emergency Preparedness and Response Plan should include;

- Emergency scenarios and relevant emergency preparedness and response actions with the allocations of responsibilities to local communities and authorities where appropriate,
- First aid training,

- Special trainings to be given to extinguishing, rescue and protection teams,
- Specific stakeholder engagement based on consultation and participation with government and communities regarding the nature and potential consequences of the Project-related risks,
- Training of the personnel for the response to emergencies in accordance with the requirements outlined in the specifications,
- Emergency drills to be conducted, at least once a year and in formats according to Regulation on Emergencies in Workplaces,
- Evaluation of findings and lessons learnt from drills and corrective actions.

7.2.9.2 Construction Phase

As defined in previous section, OHS Plan that is prepared in pre-construction stage will be implemented by contractor.

As a general approach, main OHS risks are summarized as follows:

7.2.9.2.1 Working at Height

Work at height is the biggest single cause of fatal and serious injury in the construction industry, particularly on smaller projects. Working from a level difference and the possibility of injury as a result of falling are considered for the employees as “working at height”.

Ladders, scaffolds, mobile elevating work platforms and suspended access equipment will be used during the construction and falls occur from them.

The risk related to working at height will be mitigated by the implementation of the mitigation measures presented in Chapter 8.

7.2.9.2.2 Working with Chemicals

Many products used at construction sites consist of chemicals. Workers may be exposed to dangerous chemicals during construction activities. These include lead, silica, carbon monoxide, and paints. The chemicals can exist in several forms and can enter the body in a variety of different ways including inhalation (breathed in), ingestion, absorption and injection. Chemical exposure causes acute and chronic health problems.

The risk related to working with chemicals will be mitigated by the implementation of the mitigation measures presented in Chapter 8.

7.2.9.2.3 Fire and Explosion

Flammable materials, electrical equipment and heat sources will be present at the construction site. This means that there’s a multitude of sources for fires or explosions. Hazards that can cause fires and explosions during the construction period are given below:

- There will be many hazards of high heat and sparks on construction sites. Equipment, such as those used in welding, cutting, and grinding, may create sparks when being used that can catch fire.
- Electrical errors, i.e. electrical wires short-circuit, are insufficient ground fault protection causes fires.

- Defective equipment, for example tools, heating equipment, and electrical wiring can cause a fire when being used.
- Sources of fuel, such as propane, gas lines, and acetylene on construction sites can cause a fire if they come in contact with a heat source.
- Chemical explosions (open solvents/fuels, fuel tanks and chemical tanks or drums), fires (open solvents and vehicles/heavy equipment), pressurized container explosions (vehicle tires, pipes/pipelines and water tanks) and arc flashes/blasts (switchboards, circuit breakers, transformers, other electrical wiring and parts) might cause to construction site explosions.
- Temporary lighting and lamps - where necessary the illumination of work areas is from temporary lighting installed or from specific task lighting. The hazards from such lighting come from placing light units too close to combustible items not allowing the lamps to cool or from broken lamp units where hot surfaces are exposed. Lighting units should be secured in a position away from combustible material to prevent them from being dislodged. Halogen and halide lights should not be used due to their high operating temperatures. Lamp holders should be provided that ensure bulbs of different operating voltages cannot be interchanged and those not fitted with a bulb should be capped off. Light units should be inspected periodically and broken units should be removed immediately.
- Portable heaters should only be permitted where necessary and then portable heaters should be regarded in the same category as 'hot work' and an assessment should be made of the suitability of the heater and its location; the most hazardous types of portable heaters should be avoided.

In all applications Regulation on Protection of Workers from Explosive Hazards will be complied with. Explosion protection document which is necessary according to the regulation will be prepared by the contractor. The risk related to fire and explosion will be mitigated by the implementation of the mitigation measures presented in Chapter 8.

7.2.9.2.4 Noise

During the construction phase, noise will be generated due to excavation and construction works. This impact can be mitigated with general measures such as arranging the working hours during which the noisy activities will be carried out and providing the necessary information to the enterprise. Besides, the measures (e.g., regular maintenance of the equipment, selection of low noise machines, use of personnel protective equipment etc.) will be taken to reduce the noise to acceptable limits (below the (LEX, 8 hour) = 87 dB(A)) for the health and safety of the workers in the WWTP in accordance with the Regulation on Protection of the Workers from the Noise Risks (28.07.2013/28721).

These impacts will be mitigated by the implementation of the mitigation measures presented in Chapter 8.

7.2.9.2.5 Vibration

Workers will be exposed to vibration when using grinders, polishers, strimmers, chainsaws, power drills, breakers, crashers and concrete vibrators. Vibration can lead to permanent injury of the hands and arms. The vibration effect will be low for the workers.

In all applications limits mentioned in Regulation on the Protection of Workers from Vibration Related Risks will be complied with. Daily exposure action value for an eight-hour working period (the value that, if exceeded, requires controlling the risks that may arise from the employee's exposure to vibration) 2.5 m/s2 for hand-arm vibration; 0.5 m/s2 for whole body vibration. The daily exposure limit value for an eight-hour working period (the value to which employees should never be exposed to vibration above this value) is 5 m/s2 for hand-arm vibration; 1.15 m/s2 for whole body vibration.

7.2.9.3 Operation Phase

Prior to start operation, Occupational Health and Safety Management Plan will be prepared. This Plan will include the assessment of below topics as applicable:

- General Facility Design and Operation
- Communication and Training
- Physical Hazards
- Chemical Hazards
- Biological Hazards
- Radiological Hazards
- Personal Protective Equipment (PPE)
- Special Hazard Environments
- Monitoring

As a general approach, main OHS risks are summarized as follows:

7.2.9.3.1 Working at Height

Although necessary precautions will be implemented at the working areas at height by covering ground-mounted safety railing and compliant handrail systems, lifelines, and working/maintaining platforms, there is a risk of falling due to working at height during monitoring, maintenance and repair. Although the risk is low, the risk will be mitigated by the implementation of the mitigation measures presented in Chapter 8.

7.2.9.3.2 Working with Chemicals

The names of chemicals used for the chemical treatment unit in the plant and their hazard class are given below;

- Iron (III) Chloride (H302 - Harmful if swallowed, H315 - Causes skin irritation, H318 - Causes serious eye damage)
- Flocon 744 (R 38: Irritating to skin, S 24/25: Avoid contact with eyes and skin.)
- Sodium Hypochlorite (H 314 - Skin Corrosion/Irritation, Harmful, H400 - Harmful to the aquatic environment - Acute hazard and H411 Harmful to the aquatic environment - Chronic hazard)
- Antifoam 10 A (H 319 - Causes serious eye irritation)

These chemicals present potential hazards that can be detrimental to human health and the environment. Therefore, the chemicals will be stored indoors by taking sealing precautions and only experienced personnel will handle chemicals, while employees will have minimal contact with them in terms of quantity and duration.

Adequate ventilation systems will be installed in all areas where chemicals are stored or used to ensure that air quality standards are maintained, and the risk of exposure is minimized.

Chemical management procedures will be prepared to be implemented during the operation phase.

7.2.9.3.3 Fire and Explosion

In the operation phase, the fire risks will be mainly related to contact of a very strong oxidizer (disinfectant) with a flammable substance, as a result of improper storage of chemicals, human error,

sudden release from process piping, etc. Confined spaces containing sewage can sometimes be deficient in oxygen due to organic oxidation and displacement by carbon dioxide. They can also contain flammable gases such as methane and toxic gases such as carbon monoxide and hydrogen sulphide. Explosion hazard, in the event of contact between ozone (a very strong oxidizer) and organic chemical and strong reduction agents.

In all applications Regulation on Protection of Workers from Explosive Hazards will be complied with. As stated in the Explosion Protection Document Regulation; An explosion protection document will be prepared to protect the health and safety of employees from the dangers of explosive atmospheres that may occur in workplaces. The explosion protection document will be prepared before the start of work and will be revised whenever there is a significant change, expansion or modification of the workplace, work equipment or work organization. The risk related to fire and explosion will be mitigated by the implementation of the mitigation measures presented in Chapter 8.

7.2.9.3.4 Noise

The following types of operational noise associated with treatment facilities and/or pump stations will be:

- Noise from the operation of mechanical equipment, including pumps, blowers, fans, centrifuges, and cogeneration engines or turbine generators,
- Noise from standby electrical generation equipment (e.g., backup generators for treatment facilities or pump stations during a power outage),
- Noise from electrical power substations,
- Noise from water flowing.

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 Besides, measures (e.g., regular maintenance of the equipment, selection of low noise machines, use of personnel protective equipment etc.) will be taken to reduce the noise to acceptable limits (below the (LEX, 8 hour) = 87 dB(A)) in accordance with the Regulation on Protection of the Workers from the Noise Risks (28.07.2013/28721) for health and safety of the workers in the WWTP. So, no significant noise is expected to be generated during the operation of the WWTP.

7.2.9.3.5 Vibration

Vibration may occur from the operation of mechanical equipment at treatment facilities and pump stations. While these activities are not anticipated to pose significant risks to occupational health, appropriate protective equipment will be provided to all personnel involved.

8 ENVIRONMENTAL AND SOCIAL ASPECTS, AND BEST PRACTICE MITIGATION MEASURES

This chapter presents cost effective and feasible measures to reduce adverse environmental and social impacts to acceptable level. The mitigation measures are presented in Table 8.1, Table 8.2 and Table 8.3. During the implementation of the mitigation plan, Project Standards as described in Chapter 3 will be complied with.

The mitigation measures foreseen to be applied as a minimum for the project are as follows[3]:

[3] *These measures are from driven from Environmental and Social Code of Practices of WBG. ESCOPs are pre-prepared environmental and social risks management measures for standard construction, livelihood or household support activities. To manage and mitigate potential negative environmental impacts, the project applies Environmental Codes of Practice (ESCOPs); outlined in this document. The ESCOPs contain specific, detailed and tangible measures that would mitigate the potential impacts of each type of eligible subproject activity under the project. They are marked as relevant for the pre-construction phase, the construction phase, or the operation phase of activities. They are intended to be simple risk mitigation and management measures, readily usable to the Borrower and contractors.*

8.1 Mitigation Plan for the Pre-Construction Phase

Table 8.1 Additional mitigations for the Pre-Construction Phase

Issue	Potential Impact	Impact Significance Before Mitigation	Mitigation Measure	Impact Significance After Mitigation	Cost of Mitigation *(if substantial)*	Responsible Party/Parties
Physical Environment						
Air Quality: Dust Emissions	Reducing air quality surrounding the Project Area, Temporarily reduced line of sight on nearby roads and highways, Possible health hazards due to extended exposure to high dust emissions in the Project Area. Possibility of erosion with strong winds.	Low	• Türkoğlu OIZ will ensure that the contractor will prepare and implement an Air Quality and Emissions Management Plan that is in line with the WB ESS1 and WBG EHS Guidelines (both general and sector specific). The Air Quality and Emissions Management Plan will be prepared by the Contractor 30 days prior to commencement of the works to ensure; This condition will be included within Contractor's contract. The employees will be trained on the Air Quality and Emissions 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; • When there will be windy weather conditions (wind speed is above 30 km/hour) in the Project Area, excavation will not be carried out or additional measures such as placement of wind shields/barriers will be taken to prevent dust dispersion; • Loading and unloading operations will be performed without throwing/scattering; • 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 adjacent to the crops and/or field; • 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 if deemed necessary, considering both national and WBG EHS Guidelines limit values. • Compliance with the air emission limit values stipulated in national legislation and WB Compliance with the air emission limit values stipulated in national legislation and WB	Low	Included in pre-construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)
Air Quality: Exhaust Emissions	Reducing air quality surrounding the Project Area, Possible health hazards due to extended exposure to high emissions in the Project Area. Increase in SO_2, PM, NO_x emissions. Increase in GHG emissions (CO_2, CH_4, N_2O)	Low	• All vehicles to be used in transportation activities will be issued an emission control stamp which is renewed every year by measuring the emissions from the exhausts; • 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; • Vehicles that can provide European Euro VI standards will be selected; • Relevant provisions of the Regulation on Air Pollution Control Sourced from Industry and Regulation on the Assessment and Management of Air Quality will be complied with to minimize air emissions sourced from construction machinery and trucks; • Exhaust systems of the vehicles (daily and periodically) will be controlled regularly. 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. • Vehicle speed will be controlled when passing through public transport areas, thus minimizing dust dispersion from vehicle transportation. • Optimal utilization of the available construction equipment and materials in such a way that reduces greenhouse gas emissions; • Speed restrictions will be adopted by construction vehicles and optimal use of equipment to optimize fuel efficiency;	Low	Included in pre-construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)

			• Regular maintenance of construction vehicles and equipment will be applied; • Idling of vehicles and machinery will be avoided. • Energy uses associated with construction vehicles and equipment will be monitored; • Training will be performed for project personnel regarding energy efficiency.			
Soil Environment: Preserving Topsoil	Loss of topsoil, Possibility of increased risk of erosion	Low	• Türkoğlu OIZ will ensure that the contractor will prepare and implement a Soil Management Plan that is in line with the WB ESS1 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 works and the employees will be trained on the Soil Management Plan; This condition will be included within Contractor's contract. • Where there is topsoil, topsoil will be stripped to a sufficient depth (15- 30 cm, depending on the topsoil depth) prior to the start of the land preparing 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 land preparing phase, the stored at the project site topsoil will be used for landscaping; • The stripped topsoil will not be used for agribusiness.	Negligible	Included in pre-construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)
Soil Environment: Erosion Potential	Possibility of increased risk of erosion, Possibility of increased dust emissions caused by wind erosion.	Low	• The contractor will take additional mitigation measures, such as soil sampling, in case of a requirement revealed by the monitoring and/or any complaint. • 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; • Pre-construction activities will be undertaken in the dry weather condition as much as possible to avoid surface runoff effects on stripped topsoil; • Stripping of topsoil will not be conducted earlier than required to prevent the erosion of soil (wind and water); • Circulation of heavy machinery to In the Project Area will be limited; • 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; • Topography will be restored to provide stabilization immediately after the completion of construction at each location. • Once the work is completed, construction areas will be quickly covered with topsoil and revegetated. • Mulch, sod or compacted soil will be used to stabilize exposed areas.	Low	Included in pre-construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)
Soil Environment: Soil Contamination	Contamination of soil, Possibility of contamination of underground waters close to the surface, Scatter/dispersion of contaminated soil due to improper handling, transferring and disposal of the contaminated soil, Improper reuse of contaminated soil as landscaping,	Low	• 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 pre-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 pre-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 pre-construction phase 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 ESS1, 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, Türkoğlu OIZ 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 Türkoğlu OIZ 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 pre-construction phase: ○ Vehicles containing any stripped 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; • The use of contaminated soil for landscaping will be prohibited.	Low	Included in pre-construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)
Water Resources: Quality Change in Water	Possibility of leakage of generated municipal wastewater that may cause to	Low	• Türkoğlu OIZ will ensure that the contractor will prepare and implement a Water Resources Management Plan that is in line with the WB ESS1 and WBG EHS Guidelines (both general and sector specific). The Water Resources Management Plan will be prepared by the Contractor 30	Low	Included in pre-construction cost	Contractor (implementation)

Bodies	degradation in surface water and groundwater qualities, Increased possibility of surface runoff occurrence, Deterioration of quality in nearby water bodies due to wastes carried by surface runoff, erosion, waste dispersion or improper waste storage, handling and transfer.		days prior to commencement of the works and employees will be trained in the Water Resource Management Plan; This condition will be included within Contractor's contract. • Surface runoff resulted from rain/storm water or wastewater generation due to dust suppression activities will be prevented; • Stripping of topsoil will not be conducted earlier than required to prevent the erosion of soil (wind and water); • Pre-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 will be placed in secondary containment in temporary storage area so as to minimize the risk of soil, surface water and groundwater contamination during the construction; • For a case of possible breakdown and natural disaster situation, Türkoğlu OIZ will ensure that that contractor will prepare, implement and monitor an Emergency Preparedness Plan and the employees will be trained on the plan. • The flow of natural waters should not be obstructed or diverted to another direction, which may lead to drying up of river beds or flooding of settlements. • Activities should not affect the availability of water for drinking and hygienic purposes. • No polluted substances, solid waste, toxic or hazardous substances will be stored, spilled or disposed of in water bodies for dilution or disposal.			Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)
Noise Management	Possible health hazards due to extended exposure to high noise and vibration in/around the Project Area. Over exposure to increased noise and vibration levels may disturb routine life of human and animal populations nearby.	Low	• Türkoğlu OIZ will ensure that the contractor will prepare and implement a Noise and Vibration Management Plan that is in line with the WB ESS1 and WBG EHS Guidelines (both general and sector specific) prior to the pre-construction works and the employees will be trained on the Plan. This condition will be included within Contractor's contract. • The machinery and equipment to be used during the pre-construction phase will not be operated at the same point/location but homogeneously distributed in the site if possible; • During vehicle and equipment procuring/leasing process for the Project, item with lower noise levels than equivalent ones will be preferred, if feasible; • 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 would be high, the public will be informed 1 week in advance about the time of construction activities; • 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; • A grievance mechanism will be established to manage noise related grievances as well. • The work schedule will be adjusted by communicating with sensitive receptors.	Low	Included in pre-construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)
Resource Management	Resources used/consumed during works	Low	• Türkoğlu OIZ will supervise the construction contractor via construction supervision consultant to select the most appropriate raw materials and resources by evaluating clean production options.	Negligible	Included in pre-construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)
Waste Generation	Inefficient management of resources and increased amount of waste due to not separating waste and/or storing, handling or transferring wastes improperly. Possibility of increased public health hazard risks, deterioration of surface water, underground water and air quality, and/or soil contamination due to improper storage, handling and transfer of hazardous wastes, Possibility of air and/or soil pollution risk due to unauthorized burial and burning of	Low	• Türkoğlu OIZ will ensure that the contractor will prepare and implement a Waste Management Plan that is in line with the WB ESS1 and WBG EHS Guidelines (both general and sector specific). The Waste Management Plan will be prepared by the Constructor 30 days prior to the commencement of the works and the employees will be trained on the plan. This condition will be included within Contractor's contract. • 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	Low	Included in pre-construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)

	waste on the site.		relevant Türkoğlu Municipality's vehicles; • Incineration or burying of waste by any means at site and/or dumping of waste to nearby roads or water resources will not be allowed; • 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 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 will be labeled as "waste oil". Disposal of waste oils will be controlled by the Türkoğlu OIZ; • Waste batteries from 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 Waste 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 waste, 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. • Workers will be trained in the proper transfer and handling of fuels and other materials and will require the use of gloves, boots, aprons, goggles and other protective equipment for protection when handling highly hazardous materials. • After each construction site is decommissioned, all debris and waste shall be cleared.			
Socio-economic Environment						
Stakeholder Engagement	Objections and obstruction efforts during the project/design phase due to lack of information to the people who are likely to be affected by the project Suspension of the project due to lack of Stakeholder Engagement Process and not receiving suggestions and complaints Insufficient stakeholder engagement activities and public consultation	Low	• Before the start of construction works, the local people and all relevant stakeholders will be informed of the works to be performed and the measures to be taken. • Comprehensive information on stakeholder engagement is provided in the SEP of the Project and the SEP will be updated and implemented throughout the Project. • Informing the persons or organizations likely to be affected by the project about the project • Establishing a grievance and suggestion mechanism in order to inform the persons and organizations that are likely to be affected by the Project as specified in the SEP, about any adverse environmental and social risks and how to submit any grievances, if required. • Collection and evaluation of suggestions and complaints about the project	low	Included in pre-construction cost	Contractor (implementation) Project Owner Construction Supervision Consultant (supervision/monitoring)
Occupational Health and Safety	Risk of occupational health and safety hazards to the workers Work-related accidents (near misses, personnel injuries and occupational illnesses, fatalities) Noncompliance with all applicable occupational health and safety regulations and other legal and contractual requirements GBV and SEA/SH related incidents	High	• Preparation of the following plans and procedures for the approval of the OIZ and the Supervision Consultant by the Contractor before the commencement of construction works. These will be included within Contractor's contract: ○ Occupational Health and Safety (OHS) Plan based on construction site OHS risk assessment, including work procedures (such as permit to works etc.), checklists and daily record forms ○ Emergency Preparedness and Response Plan, ○ Labor Management Plan (including Worker Code of Conduct) in line with the LMP ○ Grievance Mechanism Procedure including Grievance Register ○ Accident investigation and root cause analyze • GM, GBV, SEA/SH trainings will be given to whole personnel before the construction.	low	Included in pre-construction cost	Contractor (implementation) Project Owner Construction Supervision Consultant (supervision/monitoring)
Community Health and Safety	Risk of health and safety hazards to the community members such as access from outside etc.	Low	• Preparation and implementation of the Community Health and Safety Plan such as • Informing community about the risks • Installing warning signs, fence/curtain for the perimeter of the construction area, etc.	low	Included in pre-construction cost	Contractor (implementation) Project Owner Construction Supervision Consultant (supervision/monitoring)

8.2 Mitigation Plan for the Construction Phase

Table 8.2 Additional mitigations for the Construction Phase

Issue	Potential Impact	Impact Significance Before Mitigation	Mitigation Measure	Impact Significance After Mitigation	Cost of Mitigation *(if substantial)*	Responsible Party/Parties
Physical Environment						
Air Quality: Dust Emissions	Reducing air quality surrounding the Project Area, Temporarily reduced line of sight on nearby roads and highways, Possible health hazards due to extended exposure to high dust emissions in the Project Area. Possibility of erosion with strong winds.	Low	• Türkoğlu OIZ will ensure that the contractor will implement an Air Quality and Emissions Management Plan that is in line with the WB ESS1 and WBG EHS Guidelines (both general and sector specific). This condition will be included within Contractor's contract. • The employees will be trained on an Air Quality and Emissions 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; • When there will be windy weather conditions (wind speed is above 30 km/hour) in the Project Area, excavation will not be carried out or additional measures such as placement of wind shields/barriers will be taken to prevent dust dispersion; • 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 adjacent to the crops and/or field; • 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 if deemed necessary, considering both national and WBG EHS Guidelines limit values. • Compliance with the air emission limit values stipulated in national legislation and WB Compliance with the air emission limit values stipulated in national legislation and WB;	Low	Included in construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)
Air Quality: Exhaust Emissions	Reducing air quality surrounding the Project Area, Possible health hazards due to extended exposure to high emissions in the Project Area. Increase in SO_2, PM, NO_x emissions. Increase in GHG emissions (CO_2, CH_4, N_2O)	Low	• All vehicles to be used in transportation activities will be issued an emission control stamp which is renewed every year by measuring the emissions from the exhausts; • 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; • Vehicles that can provide European Euro VI standards will be selected; • Relevant provisions of the Regulation on Air Pollution Control Sourced from Industry and Regulation on the Assessment and Management of Air Quality will be complied with to minimize air emissions sourced from construction machinery and trucks; • Exhaust systems of the vehicles (daily and periodically) will be controlled regularly. 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. • Optimal utilization of the available construction equipment and materials in such a way that reduces greenhouse gas emissions;	Low	Included in construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)

			• Speed restrictions will be adopted by construction vehicles and optimal use of equipment to optimize fuel efficiency; • Regular maintenance of construction vehicles and equipment will be applied; • Idling of vehicles and machinery will be avoided. • Energy uses associated with construction vehicles and equipment will be monitored; • Training will be performed for project personnel regarding energy efficiency.			
Soil Environment: Erosion Potential	Possibility of increased risk of erosion, Possibility of increased dust emissions caused by wind erosion.	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 to avoid surface runoff effects on excavated soil; • Circulation of heavy machinery to In the Project Area will be limited; • 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; • Topography will be restored to provide stabilization immediately after the completion of construction at each location.	Low	Included in construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)
Soil Environment: Soil Contamination	Contamination of soil, Possibility of contamination of underground waters close to the surface, Scatter/dispersion of contaminated soil due to improper handling, transferring and disposal of the contaminated soil, Improper reuse of contaminated soil as landscaping,	Medium	• Türkoğlu OIZ will ensure that the Contractor will continue to comply with the Soil Management Plan that was prepared in line with the WB ESS1 and WBG EHS Guidelines (both general and sector specific) before the commencement of the works. The Contractor will ensure all the employees are trained on the Oil and Chemical Spill Contingency Management Plan and renew the training if necessary; • 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 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 construction phase 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 ESS1, 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, Türkoğlu OIZ 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 Türkoğlu OIZ 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; • The use of contaminated soil for landscaping will be prohibited.	Low	Included in construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)
Water Resources: Quality Change in Water Bodies	Possibility of leakage of generated municipal wastewater that may cause to degradation in surface water and groundwater qualities, Increased possibility of surface runoff occurrence, Deterioration of quality in nearby water bodies due to wastes carried by surface runoff, erosion, waste dispersion or improper waste storage, handling and transfer.	Medium	• Türkoğlu OIZ will ensure that the Contractor will continue to comply with the Water Resources Management Plan that was prepared in line with the WB ESS1 and WBG EHS Guidelines (both general and sector specific) before the commencement of the works. The Contractor will ensure all the employees are trained on the Water Resources Management Plan and renew the training if necessary. This condition will be included within Contractor's contract. • 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 monitored and recorded in m^3; • 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 limited amount of domestic wastewater generated at the construction site will be collected into the impervious septic tanks and then discharged into the nearest WWTP by licensed sewer 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	Low	Included in construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)

			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 will be placed in secondary containment in temporary storage area so as to minimize the risk of soil, surface water and groundwater contamination during the construction; • For a case of possible breakdown and natural disaster situation, Türkoğlu OIZ will ensure that that contractor will prepare, implement and monitor an Emergency Preparedness Plan and the employees will be trained on the plan. • It will be ensured that the facility is designed and constructed to be resistant to natural disasters. • Activities should not affect the availability of water for drinking and hygienic purposes. • No polluted substances, solid waste, toxic or hazardous substances will be stored, spilled or disposed of in water bodies for dilution or disposal. • The flow of natural waters should not be obstructed or diverted to another direction, which may lead to drying up of river beds or flooding of settlements.			
Noise Management	Possible health hazards due to extended exposure to high noise and vibration in/around the Project Area. Over exposure to increased noise and vibration levels may disturb routine life of human and animal populations nearby.	Low	• Türkoğlu OIZ will ensure that the contractor will prepare and implement a Noise and Vibration Management Plan that is in line with the WB ESS1 and WBG EHS Guidelines (both general and sector specific) prior to the construction works and the employees will be trained on the Plan. • The machinery and equipment to be used during the construction phase will not be operated at the same point/location but homogeneously distributed in the site if possible; • During vehicle and equipment procuring/leasing process for the Project, item with lower noise levels than equivalent ones will be preferred, if feasible; • 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; • 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; • A grievance mechanism will be established to manage noise related grievances as well. • The work schedule will be adjusted by communicating with sensitive receptors.	Low	Included in construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)
Resource Management	Resources used/consumed during works	Low	• Türkoğlu OIZ will supervise the construction contractor via supervision consultant to select the most appropriate raw materials and resources by evaluating clean production options.	Negligible	Included in construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)
Waste Generation	Inefficient management of resources and increased amount of waste due to not separating waste and/or storing, handling or transferring wastes improperly. Possibility of increased public health hazard risks, deterioration of surface water, underground water and air quality, and/or soil contamination due to improper storage, handling and transfer of hazardous wastes, Possibility of air and/or soil pollution risk due to unauthorized burial and burning of waste on the site.	Low	• Türkoğlu OIZ will ensure that the Contractor will continue to comply with the Waste Management Plan that was prepared in line with the WB ESS1 and WBG EHS Guidelines (both general and sector specific) before the commencement of the works. The Contractor will ensure all the employees are trained on the Waste Management Plan and renew the training if necessary; • 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 relevant municipality's vehicles; • Incineration or burying of waste by any means at site and/or dumping of waste to nearby roads or water resources will not be allowed;	Low	Included in construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)

			• 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 the nearest licensed 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 will be labeled as "waste oil". Disposal of waste oils will be controlled by the Türkoğlu OIZ; • Waste batteries from 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 Waste 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 waste, etc. The permit for the temporary Waste Storage Area will be taken from the Provincial Directorate of Environment, Urbanization and Climate Change. • Removal of the excavated material, which will not be used for backfilling, from the site will be performed at regular intervals without waiting. • 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.			
Landscape and Visual (Aesthetics) Concerns	Creation of visual pollution. Impairment of quality of life due to the overall presence of annoying construction works and activities and altered landscape	Low	• 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 would be high, the public will be informed 1 week in advance about the time of construction activities; • The construction schedule will be disclosed to the public via website of Türkoğlu OIZ.	Low	Included in construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)
Socio-economic Environment						
Cultural Heritage	Loss of cultural heritage	Low	• Any cultural asset found during the construction works will be indicated and recorded as "chance finds". A "Chance Find Procedure" has been prepared for the steps to be followed and implemented after the chance finding. ANNEX-9 shows Chance Find Procedure. • The Cultural and Natural Assets Conservation Boards will be informed about the chance finds and the approval of the Conservation Board, which is responsible for the area where the construction site is located, will be required. No demolition/construction work will be carried out when awaiting the said approval.	Low	Included in construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)
Employment / Economy	Contribution to economy	Low	• Care will be taken to contribute to the local economy through the use of local materials and to procure various goods and services from local resources. • Priority should be given to the local labour where possible and practical. • Efforts will be exercised to allocate employment opportunities to the local parties and the settlements within the AoI.	Low	Included in construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)
Community Health and Safety	Potential Community Disturbance Access from outside and accidents that may occur due to lack of security in the project area	Low	• The OIZ will ensure that contractors establish the code of conduct and will check that workers will be given training, especially on communication with local people of foreign nationality public before starting work, so that local people of foreign nationality will not be adversely affected by external workers. • The operations to be carried out during construction works will be performed not to restrict/hinder the social and economic life of local people. • To avoid any impact on the safety and daily life of communities, safety and information signs will be placed on site before the work. • The perimeter of the construction areas will be blocked with a wire fence and warning signs will be hung.	Low	Included in construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)

Labour and Working Conditions	Improper Working Conditions, Child labour, forced labour and unregistered employment	Low	• Implementing LMP, • Workers will be informed about the Grievance mechanism and will be required to be aware of this Mechanism. • All workers will be given training on discrimination and codes of conduct. The training given to the employees will be explanatory about the concepts of sexual harassment and abuse, sexual exploitation, gender-based violence, abuse, and intervention with harassment. • Minimum legal labour standards will be met (prevention of child/forced labour, anti-discrimination, working hours, minimum wages) as per International Labor Organization (ILO) regulations. • At the same time, national laws/ regulations and international conventions/ standards will be complied with in terms of the working conditions. • Discrimination based on language, race, gender, political thought, philosophical belief and religion will be avoided in business relations.	Low	Included in construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)
Labour and Working Conditions	Work suspension due to legal noncompliance in Human Resources and Workforce Management	Medium	• Concluding written contracts with workers upon recruitment, including job description, working hours, wages, terms and conditions of employment and rights in accordance with national legislation and Code of Conduct • Keeping personnel data files including contracts, training records, signed codes of conduct, health reports	Low	Included in construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)
Occupational Health and Safety (OHS)	Inadequate workers' health and safety conditions	High	• The PMU will include an OHS expert with a Class A specialization certificate who will take part full-time and effectively control the implementation of the Project. She/he shall monitor the site implementations. • The consultant and the OIZ will make sure that the measures provided below are taken by the contractor and enforce necessary actions/sanctions in case of lack of these measures on-site. In accordance with the Occupational Health and Safety Regulation in Construction Works, the required person, information, plan, and organization will be provided. • An Emergency Response Plan will be prepared and shared with all employees. • The OIZ will require all employees and contractors to adhere to local and international health and safety legislation and guidelines. Workers will be provided with all necessary personal protective equipment (PPE) (hard hats, safety harnesses, protective coveralls, glasses, gloves, safety shoes, etc.). • Non-smoking areas will be allocated at the construction site. • Appropriate hand and face washing facilities will be provided to the employees, and also shower facilities for dusty works. • Technical and OHS training, including the code of conduct indicating the possible risks regarding the work site and works to be carried will be given to workers by the contractor.	Low	Included in construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)
Occupational Health and Safety	Work suspension due to work accident (lack of appropriate OHS measures/ unsafe work environment)	High	• Implementing OHS Plan, Emergency Preparedness and Response Plan, Accident/incident Investigation and Reporting and Root Cause Analysis Procedure, and Non-Conformity / Non-Compliance and Corrective / Preventive Action Procedure. • The contractor will have a full-time Occupational Health and Safety Expert with relevant certification and experience in charge of occupational health and safety and s/he will control and monitor the site implementations. • Placing safety barriers and warning signs around work areas. • Conducting occupational safety meetings/toolbox talks with workers before starting work every day. • Legal periodic inspection of work equipment at the construction site by an authorized expert. • Daily control of work equipment by its operators. • First aid boxes for each work team for first aid response. • Providing certified first aid training to workers. • Establishment of a first aid team consisting of workers for each work zone. • Providing workers with Personal Protective Equipment (PPE) specific to their tasks. • Provide a safe and healthy work environment for the workers. Provide equipment that meets international standards in terms of performance and safety • Inform all workers about the required safety rules, risks, and related regulations to be followed at the construction site throughout the construction period. • Establish emergency teams and carry out training/drills according to the emergency scenarios • Record all accidents and incidents (fatalities, lost time incidents, any significant events including spills, fire, pandemic outbreak or infectious diseases, social unrest, etc.) as well as near misses. The project owner will ensure that all OHS measures are taken by the Contractor and enforce necessary actions/sanctions in case of lack of these measures on sites. • The Contractor will promptly notify the OIZ in case 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 and workers such as OHS accidents or that result in threatening community health and safety and the OIZ will immediately (not later than 48 hours) inform MoIT, and MoIT will inform the World Bank. In such cases, the OIZ will provide sufficient details regarding the incident or accident, findings of the Root Cause Analysis (RCA), indicating immediate measures taken or that are planned to be taken to address it, compensation paid, and any information provided by any contractor and supervising entity/consultant, as appropriate. The OIZ will submit the incident report, including root cause analysis, precautions and compensation measures taken, to MoIT within 30 business days. MoIT will forward the incident report to the Bank immediately upon receipt from the OIZ.	Low	Included in construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)

			• Within the scope of electrical safety, work will not be carried out other than authorized and competent persons. • Providing periodic training to the workers on OHS issues including emergency response such as firefighting and recording all provided training. • Providing appropriate type and number of fire extinguishing equipment in each working area • Machinery and equipment to be used during land preparation and construction activities will not be operated at the same point/place, but will be distributed homogeneously on the site, • Care will be taken to select equipment with low noise levels within the scope of the project, • Maintenance of construction machinery and equipment will be done regularly and periodically, • In case of complaints, noise measurements will be conducted and additional mitigation measures (such as noise barriers, etc.) will be applied if the measured values exceed the project standards. • Equipment and vehicles used externally will be regularly maintained. • "Low noise" equipment will be used as much as possible during the construction phase. Where construction equipment is provided with impermeable acoustic covers or enclosures, covers will be kept closed while the equipment is in operation. • When equipment is not working, it will be turned off or reduced to the minimum level. • Vibration levels will be monitored in case of complaints, and measures will be taken to reduce vibration if standards are exceeded. • Noise measurement will be carried out at the nearest noise-sensitive receptors in accordance with the international standard, in case of any complaints. •			
Traffic and Pedestrian Safety	Direct and indirect threats posed by construction activities against traffic and pedestrians	Low	• Traffic safety will be provided. • All vehicles to be used in transportation activities will comply with the speed limits specified in the Highway Traffic Regulation, • Traffic and warning signs will be placed around and near the project area. • The project area will be made visible. • Local people will be informed about potential hazards and risks through brochures and posters left in common areas frequently used by local people such as headman's offices, hospitals, health centres, mosques, coffee houses and marketplaces. • The activities affecting the local traffic will be planned considering the rush hours of the traffic as much as possible. • Vehicles carrying construction machinery and materials will not park outside the project area and parking lot • Setting speed limits • Protectors carrying work machines and materials must have appropriately qualified persons. • Hanging warning signs about speed limit in the Project Area • All drivers involved in the project will be informed about road safety, speed limits, and traffic rules to be followed during the project, and requirements to be observed.	Low	Included in construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)

Stakeholder Engagement	Lack of communication with the stakeholders.
	Insufficient stakeholder engagement activities and public consultation.
		Low	• Adequate timing will be planned for interaction/communication with communities and for engagement.
			• Regular public awareness and sufficient public engagement will be carried out with the authorities and communities regarding
			  • Information about current progress of the Project
			  • Implementation of project-specific Grievance Mechanism (GM)
			• Grievance mechanisms and tools other than project-specific GM implementations.
				Low	Included in construction cost	Contractor (implementation)
						Türkoğlu OIZ
						Construction Supervision Consultant (supervision/monitoring)

Grievance mechanism	Grievance Issues. Insufficient and/or ineffective grievance mechanism for the internal and external stakeholders.	Low	• An efficient Grievance mechanism will be initiated to allow potentially affected individuals to voice their concerns on the Project in accordance with the national legislation and WB ESS10. • All grievances will be collected, recorded and resolved/closed in a short period of time. • All stakeholders/grievance holders will be given feedback regarding the complaints, suggestions and requests. • Contractor will be required to establish an effective grievance mechanism working in coordination with the Project Owner.	Low	Included in construction cost	Contractor (implementation) Türkoğlu OIZ Construction Supervision Consultant (supervision/monitoring)

8.3 Mitigation Plan for the Operation Phase

Table 8.3 Additional mitigations for the Operation Phase

Issue	Potential Impact	Impact Significance Before Mitigation	Mitigation Measure	Impact Significance After Mitigation	Cost of Mitigation *(if substantial)*	Responsible Party/Parties
Physical Environment						
Air Quality: Odorous Gas Emissions	Odor problems around WWTP.	Low	• Türkoğlu OIZ will prepare and implement an Odor Management Plan that is in line with the WB ESS1 and WBG General EHS Guidelines (both general and sector specific) and the employees will be trained on the plan. • The first level measures for odor problem are as follows: ○ 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 the 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 • As a general measure: an operating grievance mechanism will be established to manage odor related grievances.	Low	Included in operation cost	Türkoğlu OIZ
Air Quality: Exhaust Emissions	Reducing air quality surrounding the Project Area, Possible health hazards due to extended exposure to high emissions in the Project Area. Increase in SO_2, PM, NO_x emissions Increase in GHG emissions (CO_2, CH_4, N_2O)	Low	• Well and adequately maintained vehicles will be used. Regular maintenance of machinery and equipment will be ensured; • Exhaust systems of the vehicles will be controlled regularly (daily and periodically); • All vehicles to be used in transportation activities will be issued an emission control stamp; • Operation phase vehicles will not be permitted to keep engines running while waiting or standing by for duty. • 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 machinery, equipment, and vehicles that are used in operation phase; • Speed restrictions will be adopted by operation phase vehicles and optimal use of operation phase equipment to optimize fuel efficiency; • Regular maintenance of operation phase vehicles and equipment will be applied; • Energy uses associated with operation phase vehicles and equipment will be monitored; • Regular maintenance of WWTP machinery, and equipment will be applied; • Energy uses associated with WWTP units and utility facilities will be monitored; • Training will be performed for project personnel regarding energy efficiency.	Low	Included in operation cost	Türkoğlu OIZ
Soil Environment: Soil Contamination	Contamination of soil, Possibility of contamination of underground waters close to the surface, Scatter/dispersion of contaminated soil due to improper handling, transferring and disposal of the contaminated soil, Improper reuse of contaminated soil as landscaping,	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. After that, the excess sludge will be sent to licensed facility (after determining its waste class	Negligible	Included in operation cost	Türkoğlu OIZ

			status by an accredited laboratory). The sludge dried in the licensed facility will be sent to cement factories as fuel.			
Water Resources: Quality Change in Water Bodies	Improving water quality of Aksu Stream	Positive	• The effluent water quality of the planned WWTP will be consistent with the limit values stipulated in the Table 19 of the Water Pollution Control Regulation, at minimum; • If the water lines will be periodically flushed to remove accumulated sediments or other impurities that have accumulated in the pipe, the water will be flushed into the municipal sewerage system. • Activities should not affect the availability of water for drinking and hygienic purposes. • No polluted substances, solid waste, toxic or hazardous substances will be stored, spilled or disposed of in water bodies for dilution or disposal. • The flow of natural waters should not be obstructed or diverted to another direction, which may lead to drying up of river beds or flooding of settlements.	Positive	Included in operation cost	Türkoğlu OIZ
Noise Control	Increase in background noise.	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 Environmental Noise Control (RENC) and WBG General EHS Guidelines and Sectorial Guidelines will be complied with during the operation phase; • If necessary nosie-control methods such as fences, barriers or deflectors will be used. 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. A grievance mechanism will be established to manage noise related grievances as well. • The work schedule will be adjusted by communicating with sensitive receptors.	Low	Included in operation cost	Türkoğlu OIZ
Resource Management	Resources used/consumed during works	Low	• Starting from the operation phase, Türkoğlu OIZ will seek assistance from 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.	Negligible	Included in operation cost	Türkoğlu OIZ
Waste and Wastewater Management: Waste Generation	Inefficient management of resources and increased amount of waste due to not separating waste and/or storing, handling or transferring wastes improperly. Possibility of increased public health hazard risks, deterioration of surface water, underground water and air quality, and/or soil contamination due to improper storage, handling and transfer of hazardous wastes, Possibility of air and/or soil pollution risk due to unauthorized burial and burning of waste on the site.	Low	• Waste Management Plan will be updated by Türkoğlu OIZ to reflect the operation phase conditions before commencement of the operation phase. Relevant measures defined for the construction phase also apply also to the 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 Türkoğlu Municipality; • Domestic waste will be collected by Türkoğlu Municipality and transferred to Kahramanmaraş Metropolitan Municipality Harmandalı Storage Facility. Other wastes generated will be given to licensed organizations within the framework of the legislation. • Incineration or burying of waste by any means on site and/or dumping of waste to nearby roads or water resources will absolutely not be in question; • 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; • 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; and • Hazardous wastes will be stored in designated impermeable waste 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.	Low	Included in operation cost	Türkoğlu OIZ
Waste and Wastewater Management: Wastewater Generation	Wastewater generation in the WWTP, Deterioration of quality in nearby water bodies due to wastes carried by waste dispersion or improper solid waste	Low	• Türkoğlu OIZ will prepare and implement monitor a Water Resources and Effluent Management Plan that is in line with WB ESS1 and WBG EHS Guidelines (both general and sector specific) should be prepared and the employees will be trained on the plan, prior to the operation phase to ensure that: • The effluent water quality of the WWTP will be consistent with Water Pollution Control	Low	Included in operation cost	Türkoğlu OIZ

	storage, handling and transfer.		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, ○ Regular inspection and maintenance should be conducted; ○ A leak detection and repair program should be implemented (including records of past leaks and unaccounted-for water to identify potential problem areas); ○ Mains having a greater potential for leaks because of their location, pressure stresses, and other risk factors should be replaced. • Machinery and equipment will be checked regularly for leaking oil and fuel; to prevent contamination of near surface water and groundwater resources during operation and maintenance activities. • Establish safe delivery/storage/handling procedures in accordance with material safety data sheets (MSDSs), • Immediately contain and cleanup any spilled material.			
Waste Management: Sludge Generation	Generation of sludge at the end of the water treatment process.	Medium	• Türkoğlu OIZ will prepare and implement a Sludge Management Plan in line with WB ESS1 and WBG General EHS Guidelines (both general and sector specific) and the employees will be trained on the plan; • The 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; • Dried sludge will be sent to nearest appropriate licensed company (after determining its waste class status by an accredited laboratory) with licensed trucks.	Low	Included in operation cost	Türkoğlu OIZ
Landscape and Visual (Aesthetics) Concerns	Creation of visual pollution.	Low	• Trees will be planted at the borders of the WWTP; • Türkoğlu OIZ should paint the visible buildings to colors suitable to the background.	Low	Included in operation cost	Türkoğlu OIZ
Socio-economic Environment						
Community Health and Safety	Community health and safety risks	Low	• The public, nearby institutions and organizations, and hospitals and schools will be informed at least two days before starting repair/maintenance works that may cause disturbance. • The grievance mechanism officer will be introduced to the local people and updated information about the grievance mechanism will continue to be provided. In case of an update in the documents, the updated information will be announced to the local people through the relevant headman's office.	Low	Included in operation cost	Türkoğlu OIZ
Labour and Working Conditions	Improper Working Conditions Child Labor, forced Labor and unregistered employment	Low	• Concluding written contracts with workers upon recruitment, including job description, working hours, wages, terms and conditions of employment and rights in accordance with national legislation and Code of Conduct • Workers will be familiar with the grievance mechanism officer and will be enabled to have access to and be aware of the Grievance mechanism. • Minimum legal labour standards will be met (child/forced labour, anti-discrimination, working hours, minimum wages) as per ILO regulations. • At the same time, national laws/ regulations and international conventions/ standards will be complied with in terms of the working conditions.	Low	Included in operation cost	Türkoğlu OIZ
Occupational Health and Safety	Inadequate workers health and safety conditions	Medium	• Prior to start operation, Occupational Health and Safety Plan will be prepared based on operational OHS risks. • Before starting work, employees will be knowledgeable about job descriptions, responsibilities, relationships with the local people, and risks that may threaten occupational health and safety. • Workers will be provided with appropriate induction, health and safety training and information. • All equipment used during the operation phase will be kept in good working condition. • Emergency Plans" will be prepared for a potential accident or emergency. Emergency teams will be formed, and drills and training programs will be carried out in line with emergency scenarios. • Employees will have a good command of emergency plans, and the grievance will be reported to the authorized teams and resolved if they require urgent action. • In case of any potential accident involving injury during the operation phase, the equipment for first aid will be kept available at the rehabilitation centre, taking into account that first aid response may be required before the casualty is referred to the nearest healthcare provider. • The OIZ formally agrees that all work will be carried out in a safe and disciplined manner and is designed to minimize risks to neighbouring residents and the environment. • All activities will be implemented in line with both the Law on Occupational Health and Safety and its relevant regulations, and also the WBG's EHS Guidelines. • Both training and incidents (fatalities, lost time incidents, outbreak of pandemic or communicable diseases, social unrest, etc.) will be recorded. • In the event of any significant incident (e.g. environmental, social, labour or lost-time incidents)	Low	Included in operation cost	Türkoğlu OIZ

			the OIZ shall inform the MoIT and WB within three business days. Then, within 30 days, a report on the root causes of the incident and the corrective actions to be taken will be presented to the MoIT and WB. • Equipment that meets international standards in terms of performance and safety will be used in the Project • The chemicals will be stored indoors by taking sealing precautions and only experienced personnel will handle chemicals, while employees will have minimal contact with them in terms of quantity and duration. • Adequate ventilation systems will be installed in all areas where chemicals are stored or used to ensure that air quality standards are maintained, and the risk of exposure is minimized. • Necessary precautions will be implemented at the working areas at height by covering ground-mounted safety railing and compliant handrail systems, lifelines, working/maintaining platforms			
Grievance mechanism	Grievance Issues. Insufficient and/or ineffective grievance mechanism for the internal and external stakeholders.	Low	• An efficient grievance mechanism will be initiated to allow potentially affected community members and employees to voice their concerns on the Project.	Low	Included in operation cost	Türkoğlu OIZ
Stakeholder Engagement	Lack of communication with the stakeholders. Insufficient stakeholder engagement activities and public consultation.	Low	• Interaction/communication will be established with communities, and adequate timing will be planned for engagement activities. Additionally, regular consultations will be carried out with the authorities and communities regarding the project management.	Low	Included in operation cost	Türkoğlu OIZ

9 ENVIRONMENTAL AND SOCIAL 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 assess the implementation of the prescribed 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 stage of the Project.

Consequently, monitoring studies will ensure the proper implementation of impact mitigation measures and optimization of environmental protection by using best practices at all stages 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 project standards, contract necessities and implementation of impact mitigation measures.

Monitoring activities are submitted in tabular form in Table 9.1, Table 9.2 and Table 9.3 for pre-construction and construction, and operation phases, respectively.

Table 9.1 Monitoring Plan for the Pre-Construction Phase

Issue	**Parameters to be monitored** **(What parameter is to be monitored?)**	**Target/Threshold Value***	**Monitoring location** **(Where the parameter is to be monitored?)**	**Monitoring Method** **(How** *is the parameter to be monitored/ type of monitoring equipment?)*	**Timing/Frequency of Monitoring** **(When** *is the parameter to be monitored- frequency of measurement or continuous?)*	**Cost of Monitoring** *(What is the cost of equipment or contractor charges to perform monitoring?)*	**Responsible Party/Parties**	**Supervision observation and comments** *to be filled out during supervision with reference to adequate measuring reports*
Air quality	Settled dust, PM_{10} and $PM_{2.5}$	Below the Project standards No air quality related grievance received	In case of a complaint, in the relevant area	Sampling/analysis via an authorized environmental laboratory Visually, on the basis of irritation of the respiratory system	Monthly starting from the initialization of pre-construction phase Upon grievance	Included in pre-construction cost	Contractor, Türkoğlu OIZ, Construction Supervision consultant	
	Maintenance and exhaust decal records of all machinery and equipment	Below the Project Standards: CO: 50 kg/h Dust: 1 kg/h NOx: (as NO_2) 4 kg/h SOx: 6 kg/h TOC: 3 kg/h	Administration office of Contractor for the follow-up of records	Maintenance records	Monthly during the pre-construction phase	Included in pre-construction cost	Contractor, Türkoğlu OIZ/PIU, Construction Supervision consultant	
Storage and usage of topsoil	Amount of stripped and reused topsoil by indicating reuse locations Storage conditions of topsoil (humidity and pile height)	No loss of topsoil	Construction site and storage areas	Visual observation Records	Once in a week starting from the initialization of pre-construction phase	Included in pre-construction cost	Contractor, Türkoğlu OIZ/PIU, Construction Supervision consultant	
Storage and usage of chemicals including fuels	Conditions of the storage area Number of leaks, spills, etc.	No chemical spill incident	Entire Project Area and chemical storage locations	Visual observation Site inspections Environmental incident registry	Once in a week starting from the initialization of pre-construction phase	Included in pre-construction cost	Contractor, Türkoğlu OIZ/PIU, Construction Supervision consultant	
Water resources	Surface water / groundwater quality analysis and measurements that include spill-related pollutants including the parameters of pH, BOD, COD, TSS, TDS, TP, TKN, nitrate, nitrite, TN, salinity, etc.	Prevention of water quality deterioration compared to current surface water and groundwater quality COD: 250 mg/L TSS: 200 mg/L Oil and grease: 20 mg/L Total Phosphorus (P): 2 mg/L Total Chrome: 2 mg/L Chrome (Cr^{+6}): 0.5 mg/L Lead (Pb): 2 mg/L Total Cyanide (CN-): 1 mg/L Cadmium (Cd): 0.1 mg/L Ferrous (Fe): 10 mg/L Fluoride (F-): 15 mg/L Copper (Cu): 3 mg/L Zinc (Zn): 5 mg/L Mercury (Hg): 0.05 mg/L Sulphate (SO_4^{-2}): 1500 mg/L	At the upstream and downstream of Aksu Stream At related water resources (wells, fountains, etc.)	Sampling and in situ / laboratory measurements via an authorized environmental laboratory Spill notices/correspondences to authorities in case of major spills	In case of a major spill In case of a leak/spill reaches water bodies	Included in pre-construction cost	Contractor, Türkoğlu OIZ/PIU, Construction Supervision consultant	

		Total Kjeldahl Nitrogen (TKN): 20 mg/L Fish Bioassay (TDF): 10 Color: 280 Pt-Co pH:6-9						
Noise	Noise levels	Not exceeding the limit values defined in Project Standards Day time (07:00-19:00): $LA_{eq,\ 5\ min.}$< 65 dB(A) Evening time (19:00-23:00): $LA_{eq,\ 5\ min.}$< 60 dB(A) Night time (23:00-07:00): $LA_{eq,\ 5\ min.}$< 55 dB(A)	In case of a complaint, in the relevant area	At least 24-hr noise measurements via an authorized environmental laboratory	Monthly starting from the initialization of pre-construction phase Upon grievance	Included in pre-construction cost	Contractor, Türkoğlu OIZ/PIU, Construction Supervision consultant	
	Number of complaints	No noise related grievance received	Administration office of Contractor for the follow-up of records	Grievance Registration	Monthly during the pre-construction phase	Included in pre-construction cost	Contractor, Türkoğlu OIZ/PIU, Construction Supervision consultant	
Waste	Type and amount of waste generated	Adhering to the TurkStat estimation of 1.13 kg/person/day waste generation Minimizing the amount of waste to be sent for disposal and implementing waste management hierarchy	Treatment plant site, storage areas	Visual inspection regarding proper collection and temporary storage of waste and records kept regarding their coordinated recycle / disposal via licensed firms Waste Records Site inspections Disposal truck register	Once in a month starting from the initialization of the pre-construction phase	Included in pre-construction cost	Contractor, Türkoğlu OIZ/PIU, Construction Supervision consultant	
Resources	Types and amounts of materials/resources used	Use of recycled materials whenever possible Reducing energy consumption	Administration office	Material/resource procurement/consumption records	Quarterly during the pre-construction phase	Included in pre-construction cost	Contractor, Türkoğlu OIZ/PIU, Construction Supervision consultant	
Infrastructure Damage	Number and nature of cases and amount of compensation paid	No infrastructure cases	Administration office	Incident records Receipts of compensation payments	Monthly during the pre-construction phase	Included in pre-construction cost	Contractor, Türkoğlu OIZ/PIU, Construction Supervision consultant	
Trespassing	Trespassing cases	No trespassing	Administration office	Security reports Visitor logs	Weekly during the pre-construction phase	Included in pre-construction cost	Contractor, Türkoğlu OIZ/PIU, Construction Supervision consultant	
	Condition of CCTV system			System checks	Daily during the pre-construction phase			
Community Health and Safety	Health and safety signs and traffic signs placed in appropriate locations, Health and Safety Plan prepared, Emergency Action Plan prepared	All cases that cause health and safety problems to be prevented Plans aim to identify hazards in advance and prevent risks	AoI	Visual observation Site inspection	Daily basis Upon grievance	Included in pre-construction cost	Contractor, Türkoğlu OIZ/PIU, Construction Supervision consultant	
Working Conditions	Workers' grievances	100 percent of satisfactorily resolved grievances within stipulated time	Project area	Grievance records	Weekly during the pre-construction phase	Included in pre-construction cost	Contractor, Türkoğlu OIZ/PIU, Construction Supervision	

							consultant	
Occupational Health and Safety	Number of incidents	No OHS incidents occurred	Construction site	Incident records	Daily basis starting from the initialization of the pre-construction phases	Included in pre-construction cost	Contractor, Türkoğlu OIZ/PIU, Construction Supervision consultant	
	Incident investigation	No OHS incidents occurred		Incident investigation records	Daily basis starting from the initialization of the pre-construction phases			
	Period of disease occurrence	No infectious disease is recorded		Disease follow-up register	Daily basis starting from the initialization of the pre-construction phases			
	Number of personnel who are infected with an infectious disease	No infectious disease occurred		Training records	Monthly during the pre-construction phase			
	Training requirements	Every training defined in the Annual ESHS is completed		Annual Environmental, Social Health, and Safety (ESHS) training plan	Annually during the pre-construction phase			
	Adequate OHS organizational structure.	1 fulltime OHS staff throughout the life of the Project		Site implementation Site inspection	Quarterly during the pre-construction phase			
	Total hours worked by employee	Total hours worked should be less than 11 hours/worker/day including overtime. The total of overtime working hours cannot exceed 270 hours/worker/year.		Timesheets, Grievance records	Monthly, yearly			
Protecting the Workforce	Age of candidate employee	No case of child labor	Administration office and Project area	Age verification with National ID	Before each recruitment	Included in pre-construction cost	Contractor, Türkoğlu OIZ/PIU, Construction Supervision consultant	
Workers Engaged by Third Parties and the Supply Chain	Contractor and sub-contractor agreements	No nonconformity is observed with the ESMP	Administration office	Contract reviews by ESHS expert(s)	Before each agreement made	Included in pre-construction cost	Contractor, Türkoğlu OIZ/PIU, Construction Supervision consultant	
Gender Based Violence (GBV), Sexual Exploitation Abuse / Sexual Harassment (SEA/SH)	GBV and SEA/SH related incidents GM, GBV, SEA/SH trainings	No GBV and SEA/SH related issues	Administration office and Project area	Document review Review of grievance logs Training logs	Quarterly Upon relevant grievances	Included in pre-construction cost	Contractor, Türkoğlu OIZ/PIU, Construction Supervision consultant	

**In cases where the Turkish requirements differ from the levels and measures presented in the WBG's EHS Guidelines, the more stringent one (such as the most stringent discharge and emission standards) will be applied in the project specifications.*

Table 9.2 Monitoring Plan for the Construction Phase

Issue	**Parameters to be monitored** **(What parameter is to be monitored?)**	**Target/Threshold Value***	**Monitoring location** **(Where the parameter is to be monitored?)**	**Monitoring Method** **(How** *is the parameter to be monitored/ type of monitoring equipment?)*	**Timing/Frequency of Monitoring** **(When** *is the parameter to be monitored- frequency of measurement or continuous?)*	**Cost of Monitoring** *(What is the cost of equipment or contractor charges to perform monitoring?)*	**Responsible Party/Parties**
Air quality	Settled dust, PM_{10} and $PM_{2.5}$	Below the Project Standards No air quality related grievance received	In case of a complaint, in the relevant area	Sampling/analysis via an authorized environmental laboratory Visually, on the basis of irritation of the respiratory system	Monthly starting from the initialization of construction phase Upon grievance	Included in construction cost	Contractor, Türkoğlu OIZ Construction Supervision consultant
	Maintenance and exhaust decal records of all machinery and equipment	Below the Project Standards: CO: 50 kg/h Dust: 1 kg/h NOx: (as NO_2) 4 kg/h SOx: 6 kg/h TOC: 3 kg/h	Administration office of Contractor for the follow-up of records	Maintenance records	Quarterly during the construction phase	Included in construction cost	Contractor, Türkoğlu OIZ Construction Supervision consultant
Soil contamination	Amount of contaminated soil	No soil contamination resulting from project activities	Project Area	Visual observation	After each incident	Included in construction cost	Contractor, Türkoğlu OIZ Construction Supervision consultant
Storage and usage of chemicals including fuels	Conditions of the storage area Number of leaks, spills, etc.	No chemical spill incident	Entire Project Area and chemical storage locations	Visual observation Site inspections Environmental incident registry	Once in a week starting from the initialization of construction phase	Included in construction cost	Contractor, Türkoğlu OIZ, Construction Supervision consultant
Storage and use of excavation waste	Amount of refilled, stored and disposed excavation materials	Proper management of excavation wastes	Construction site and storage areas	Visual observation Records	Once in a week starting from the initialization of construction phase	Included in construction cost	Contractor, Türkoğlu OIZ Construction Supervision consultant
Water resources	Surface water / groundwater quality analysis and measurements that include spill-related pollutants including the parameters of pH, BOD, COD, TSS, TDS, TP, TKN, nitrate, nitrite, TN, salinity, etc.	Prevention of water quality deterioration compared to current surface water and groundwater quality COD: 250 mg/L TSS: 200 mg/L Oil and grease: 20 mg/L Total Phosphorus (P): 2 mg/L Total Chrome: 2 mg/L Chrome (Cr^{+6}): 0.5 mg/L Lead (Pb): 2 mg/L Total Cyanide (CN-): 1 mg/L Cadmium (Cd): 0.1 mg/L Ferrous (Fe): 10 mg/L Fluoride (F-): 15 mg/L Copper (Cu): 3 mg/L Zinc (Zn): 5 mg/L Mercury (Hg): 0.05 mg/L Sulphate (SO_4^{-2}): 1500 mg/L	At the upstream and downstream of Aksu Stream At related water resources (wells, fountains, etc.)	Sampling and in situ / laboratory measurements via an authorized environmental laboratory Spill notices/correspondences to authorities in case of major spills	In case of a major spill In case of a leak/spill reaches water bodies	Included in construction cost	Contractor, Türkoğlu OIZ, Construction Supervision consultant

Issue	Parameters to be monitored (What parameter is to be monitored?)	Target/Threshold Value*	Monitoring location (Where the parameter is to be monitored?)	Monitoring Method (**How** *is the parameter to be monitored/ type of monitoring equipment?)*	Timing/Frequency of Monitoring (**When** *is the parameter to be monitored- frequency of measurement or continuous?)*	Cost of Monitoring *(What is the cost of equipment or contractor charges to perform monitoring?)*	Responsible Party/Parties
		Total Kjeldahl Nitrogen (TKN): 20 mg/L Fish Bioassay (TDF): 10 Color: 280 Pt-Co pH:6-9					
Noise	Noise levels	Not exceeding the limit values defined in Project Standards: Receptor: Industrial, commercial: Day time (07:00-19:00): $LA_{eq,\ 5\ min.}$< 65 dB(A) Evening time (19:00-23:00): $LA_{eq,\ 5\ min.}$< 60 dB(A) Night time (23:00-07:00): $LA_{eq,\ 5\ min.}$< 55 dB(A)	In case of a complaint, in the relevant area	At least 24-hr noise measurements via an authorized environmental laboratory	Monthly starting from the initialization of construction phase Upon grievance	Included in construction cost	Contractor, Türkoğlu OIZ, Construction Supervision consultant
	Number of complaints	No noise related grievance received	Administration office of Contractor for the follow-up of records	Grievance Registration	Quarterly during the construction phase	Included in construction cost	Contractor, Türkoğlu OIZ, Construction Supervision consultant
Waste	Type and amount of waste generated	Adhering to the TurkStat estimation of 1.13 kg/person/day waste generation Minimizing the amount of waste to be sent for disposal and implementing waste management hierarchy	Treatment plant site, storage areas	Visual inspection regarding proper collection and temporary storage of waste and records kept regarding their coordinated recycle / disposal via licensed firms Waste Records Site inspections Disposal truck register	Once in a month starting from the initialization of the construction phase	Included in construction cost	Contractor, Türkoğlu OIZ, Construction Supervision consultant
Resources	Types and amounts of materials/resources used	Use of recycled materials whenever possible Reducing energy consumption	Administration office	Material/resource procurement/consumption records	Quarterly during the construction phase	Included in construction cost	Contractor, Türkoğlu OIZ, Construction Supervision consultant
Infrastructure Damage	Number and nature of cases and amount of compensation paid	No infrastructure cases	Administration office	Incident records Receipts of compensation payments	Monthly during the construction phase	Included in construction cost	Contractor, Türkoğlu OIZ, Construction Supervision consultant
Trespassing	Trespassing cases	No trespassing	Administration office	Security reports Visitor logs	Weekly during the construction phase	Included in construction cost	Contractor, Türkoğlu OIZ, Construction Supervision consultant
	Condition of CCTV system			System checks	Daily during the construction phase		
Community Health	Health and safety signs and traffic signs placed in appropriate locations	No community health and safety incidents occurred	Project Area	Visual observation	Daily basis	Included in construction cost	Contractor,

Issue	Parameters to be monitored (What parameter is to be monitored?)	Target/Threshold Value*	Monitoring location (Where the parameter is to be monitored?)	Monitoring Method (**How** *is the parameter to be monitored/ type of monitoring equipment?)*	Timing/Frequency of Monitoring (**When** *is the parameter to be monitored- frequency of measurement or continuous?)*	Cost of Monitoring *(What is the cost of equipment or contractor charges to perform monitoring?)*	Responsible Party/Parties
and Safety	Number of Grievances, Number of incidents, Number of accidents	No community health and safety accidents occurred 100 percent of satisfactorily resolved grievances within stipulated time		Site inspection Grievance logs, Accident investigation and root cause records	Upon grievance		Türkoğlu OIZ, Construction Supervision consultant
Working Conditions	Workers' grievances Training records Recruitment documentations	All employees will be trained on OHS, GM, GBV, SEA/SH and other E&S issues. All grievances closed-out within the target timeframe.	Administration office	Grievance records Accident/incident records, On-site inspections	Weekly during the construction phase	Included in construction cost	Contractor, Türkoğlu OIZ, Construction Supervision consultant
Occupational Health and Safety	Number of incidents	No OHS incidents occurred	Construction site	Incident records	Daily basis starting from the initialization of the construction phases	Included in construction cost	Contractor, Türkoğlu OIZ Construction Supervision consultant
	Incident investigation	No OHS incidents occurred		Incident investigation records	Daily basis starting from the initialization of the construction phases		
	Period of disease occurrence	No infectious disease is recorded		Disease follow-up register	Daily basis starting from the initialization of the construction phases		
	Number of personnel who are infected with an infectious disease	No infectious disease occurred		Training records	Monthly during the construction phase		
	Training requirements	Every training defined in the Annual ESHS is completed		Annual Environmental, Social Health, and Safety (ESHS) training plan	Annually during the construction phase		
	Adequate OHS organizational structure.	1 fulltime OHS staff to be		Site implementation Site inspection	Quarterly during the construction phase		
	Total hours worked by employee	Total hours worked should be less than 11 hours The total of overtime working hours cannot exceed 270 hours in a year.		Timesheets, Grievance records	Monthly, yearly		
Protecting the Workforce	Age of candidate employee	No cases of child labor	Administration office and Project area	Age verification with National ID	Before each recruitment	Included in construction cost	Contractor, Türkoğlu OIZ Construction Supervision consultant
Workers Engaged by Third Parties and the Supply Chain	Contractor and sub-contractor agreements	No nonconformity is observed with the ESMP	Administration office	Contract reviews by ESHS expert(s)	Before each agreement made	Included in construction cost	Contractor, Türkoğlu OIZ, Construction Supervision consultant
Gender Based Violence (GBV), Sexual Exploitation Abuse / Sexual Harassment (SEA/SH)	GBV and SEA/SH related incidents Grievance records	No GBV and SEA/SH related issues Minimum 1 annual refresher training for SEA/SH and GBV	Administration office and Project area	Document review Review of grievance logs Training records	Quarterly Upon relevant grievances Yearly	Included in construction cost	Contractor, Türkoğlu OIZ, Construction Supervision consultant

**In cases where the Turkish requirements differ from the levels and measures presented in the WBG's EHS Guidelines, the more stringent one (such as the most stringent discharge and emission standards) will be applied in the project specifications.*

Table 9.3 Monitoring Plan for the Operation Phase

Issue	Parameters to be monitored (What parameter is to be monitored?)	Target/Threshold Value*	Monitoring location (Where the parameter is to be monitored?)	Monitoring Method (How *is the parameter to be monitored/ type of monitoring equipment?)*	Timing/Frequency of Monitoring (When *is the parameter to be monitored- frequency of measurement or continuous?)*	Cost of Monitoring *(What is the cost of equipment or contractor charges to perform monitoring?)*	Responsible Party/Parties
Soil and Contaminated Land	Number of spills/leaks	No soil contamination resulting from project activities	Entire construction site	Environmental incident reports	Monthly during the operation phase After each incident	Included in operation cost	Türkoğlu OIZ
	Amount of contaminated soil						
	Soil quality, including heavy metals, petroleum hydrocarbons, organic halogens			Sampling and analysis by an authorized environmental laboratory	Upon grievance		
Water quality of the receiving environment	Water quality analysis parameters including Ammonium, Oil and Grease, Biological Oxygen Demanded BOD, Dissolved Oxygen DO, Conductivity, Chemical Oxygen Demanded COD, Nitrate, pH, Total Phosphorus, TP, Ortophosphate, Total Kjeldahl Nitrogen, TKN, Total Nitrogen, TN, Floride, Manganese, Selenium, Sulphur	Prevention of water quality deterioration compared to current surface water COD: 250 mg/L TSS: 200 mg/L Oil and grease: 20 mg/L Total Phosphorus (P): 2 mg/L Total Chrome: 2 mg/L Chrome (Cr^{+6}): 0.5 mg/L Lead (Pb): 2 mg/L Total Cyanide (CN-): 1 mg/L Cadmium (Cd): 0.1 mg/L Ferrous (Fe): 10 mg/L Fluoride (F-): 15 mg/L Copper (Cu): 3 mg/L Zinc (Zn): 5 mg/L Mercury (Hg): 0.05 mg/L Sulphate (SO_4^{-2}): 1500 mg/L Total Kjeldahl Nitrogen (TKN): 20 mg/L Fish Bioassay (TDF): 10 Color: 280 Pt-Co pH:6-9	Aksu Stream	In-situ measurements and laboratory measurements and analysis via an authorized environmental laboratory Spill notices/correspondences to authorities in case of major spills	Quarterly during the operation phase	Included in operation cost	Türkoğlu OIZ
Odor	Odor Level	Limited number of grievances, resolved adequately, fast and to the satisfaction of the complainants.	Location of Grievance	Grievance records Measurement via an authorized environmental laboratory	Upon grievance	Included in operation cost	Türkoğlu OIZ
Effluent water quality	COD, TSS, Oil and grease,TP, Total Chromium, Chromium (Cr+6), Lead (Pb), Total Cyanide (CN-), Cadmium (Cd), Iron (Fe), Fluoride (F-), Copper (Cu), Zinc (Zn), Mercury (Hg), Sulphate (SO4-2), Total Kjeldahl Nitrogen (TKN), Fish Bioassay (TDF), Colour, pH	Effluent discharge compliant with the discharge standards	Discharge location	Automatic measurement for relevant parameters and laboratory analysis for others via an authorized environmental laboratory	Continuous monitoring for the detectable by automatic measurement devices Twice a month for the others (at minimum 24 samplings in a year)	Included in operation cost	Türkoğlu OIZ
Noise	Noise level	Not exceeding the limit values defined in Regulation on Environmental Noise Control and WB standards No noise related grievance received	In case of a complaint, in the relevant area	At least 24-hr noise measurements via an authorized environmental laboratory	Once in a year Upon grievance	Included in operation cost	Türkoğlu OIZ
Waste	Type and amount of waste generated including sludge	Adhering to the TurkStat estimation of 1.13 kg/person/day waste generation Minimizing the amount of waste to be sent for disposal and implement waste management hierarchy	Treatment plant site and storage areas	Visual observation Waste Records Site inspections Disposal truck register	Weekly basis starting from the initialization of the operation phase of the Project	Included in operation cost	Türkoğlu OIZ

Issue	Parameters to be monitored (What parameter is to be monitored?)	Target/Threshold Value*	Monitoring location (Where the parameter is to be monitored?)	Monitoring Method (How *is the parameter to be monitored/ type of monitoring equipment?)*	Timing/Frequency of Monitoring (When *is the parameter to be monitored- frequency of measurement or continuous?)*	Cost of Monitoring *(What is the cost of equipment or contractor charges to perform monitoring?)*	Responsible Party/Parties
Resources	Types and amounts of materials/resources used	Use of recycled materials whenever possible Reducing energy consumption	Administration office	Material/resource procurement/consumption records	Annually starting from the initialization of operation phase	Included in operation cost	Türkoğlu OIZ
Infrastructure Damage	Number and nature of cases and amount of compensation paid	No infrastructure cases	Administration office	Incident records Receipts of compensation payments	Monthly during the operation phase	Included in operation cost	Türkoğlu OIZ
Trespassing	Trespassing cases	No trespassing	Administration office	Security reports Visitor logs	Weekly during the operation phase	Included in operation cost	Türkoğlu OIZ
	Condition of CCTV system			System checks	Daily during the operation phase		
Community Health and Safety	Health and safety signs and traffic signs placed in appropriate locations	All cases that cause health and safety problems to be prevented	Project Area	Visual observation Site inspection	Daily basis Upon grievance	Included in operation cost	Türkoğlu OIZ
Working Conditions	Workers' grievances	Proper management of provisions given in ESMP	Administration office	Grievance records	Weekly during the operation phase	Included in operation cost	Türkoğlu OIZ
Occupational Health and Safety	Number of incidents	No OHS incidents occurred	Administration office	Incident records	Daily basis starting from the initialization of operation phase	Included in operation cost	Türkoğlu OIZ
	Incident investigation	No OHS incidents occurred		Incident investigation records	Daily basis starting from the initialization of operation phase		
	Period of disease occurrence	No infectious disease is recorded		Disease follow-up register	Daily basis starting from the initialization of operation phase		
	Number of personnel who are infected with an infectious disease	No infectious disease is occurred		Training records	Monthly during the operation phase		
	Training requirements	Every training defined in the Annual ESHS is completed		Annual ESHS training plan	Annually during the operation phase		
	Total hours worked by employee	Total hours worked should be less than 11 hours/worker/day The total of overtime working hours cannot exceed 270 hours in a year.	Administration office	Timesheets, Grievance records	Monthly, yearly		
Protecting the Workforce	Age of candidate employee	No case of child labor	Administration office	Age verification with National ID	Before each recruitment	Included in operation cost	Türkoğlu OIZ
Gender Based Violence (GBV), Sexual Exploitation Abuse / Sexual Harassment	GBV and SEA/SH related incidents Grievance recordas	No GBV and SEA/SH related issues Minimum 1 annual refresher training for SEA/SH and GBV	Administration office	Document review Review of grievance logs Training records	Quarterly Upon relevant grievances Yearly	Included in operation cost	Türkoğlu OIZ

Issue	Parameters to be monitored (What parameter is to be monitored?)	Target/Threshold Value*	Monitoring location (Where the parameter is to be monitored?)	Monitoring Method (How *is the parameter to be monitored/ type of monitoring equipment?)*	Timing/Frequency of Monitoring (When *is the parameter to be monitored- frequency of measurement or continuous?)*	Cost of Monitoring *(What is the cost of equipment or contractor charges to perform monitoring?)*	Responsible Party/Parties
(SEA/SH)							

10 INSTITUTIONAL ARRANGEMENT AND TRAINING

The main responsible organization for the implementation of this ESMP is Türkoğlu OIZ. Türkoğlu OIZ/PMU does not yet have the personnel and resources to ensure the implementation of the Environmental and Social Management Plan (ESMP), which covers all stages of the Project and consists of management plans on different issues. A PMU will be established to carry out operational and administrative tasks. The PMU staff will be the Türkoğlu OIZ's own staff.

E&S team having a minimum 5 years' experience in implementation of Environmental and Social Management Plan during construction and operation of the Project will be deployed. Besides, on different phases of the Project, various parties (contractors, Construction Supervision Team, Ministry of Industry and Technology (MoIT), etc.) will take responsibility for various works in the scope of the ESMP. All mentioned works will be coordinated by the Türkoğlu OIZ. 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 can show-up.
- Additional management plans (have been listed in Table 2).

10.1 Roles and Responsibilities

The entire Project will be financed by the WB. MoIT is the Borrower of the loan, serving as a Financial Intermediary to Türkoğlu OIZ. Türkoğlu OIZ will be responsible for the implementation of the Project at the local level.

The final ESMP will be made available to the public in both Türkoğlu OIZ's and MoIT's web site prior to any activity on site. MoIT Project Implementation Unit (PIU) will include an environmental specialist, a social expert and an OHS specialist to supervise the implementation of the ESMP. The specialist will supervise the implementation of the ESMP by Türkoğlu OIZ and document performance, recommendations and any further actions required. He/she will provide guidance to Türkoğlu OIZ officials on WB procedures, consultation and disclosure requirements. In addition, Türkoğlu OIZ will inform MoIT and WB on any project changes or unforeseen circumstances in the approved project documents.

Türkoğlu OIZ 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, Türkoğlu OIZ holds ultimate responsibility for the environmental and social performance of the overall Project, including the performance of its contractors and any other contractors. A PMU will be established to carry out operational and administrative tasks. The PMU staff will be the Türkoğlu OIZ's own staff.

The parties responsible for the monitoring progress are contractor, supervision consultant and Türkoğlu OIZ/PIU during the construction phase, while only Türkoğlu OIZ/PMU is responsible for monitoring progress during the operation phase of the Project. Depending on the monitoring plan, the Contractor will prepare monthly Environmental and Social Monitoring Reports (ESMRs) to be submitted to Türkoğlu OIZ; whereas Türkoğlu OIZ will review and submit ESMRs to MoIT monthly. Environmental engineer/expert will appoint a representative on site to lead the development of this ESMP and its onsite implementation.

Regarding implementation of the ESMP, a team (project management unit) to be established by the OIZ management will be specified to include team members detailed as follows and indicated in the below chart.

Project Coordinator

- Overall responsibility for the ESMP implementation,

Project Manager

- Ensure that ESMP provisions are implemented to mitigate environmental (including OHS) and social impacts,
- Ensure that all workers participate in training sessions on ESMP. Maintain a record of training and conduct of awareness sessions for staff to ensure compliance with environmental and safety commitments stated in ESMP,
- Prepare monthly environmental and social monitoring reports for submission to MoIT PIU.

Environmental Specialist

- Ensure that the environmental management systems of the project comply with the ESMP,
- Monitor the environmental impacts and risks of the construction activities on site.

Social Specialist

- Adopt and implement Stakeholder Engagement Plan (SEP),
- Establish an easily accessible public and workers' grievance mechanism,
- Manage and ensure effective operationalization of the GM,
- Record grievances,
- Disclosure to complainant,
- Monitor the social impacts and risks of the construction activities on site.

OHS Specialist

- Ensure that implementation and supervision of Occupational Health and Safety Management Plan,
- Preparedness and response to emergency situations according to Emergency Response Plan
- Notify MoIT PIU immediately about any contingencies such as labor issues, accidents and incidents. The incident report including root cause analysis, precautions and compensation measures taken, will be shared with MoIT PIU in 30 business days.

Technical Specialist

- Responsible for the project design,
- Coordinating the actions and evaluations in case of a change due to engineering/design changes.

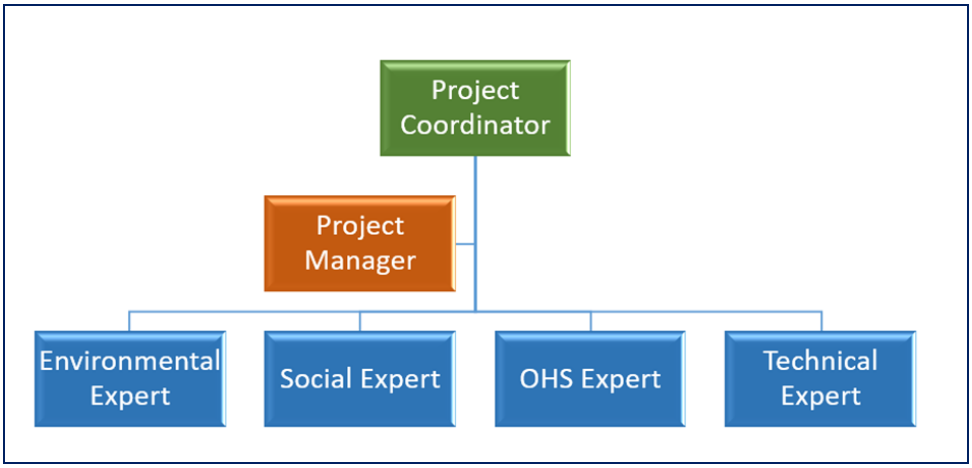

Figure 10.1 Organizational Chart of Project Management Unit (PMU)

A table defining the responsibilities for the MoIT PIU, OIZ PMU, E&S consultant, construction supervision Consultant and contractor is given below. The roles and responsibilities of the relevant institutions which are involved in the management, monitoring, implementation and finalization of the Project in line with both national and WB ESF requirements are summarized in the table below.

Table 10.1 Parties Responsible for the Management of the Project in Accordance with World Bank ESF Requirements

Institution	Responsibilities
MoIT Project Implementation Unit (PIU)	• Providing guidance to OIZ and the consultant that is responsible for preparation of this ESMP and SEP considering WB's requirements (standards, guidelines and procedures), • Reviewing the documents related to the environmental and social assessment of the project, provide comments/revisions to the consultant in order to develop (performing overall quality assurance) the E&S documents, • Guiding OIZ and the consultant on stakeholder consultation and announcement requirements within the scope of this ESMP, • Following of monitoring activities such as the implementation of this ESMP, other environmental and social mitigation measures, grievance process and Main Project's Labor Management Procedures (LMP), • Auditing the OIZ's ESMP practices and giving feedback on its performance, and further actions to be taken within the overall project audit, • Being open and responsive to concerns raised by affected groups and local environmental authorities regarding environmental aspects of sub-project implementation. Meet with these groups during site visits, as necessary, • In case of necessity, providing coordination and communication regarding the field visits • To provide GM, GBV, SEA/SH training to the contractor, construction supervision consultant and OIZ PMU specialists before the construction activities
OIZ Project Management Unit (PMU)	• Assigning/hiring one environmental expert, one social expert and one OHS specialist with sufficient qualifications and skills • Implementation of this ESMP and related management plans and achieving of all commitments under these plans. Checking both the technical and administrative progress of contract packages and • Providing support to implementation of the mitigation measures and commitments given in the ESMP and SEP on site • Sharing the ESMP with the Contractor and Construction Supervision Consultant, • Guiding the Contractor in preparing and approving the sub-management plans including contractor's Labour Managemet Plan, • Coordinating the actions and evaluations in case of a change due to engineering/design changes, route/location changes, legislative changes related to environmental and social issues, authorization provision changes, new environmental/social data, construction/operation strategy

Institution	Responsibilities
	changes. • Updating the ESMP when necessary and sharing additional commitments with the Contractor, • Informing MoIT PIU via ***monthly ES Monitoring Reports*** which will be prepared in line with ESMF and submitted by the consultant and contractor, • Auditing contractor activities in line with ESMP requirements, • Ensuring compliance with project standards, taking urgent action in case of non-compliance within the knowledge and approval of MoIT PIU, • To provide GM, GBV, SEA/SH training to the project personnel before construction activities • Suspending work in any situation that threatens environment and community and occupational health and safety and informing MoIT PIU, • Analyzing and following-up the environmental (including OHS) and social accidents/incidents. *Specifically, for any significant environmental or social incidents (e.g. fatalities, lost time incidents, environmental spills etc.), the OIZs will inform MoIT PIU in 3 business days,* • Notifying MoIT PIU immediately about any contingencies such as environmental, social and labor issues or accidents, incidents or loss of time that has or is likely to have a significant adverse impact on the environment, affected communities, the public or workers. The incident report including root cause analysis, precautions and compensation measures taken, will be submitted to MoIT in 30 business days, • GM, GBV, Code of Conduct, SEA/SH training will be given to OIZ PMU (in case of change of personnel in the PMU team), Supervision Consultant and Contractor's personnel and training records will be kept
E&S Consultant	• Preparation and finalizing this ESMP and the SEP as per the concerns/opinions of the stakeholders of the Project for the approval of MoIT PIU and WB, • Supporting the PIU to organize and carry out the stakeholder consultation meeting for the draft version of this ESMP and SEP, • Organizing and delivering a training to the respective OIZ PMU on ESMP implementations, GM, GBV, SEA/SH trainings and commitments, which covers project related environmental and social impacts and risks, and corresponding measures applied to avoid, reduce, and mitigate the risks and potential adverse impacts, roles and responsibilities assigned to the relevant party, monitoring plan and reporting process prior to the construction activities are commenced.
Construction Supervision Consultant	• Supervision of construction and/or rehabilitation works and installation of equipment, • Identification and management of risks and impacts related to environmental, social and OHS issues, • Ensuring initiation of corrective actions where necessary, ensuring implementation of mitigation measures by the contractor, and sufficient capacity in the team (at least one Social Expert, one Environmental Expert and one full-time OHS Expert) to perform E&S supervision effectively within the scope of this ESMP and SEP in accordance with the WB requirements, • The E&S Team will be responsible for taking actions required to eliminate/minimize environmental and social impacts and risks in line with this ESMP and for putting monitoring plans into practice, • Preparing the bidding documents during the implementation, conducting bidding processes. *The requirements of the WB and the Construction Contract including this ESMP, SEP and LMP will be chased and cooperating with the MoIT PIU for the supervision of construction activities,* • Follow up and audit the contractor's activities on a daily basis in line with the measures and commitments given in this ESMP and associated managements plans and documentation, • Ensuring and monthly reporting the E&S performance of the contractor to the OIZ PMU, • Using the contractual authority and notifying MoIT PIU and the OIZ PMU on time If any non-compliances are encountered, • Monitoring and evaluating the performance of the services provided by the Contractor, • Providing guidance to the OIZ PMU and contractor on the WB's requirements (documents and procedures), • Non-conformities found during audits will be prioritized and managed according to the severitiy of the case • Follow up the penalties arising from the contract, checking the suitability of the work done by the Contractor, giving warnings and directions, and notifying the OIZ PMU in a timely manner if

Institution	Responsibilities
	necessary.
Contractor	• Fulfillment of all requirements of ESMP and the relevant management plans, • Implementation of additional commitments to be included in the Construction Contract, • Preparation of its site-specific sub-management plans (mentioned above in the relevant sections and the mitigation measures Tables) in line with this ESMP (including OHS plans) and SEP before construction, as part of their method statement and submit to the OIZ PMU and MoIT PIU for reviewing and approval, • Contractor's OHS specialist is responsible for OHS plan and risk assessments, • Ensuring compliance with project standards, obtaining all relevant permits and licenses, • Implementing of the mitigation measures provided in this ESMP and monitoring of construction activities (including subcontractor activities) in compliance with the national legislation and WB standards, • Development of monitoring plans/procedures in accordance with the ESMP structure, implementation after the approval of OIZ and MoIT PIU, • Employment of competent Environmental andSocial and OHS Experts (at least one Social Expert, one Environmental Expert and one full-time OHS Expert) within the scope of the project, • Training its own and subcontractor's staff on environmental, social and OHS issues, • Carrying out the environmental and social audits to monitor the ESMP practices on site and report on this to the supervision Consultant, • Submission of Environmental and Social Progress Reports (ESPRs) on environmental and social issues, mitigation, results and findings throughout the construction period to the Consultant and OIZ PMU, • Notifying immediately of the contingencies such as environmental, social and labor issues or accidents, incidents or loss of time to construction supervision consultant and OIZ PMU and keeping an event log on site throughout the life of the Project. The incident report including root cause analysis and the corrective actions to be taken will be submitted to construction supervision consultant and OIZ PMU within 30 days, • On the basis of the project's Labor Management Procedures, the Labor Management Plan which will be prepared by the contractor will also comply with the Labor Legislation (4857 Labor Law), Occupational Health and Safety Plan and Procedures (6331 Occupational Health and Safety Law) and 5510 Social Insurance Law. • Contractor will develop its own LM Plan. This plan encompasses various provisions, including the assurance that workers will be provided with written contracts detailing job descriptions, working hours, wages, rights and duties descriptions, and a Code of Conduct, among other aspects. • Developing and implementing Labour Management Plan (based on Project's LMP) including working conditions, fair treatment, non-discrimination, equal opportunity, vulnerable/disadvantaged workers, GBV, SEA/SH, prevention of child labor and forced labor issues under the project's Labor and Employment Policy for construction phase. • Establishment and implementation of project specific grievance mechanism for the Project construction activities in coordination with OIZ PMU.

10.2 Reporting

Reporting process that should be followed during the implementation phase of the project is an important tool to record and chase project activities in compliance with the national and WB standards. Therefore, the requirements of such processes are presented in Table 10.2.

Table 10.2 Requirements of Such Processes

Responsible Party	Roles & Responsibility
MoIT Project Implementation Unit (PIU)	• Quarterly inform the WB with Environmental and Social Reports (ESRs) to include summary of Environmental and Social Monitoring Reports (ESMRs) on the progress and updates. Quarterly ESRs will highlight any issues arising from non-compliance with ES requirements in the ESMP and how it has been/is being addressed from the ESF requirements point of

	view. • Submitting the quarterly Grievance Mechanism Report (GMR) to WB • Site visits will be carried out quarterly and environmental and social issues will be examined on site. Findings after site visits will be included in the quarterly ESRs. • GM, GBV, SEA/SH training will be given to OIZ PMU, Supervision Consultant and Contractor's Environmental and Social Specialists and training records will be kept.
OIZ Project Management Unit (PMU)	• Review and submit monthly ESMRs to MoIT PIU • Submitting the monthly GMR to cover both Consultant's GMR and Contractor GMR to MoIT PIU • GM, GBV, SEA/SH training will be given to employees and training records will be kept.
Construction Supervision Consultant	• Prepare and submit monthly ESMR to OIZ PMU including monthly Environmental and Social Progress Report (ESPR) from the contractor. Monthly ESMRs will highlight any issues arising from non-compliance with ESMP requirements and how it has been/is being addressed from the ESF point of view. • Submit the monthly Grievance Mechanism Report to OIZ prepared in line with the complaint received and combine it with monthly the Grievance Mechanism Report prepared by the Contractor • GM, GBV, SEA/SH training will be given to employees and training records will be kept.
Contractor	• Prepare and submit monthly ESPRs covering the progress of the construction activities and environmental and social issues to the Construction Supervision Consultant • Submit the monthly GMR to Construction Supervision Consultant • GM, GBV, SEA/SH training will be given to employees and training records will be kept.

Regarding the reporting process, workflow is summarized in the chart below.

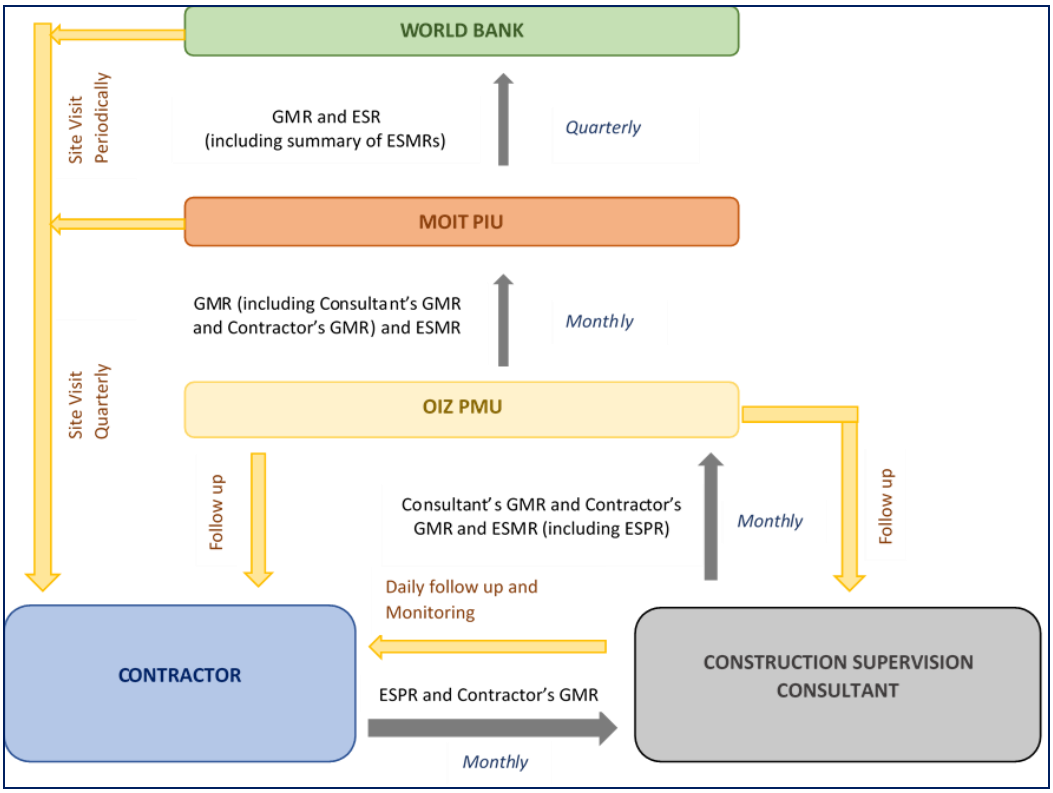

Figure 10.2 Reporting Process on ESMP Implementation

10.3 Training

One of the main necessities of the ESMP is training for the Project Owner's and contractor's top-level management and employees.

Necessary training will be given to the personnel immediately after the recruitment, and training will also be refreshed during the work period and will be conducted at a number of levels. Some short-term training is required for the Environment Expert, 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 with the help of in-house expertise of the PIU and the consultants and help of MoIT and WB. In the long-term training, special environmental and social issues will be investigated, and likely solutions provided to the PIU.

The mentioned training will take place within in maximum two (2) days. This period will be determined by considering 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 will be performed at the end of the training given to the personnel. 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 basic training 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 training including Code of Conduct, GBV & SEA/SH, GM, EHS and ESMP Requirements, and
- First-Aid and Emergency Preparedness Measures

Table 10.3 provides examples of the basic training for the ESMP implementation. The training programs will be developed annually and delivered by the PIU.

Table 10.3 Training Program

Training Topics	Responsible Party (Trainer Party)	Target Group	Duration	Time	Cost
• Overview of potential impacts and mitigation measures	PMU with support of MoIT PIU	Contractor, related authorities: On-site construction management staffs, environmental staffs of contractor, related authorities	Two (2) days of training twice a year to be repeated on a yearly basis depending on needs.	After signing the works contract	- -
• Requirements of environmental monitoring					
• Occupational Health and Safety Training					
• Role and responsibilities of the contractor					

Training Topics	Responsible Party (Trainer Party)	Target Group	Duration	Time	Cost
• 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					
• Trainings for the E&S documents	Environmental and Social Consultant	Contractor, Construction Supervision Consultant, PMU	One (1) day	Before construction	
• General environmental and social management relating to the Project	PMU	Whole personnel related to the Project.	Two (2) days of training twice a year to be repeated on a yearly basis until the end of the DLP.	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.	
• 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					
• Risk response and control					
• Other areas to be determined					
• SEA/SH and GBV training/ awareness	PMU	Whole personnel related to the Project	Two (2) days of training twice a year to be repeated on a yearly basis until the end of the DLP.	Soon after the Project effectiveness but at least one (1) month before the construction of the contract and the training will be renewed whenever a need arises. Minimum one (1) annual refresher training to be conducted after first training.	

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 mechanism developed within the scope of the project, grievance mechanism officer and employee rights,
- Community health and safety risks and measures,
- OHS, first aid, emergency preparedness,
- 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.

11 STAKEHOLDER MANAGEMENT UNDER ESMP

The project has a SEP. In this context, this section presents a brief explanation of the stakeholder engagement of the project.

11.1 Previous Stakeholder Engagement Activities

Türkoğlu OIZ Wastewater Treatment Plant is a part of Türkiye Organized Industrial Zones main project developed by MoIT. Stakeholder engagement activities carried out during the development of the main project are presented in the project's SEP. Stakeholder engagement efforts have included meetings with key stakeholders, including relevant ministries and other government agencies, OIZs, development agencies and other development partners.

ENCON, who prepared this ESMP and the SEP for the Project, is the E&S Consultant and provided necessary information to the Project Owner and took part in the organization of the stakeholder consultation meeting of the Project that was held on 4th of July 2024. In the meeting, the E&S Consultant made a presentation that provided information on project description, its potential environmental and social impacts and risks and then comments, suggestions and expectations of the stakeholders were received through a questions and answers session. The ESMP was then revised based on the inputs from the engagement activities and comments received during the meeting.

11.2 Disclosure and Consultation of the ESMP

As part of the requirements of WB ESF and ESSs, the ESMP is to be publicly disclosed and will be the responsibility of the Project Implementation Unit (PIU). The Türkoğlu OIZ will ensure that the final approved ESMP to be disclosed will be available locally at the Türkoğlu OIZ offices, places easily accessible to affected groups such as headmen's offices and local NGOs and will be published on Türkoğlu OIZ website (www.turkogluosb.org) and MoIT PIU website (yesilosb.sanayi.gov.tr). The ESMP is a dynamic document and will be reviewed, updated, and approved as necessary throughout the implementation of the Project. For each approved updated version of this ESMP, the Türkoğlu OIZ and the firm will be responsible for disclosure through the communication channels.

11.3 Stakeholder Consultation

Stakeholder consultation meeting of the Project was held on 4th of July 2024. Türkoğlu OIZ-Meeting Hall in Türkoğlu district of Kahramanmaraş province was selected as the meeting venue. The meeting venue had enough capacity and facilities to ensure comfortable and efficient communication during the event.

Prior to stakeholder consultation meeting, several information dissemination 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 etc. In the process of announcing the stakeholder consultation meeting, announcements were published on the official website of Türkoğlu OIZ on June 11, 2024 and in the local newspaper on June 26, 2024. Newspaper announcement, Türkoğlu OSB official website to announce the meeting is given in the Annex-16.1. In addition, before the commencement of meeting, the Project information brochures were distributed to the participants. The brochure is provided also in Annex-16.1.

The meeting was attended by representatives of Türkoğlu OIZ, public authorities and ENCON (E&S Consultant), as well as local communities. Photos from the meeting are presented in Annex-16.2.

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-16.1.

A total of 24 people participated in the meeting for the Project. In accordance with the Personal Data Protection Law, the meeting list of participants will not be published and will be stored in the Project Implementation Unit archives for project management purposes only. The list of participants of the meeting held within the scope of the Project will be stored for the duration of the Project and will not be shared with third parties. 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 11.1.

Table 11.1 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* (Türkoğlu Municipality)	Will there be any odor problem in the region due to wastewater treatment and the sludge to be formed?	It will be in a situation considerably improved from the current situation, as wastewater is currently discharged to the nature without treatment. During the treatment of wastewater at the planned WWTP, the facility will be monitored according to both operational and quality parameters, and the processes will be monitored by the Ministry of Environment, Urbanization and Climate Change as it is subject to environmental permit. Waste sludge will also be removed from the site in certain periods. In case of any problems, including odor, stakeholders will be able to express their suggestions and complaints through the channels provided in this meeting. Türkoğlu OIZ will pay the necessary attention in the operation of the WWTP and there will be no odor problem with proper operation. All measures, including odor barriers, have been considered in case of need. As OIZ, we are very sensitive about this issue.
Participant 2* (Türkoğlu Municipality)	Will the treated water be used as irrigation water within the facility?	There are no recovery activities in the first 1000 m^3/day phase of the Project.
Participant 3* (Türkoğlu District Health Directorate)	We are very pleased with the Project, but the wastewater from other factories in Türkoğlu is discharged into the same stream and a very serious pollution occurs.	There are two OIZ zones declared for the region. These are Erkenez OIZ and Türkoğlu OIZ, two separate directorates. Therefore, these factories are outside the responsibility area of Türkoğlu OIZ.
Participant 4* (A facility investor located in the Türkoğlu OIZ)	The factories outside and above Türkoğlu OIZ and the Ceceli neighborhood have treatment problems. A WWTP with a larger capacity needs to be built in the region. This planning can be done in a larger area in the Gavur Lake region. Is there any possibility of taking these wastewaters to the planned wastewater treatment plant?	There is no possibility of expropriation and construction in the Gavur Lake region. The Project design is made for WWTP with a wastewater treatment capacity of 1000 m^3/day, the requested issue will not be in question. In addition, the mentioned activity is outside the responsibility area of Türkoğlu OIZ. MoIT Authorities informed that MoIT can fund the WWTP needs of OIZs and that the mentioned WWTP investment is outside their area of responsibility. Those kind of demand can be consider as inputs for another project.
Participant 5* (A facility investor located in the Türkoğlu OIZ)	What is the exact location of the discharge point and will the location shown on the map in the presentation be changed?	Regarding the location of the discharge point, the location was determined and approved according to the opinion received from the General Directorate of Highways and the General Directorate of State Hydraulic Works and the location will not be changed.

Party who Raised the Question/ Issue/Concern/ Suggestion	Question/Issue/Concern/ Suggestion Raised	Response of Project Sponsors/ Environmental Consultant
Participant 6* (Türkoğlu Open Penal Institution)	What are the security measures during the construction of the Project as there are prisoners in the semi-open prison. Will there be a risk for the prison?	The locations of the Project site and the prison are at opposite sides and there is no such security risk due to their distance from each other.
Participant 7* (Press)	The Minister of Environment, Urbanization and Climate Change will visit the region and construction of the second 1000 m^3/day phase of the Project may be requested from him.	At this stage, the WWTP with a capacity of 1000 m^3/day is sufficient. There is no need for such a request at this time.

**The participation's name is not given because of the Law on Protection of Personal Data.*

11.4 Grievance Mechanism

The main aim of the grievance mechanism is to assist in resolving complaints and grievances in a timely, effective, and efficient manner that satisfies all parties involved. The GM (and also workers' GM) will be effective during the lifespan of the project. It is intended to serve as a mechanism to:

- Allow identification and impartial, timely and effective resolution of issues affecting the project,
- Strengthen accountability of the beneficiaries, including project-affected stakeholders, and
- Provide channels for the stakeholders to provide feedback and raise concerns.
- Offer a consultation process that is clear, transparent, culturally sensitive, and easily accessible.
- Provide the option for anonymous complaints and feedback, particularly in cases related to Gender Based Violence (GBV), Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH).
- Recognize that grievances concerning community health, safety, and environmental risks may be urgent, especially in cases of accidents, communicable diseases, and pollution. Immediate actions must be taken to address and prevent further harm.

In addition to public GM, the ESS 2 requires the establishment of a Workers' Grievance Mechanism (WGM) for the project workers. Constitution of WGM will be under responsibility of the Contractor in accordance with its LM Plan which will be prepared in line with Project's LMP. The project workers will use the WGM to convey their concerns or suggestions regarding their working conditions and workplace.

The details such GM levels and steps of implementation on GM is presented in SEP.

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ANNEXES

ANNEX-1- EXPROPRIATION LETTER

İli	KAHRAMANMARAŞ
İlçesi	TÜRKOĞLU
Mahallesi	CECELİ
Köyü	
Sokağı	
Mevkii	

Türkiye Cumhuriyeti

TAPU SENEDİ

Fotoğraf

Satış Bedeli	Pafta No.	Ada No.	Parsel No.	Yüzölçümü ha	Yüzölçümü m²	Yüzölçümü dm²
0,00		499	15		25.671,95 m2	

GAYRİMENKULÜN

Niteliği	ARSA
Sınırı	Planındadır Zemin Sistem No : 108627597 QRKodu kullanarak taşınmazın haritasına ulaşabilirsiniz.
Edinme Sebebi	CECELİ Mah. 179 Ada 1 Parsel(10671.95m2), CECELİ Mah. 179 Ada 15 Parsel(15000.00m2) taşınmazlarının İmar (TSM) işleminden.
Sahibi	TÜRKOĞLU ORGANİZE SANAYİ BÖLGESİ Tam

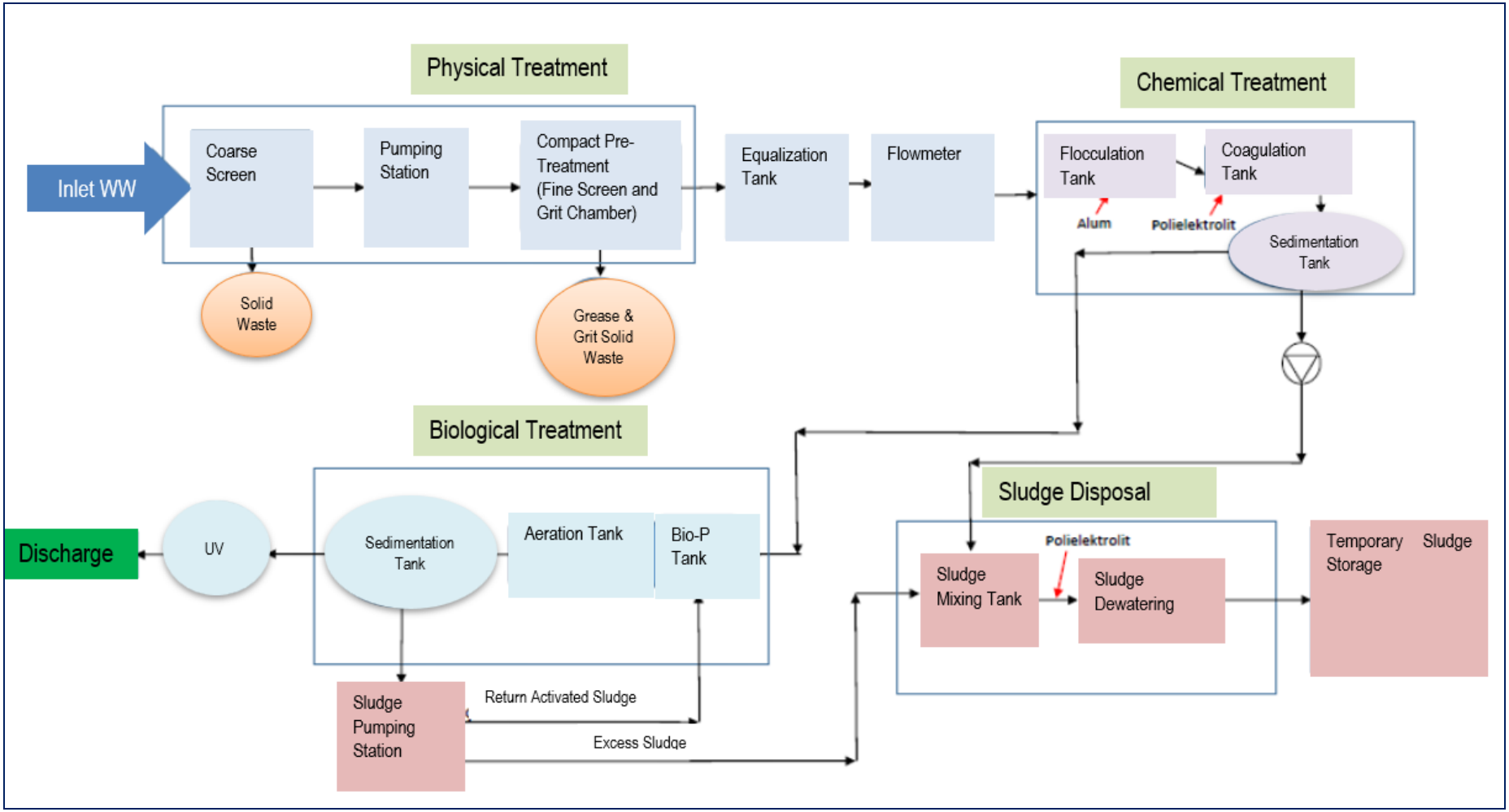
Geldisi		Yevmiye No.	Cilt No.	Sahife No.	Sıra No.	Tarihi	Gittisi	
Cilt No.		378	29	2836		20/01/2020		Cilt No.
Sahife No.								Sahife No.
Sıra No.								Sıra No.
Tarih								Tarih

Siciline Uygundur
İbrahim GÜNEŞ
Tapu Müdürü

NOT : * Mülkiyetin geyri ayni haklar ile şerhler için tapu kütüğüne müracaat edilmelidir.
** Tebligat Kanunu hükümleri gereğince adres değişikliği ilgili Tapu Sicil Müdürlüğüne bildirilecektir.

D.M.O. Basım İşl. Md. Döner Sermaye İşletmesi tarafından bastırılmıştır. Stok No 129

ANNEX-2- FLOW CHART OF WWTP



ANNEX-3- MAPS

Figure- 1 The Discharge Point and Dry Creek Bed Route (shown with orange) (Source: Kahramanmaraş - Türkoğlu OIZ WWTP E&S Screening Report, Figure 14)

Figure- 2.The Project Area Map (Source: Kahramanmaraş - Türkoğlu OIZ WWTP E&S Screening Report, Figure 4)

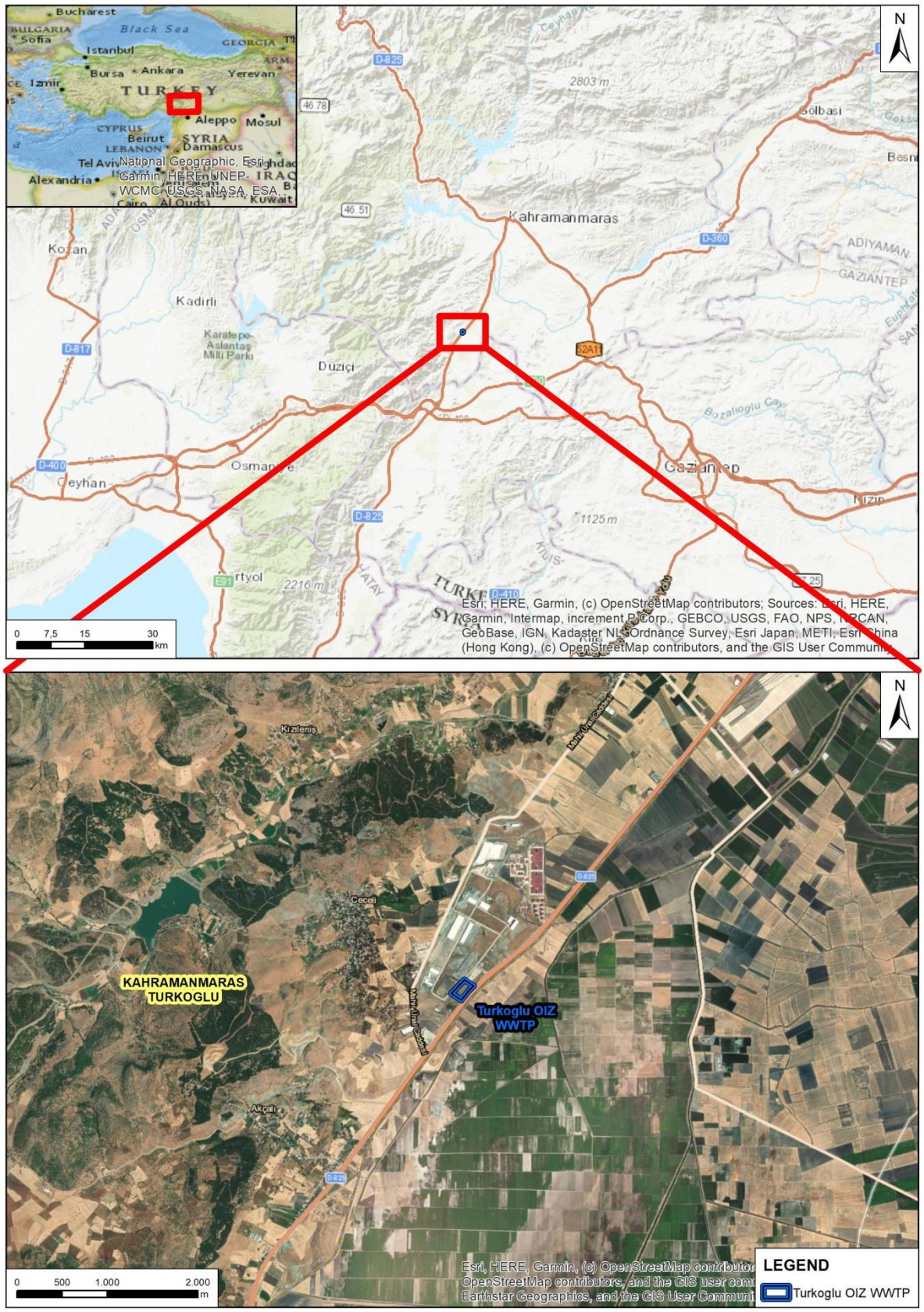


Figure- 3 Project Location

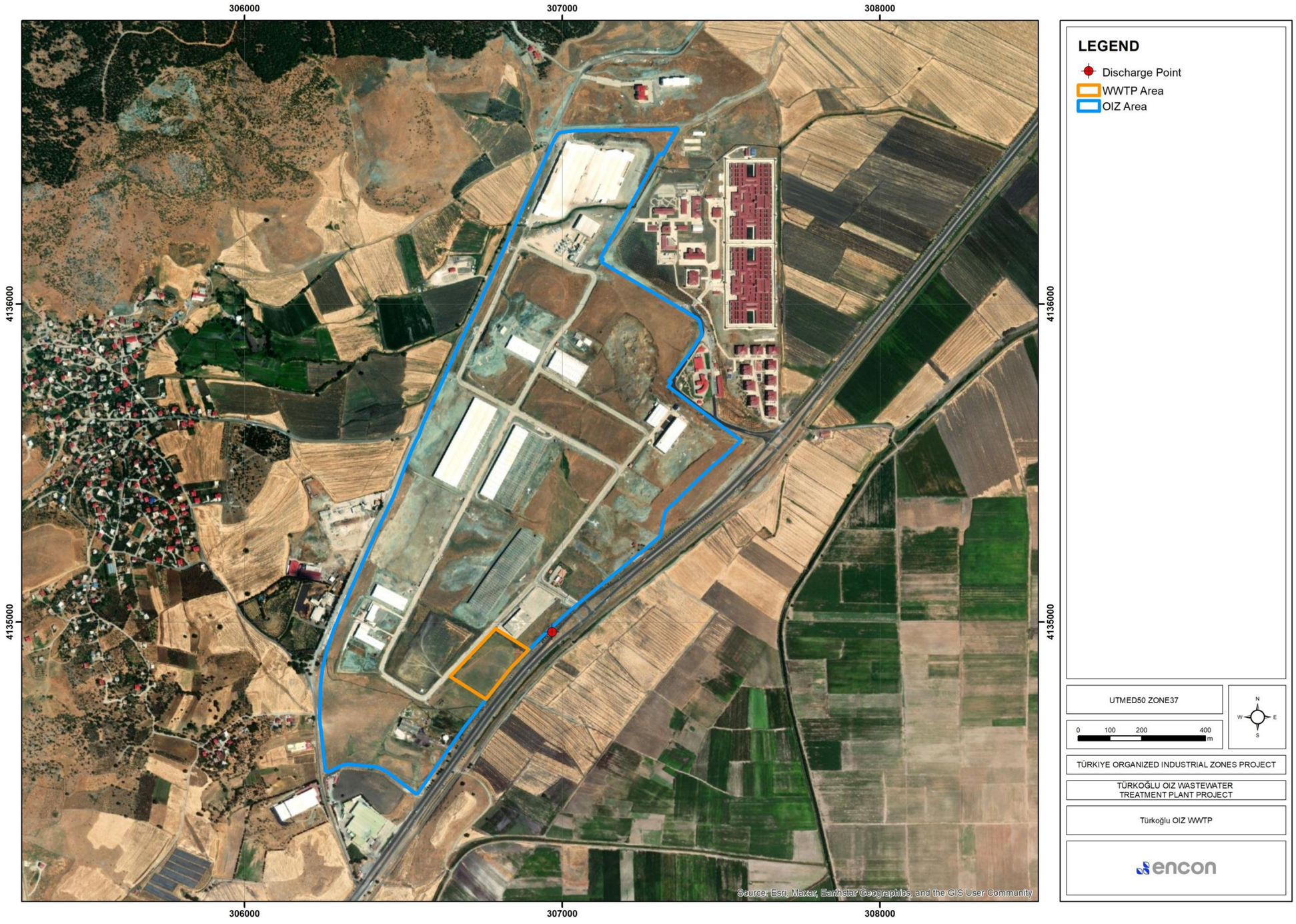


Figure- 4 Türkoğlu OIZ WWTP-

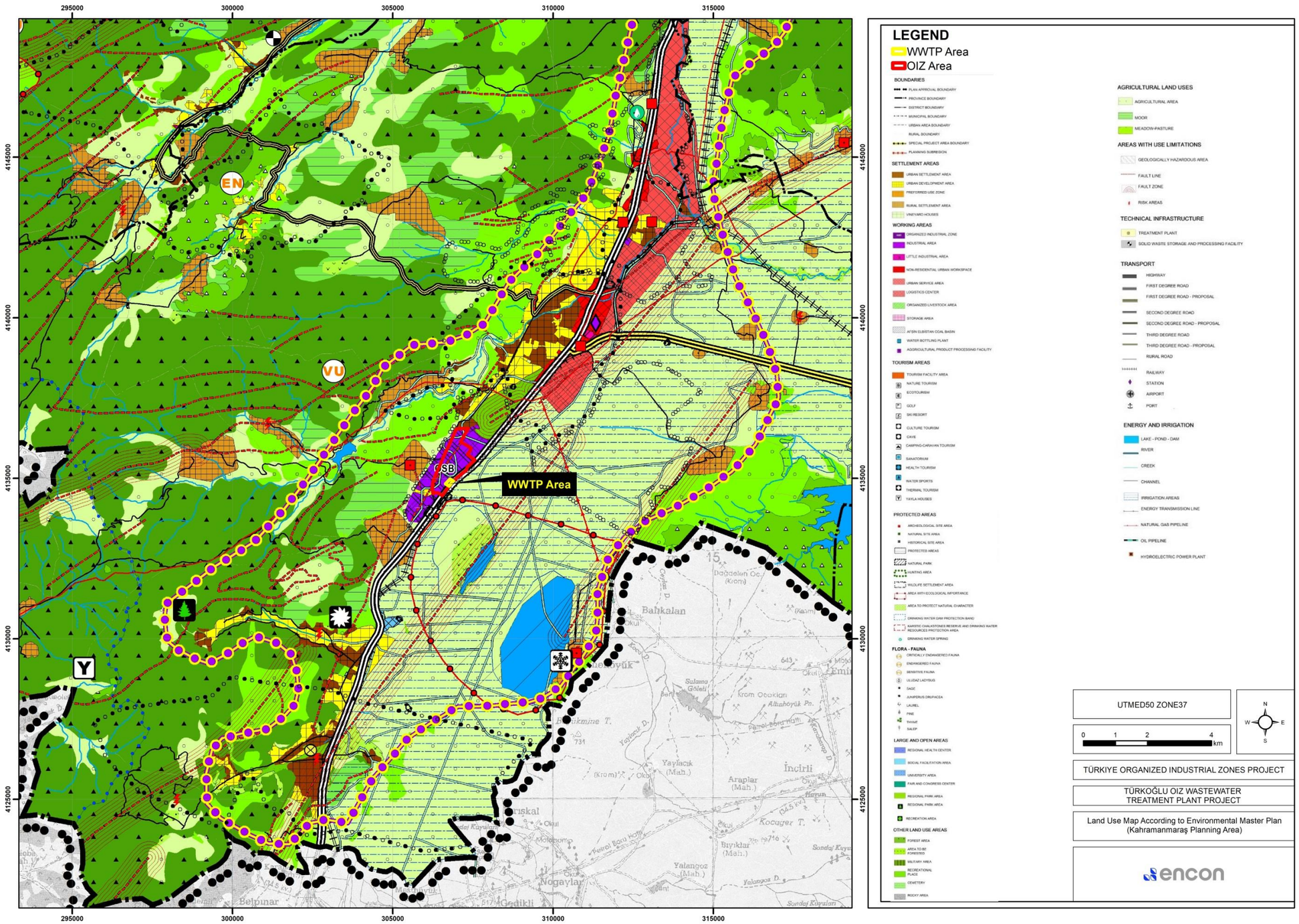


Figure- 5 Land Use Map According to Environmental Master Plan

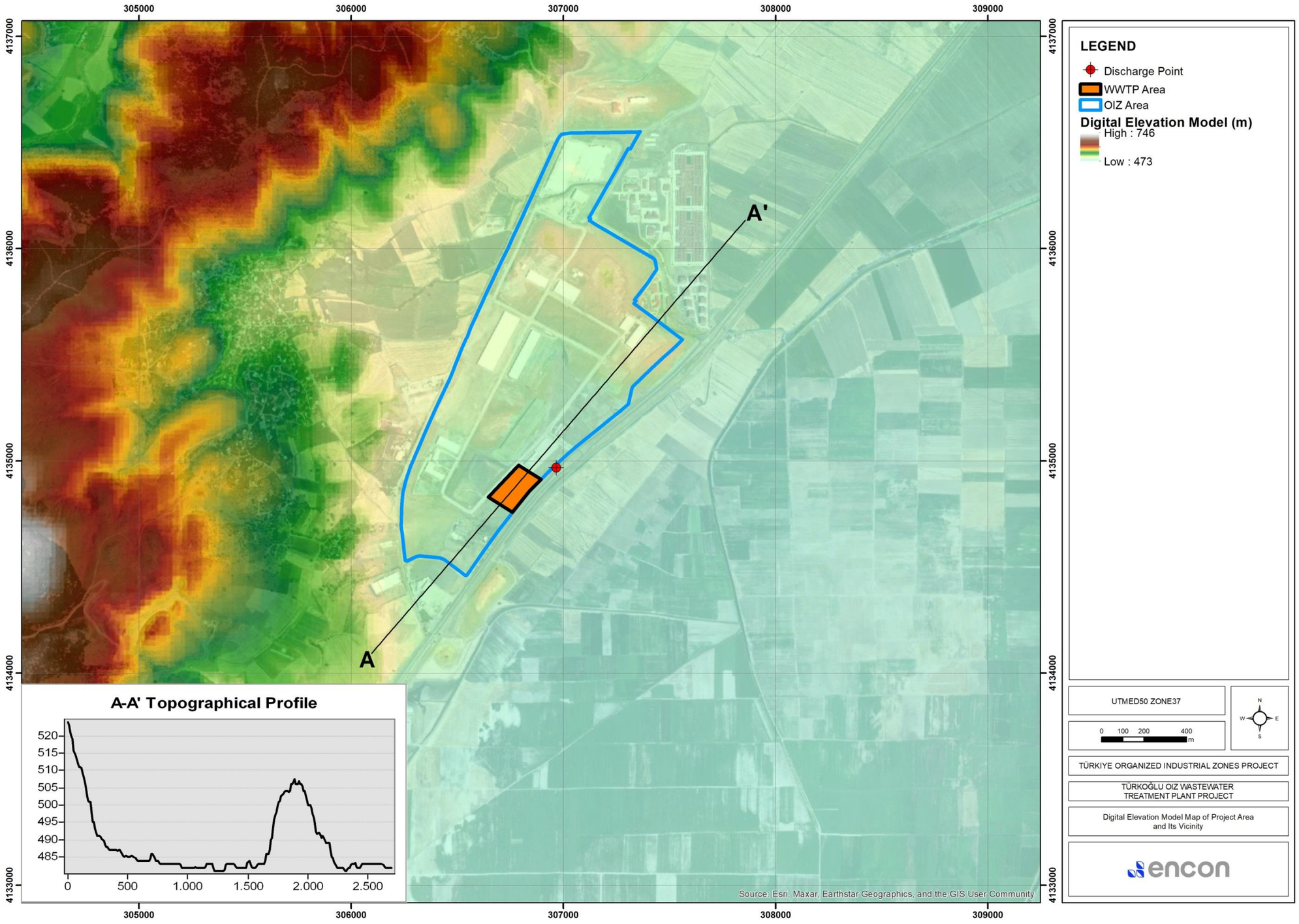


Figure- 6 DEM Map of Project Area and Its Vicinity

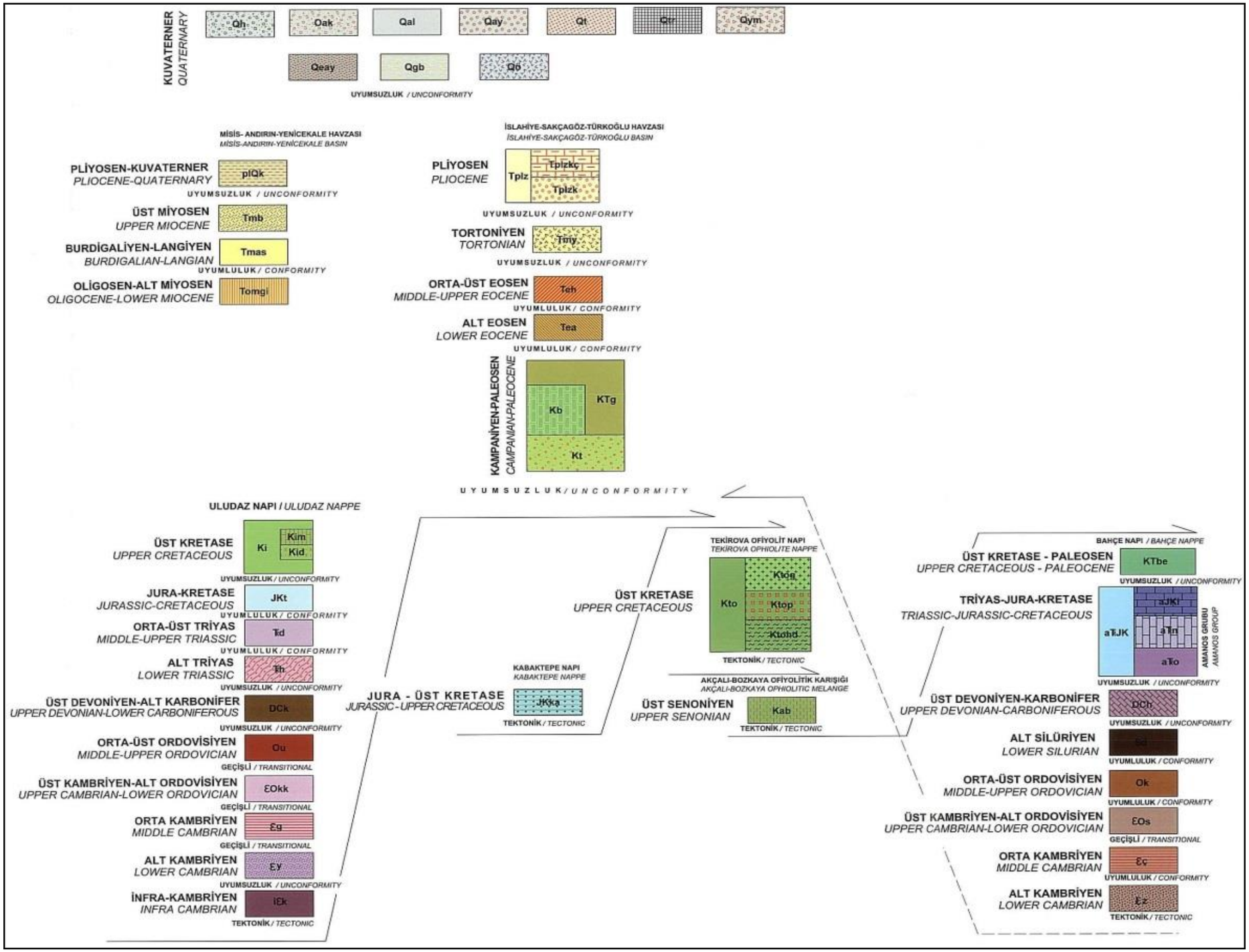


Figure- 7 Generalized Stratigraphic Column Section of the Project Area and Its Surroundings

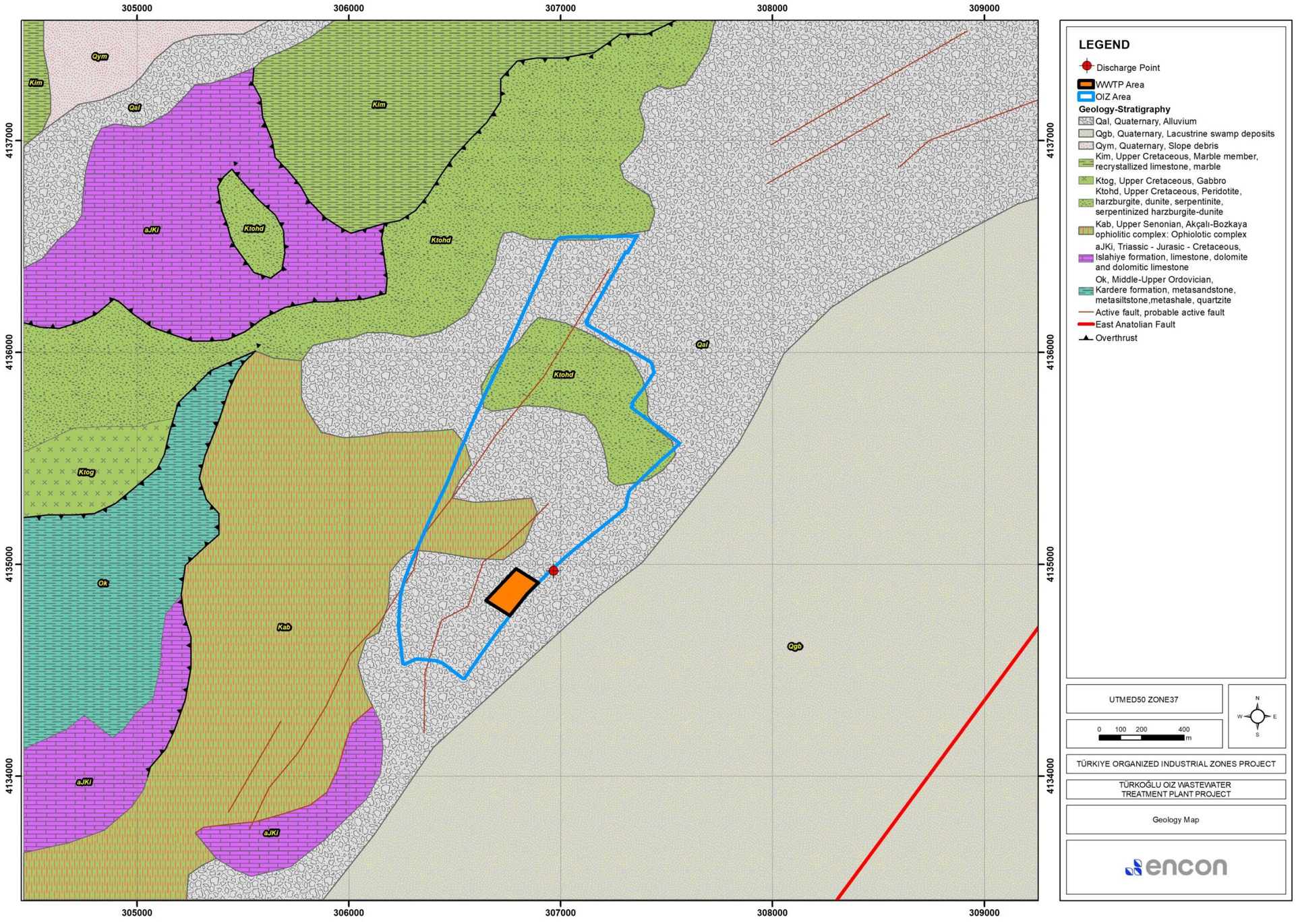


Figure- 8 Geology Map of Project Area

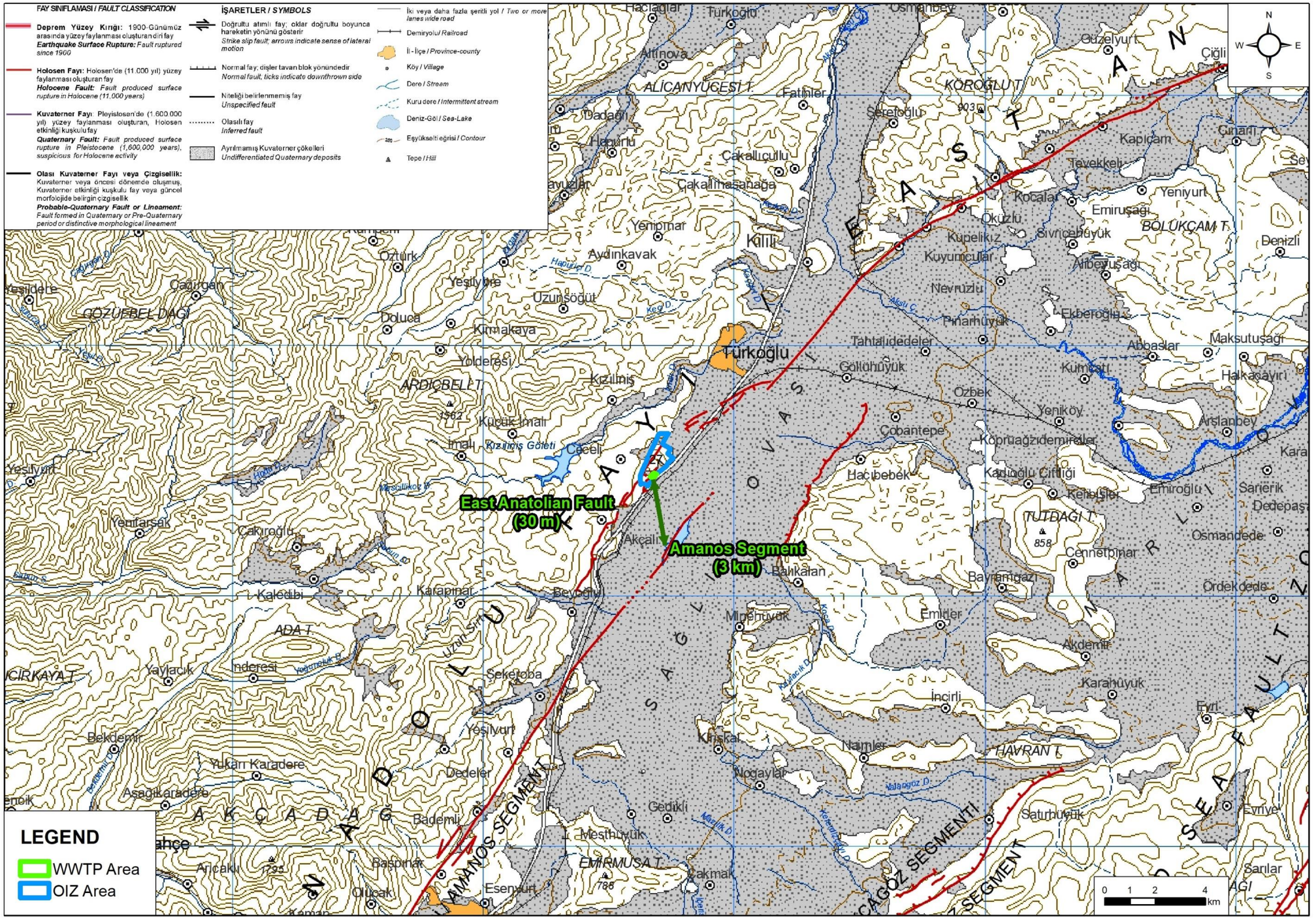


Figure- 9 Active Fault Map of the Project Area and Its Vicinity

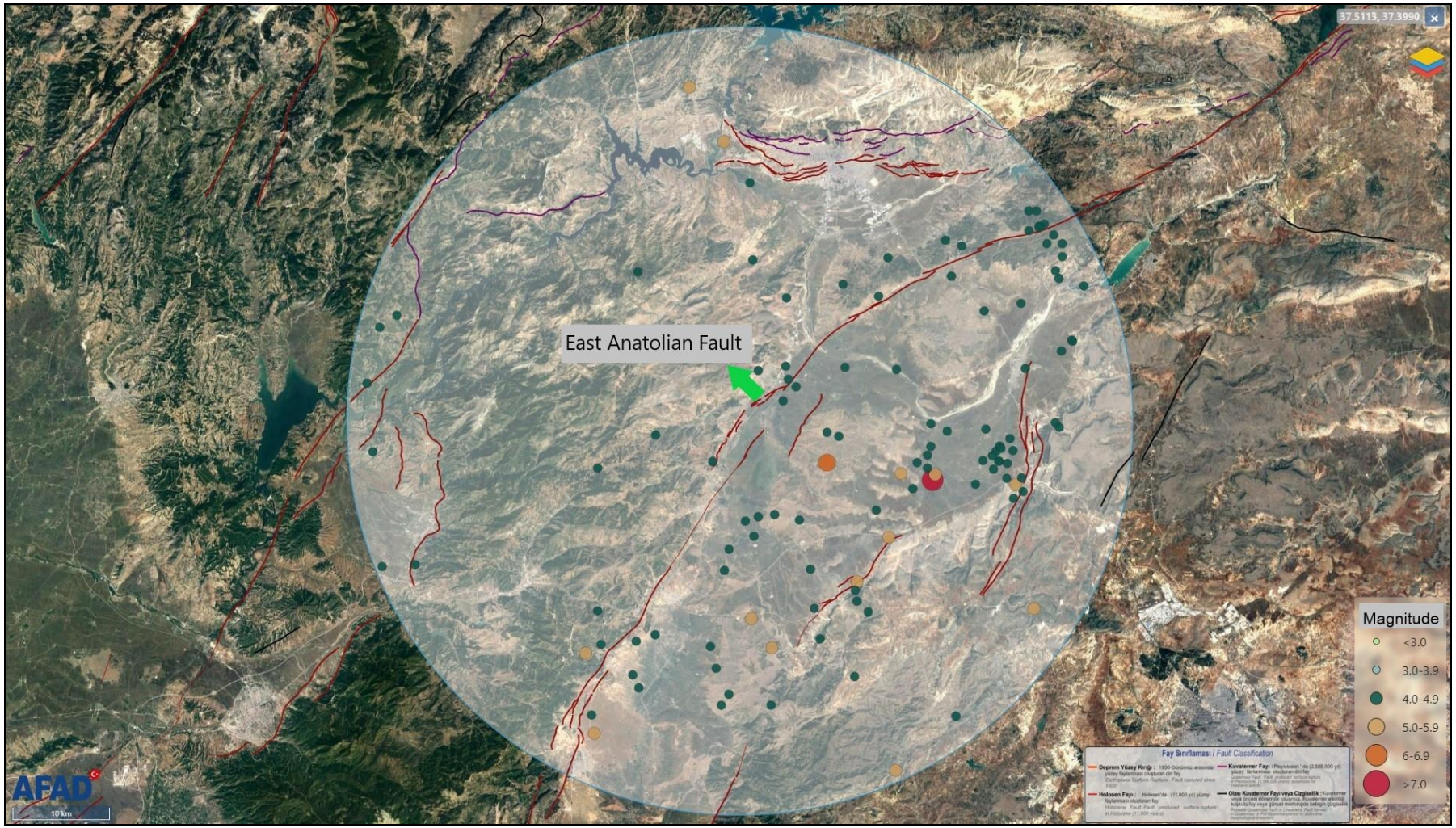


Figure- 10 Earthquakes with M>4 with a radius of 50 km and the center point of which is the project area

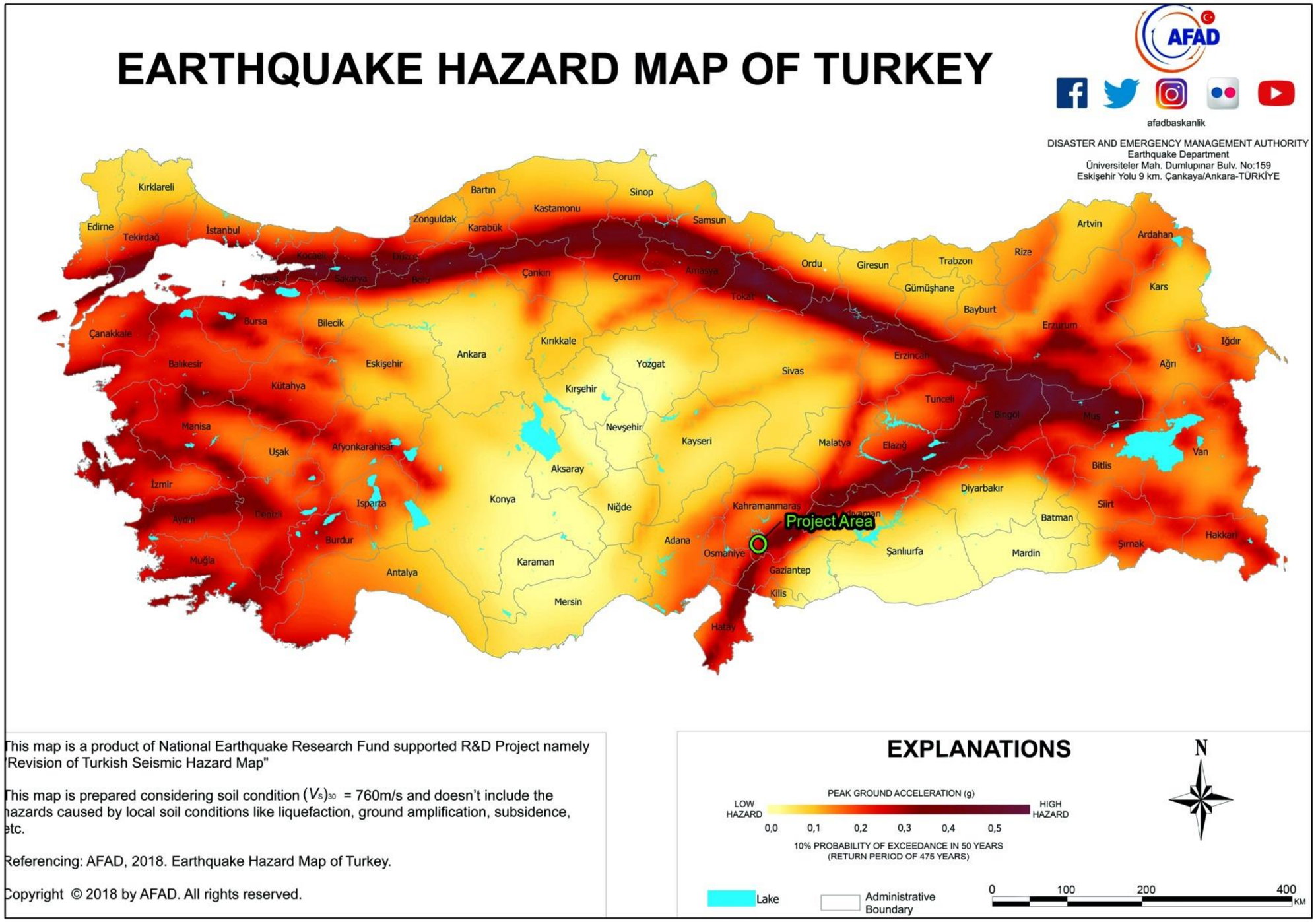


Figure- 11 Earthquake Hazard Map of Türkiye

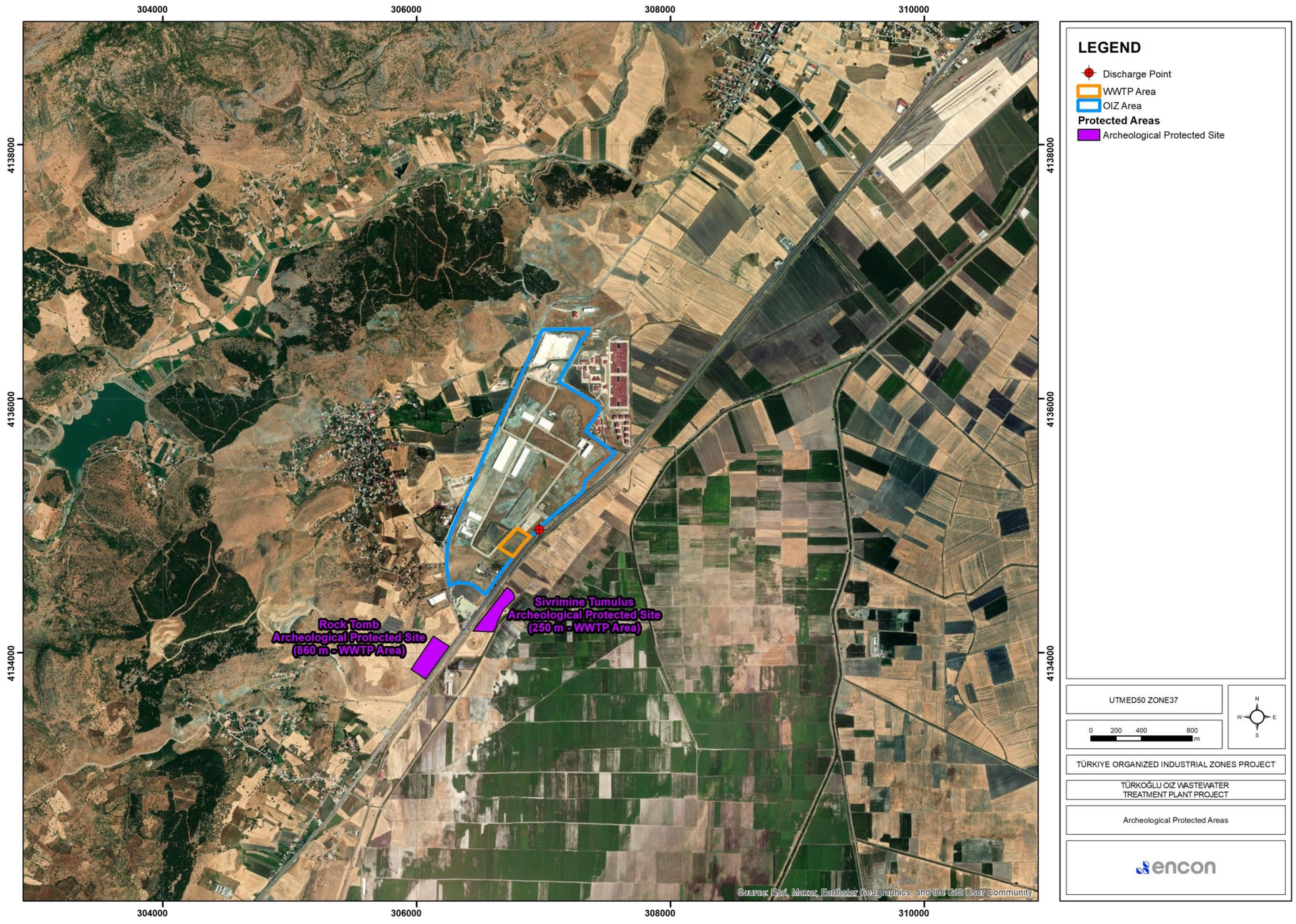


Figure- 12 Archeological Protected Areas

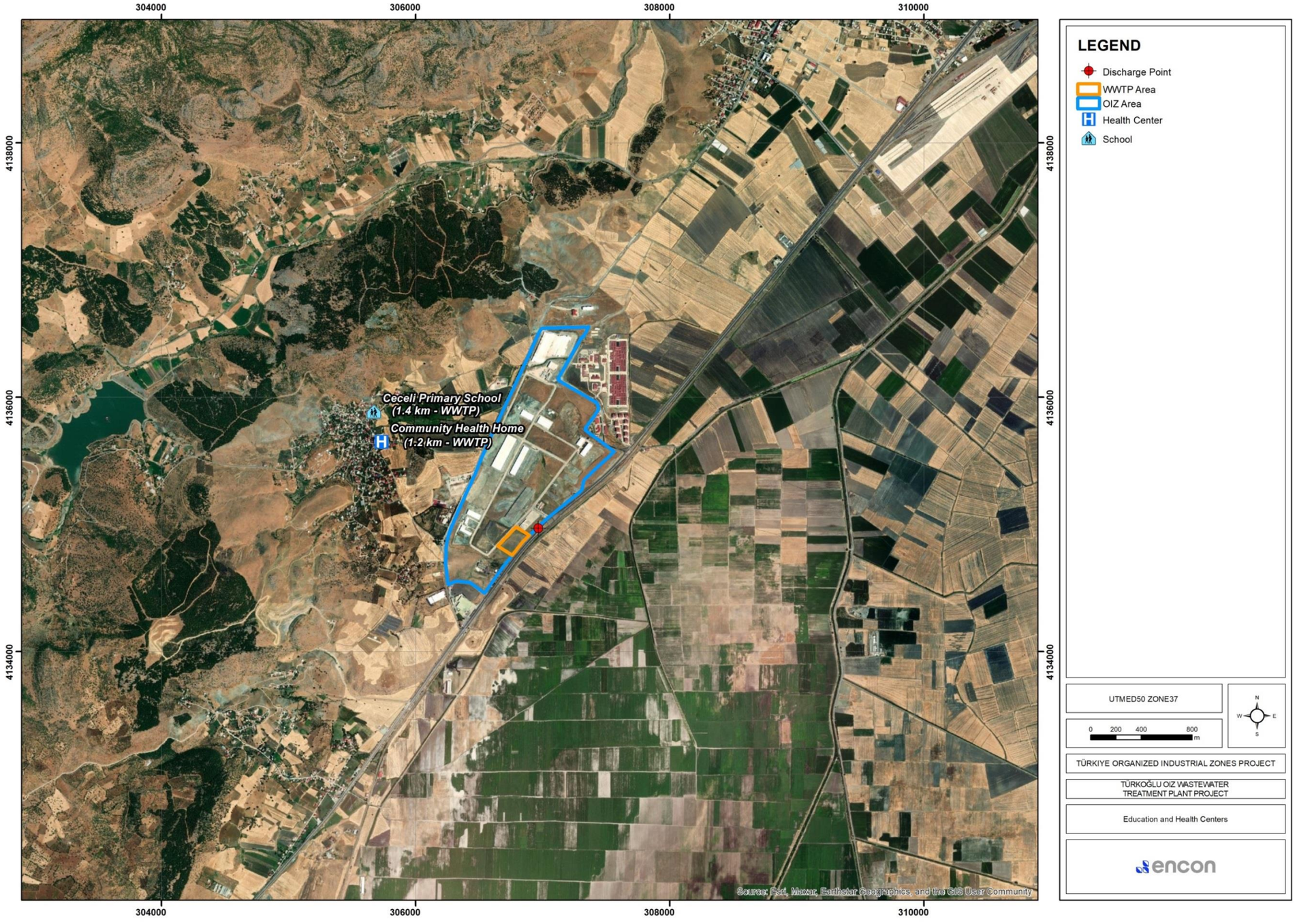


Figure- 13 Sensitive Receptors

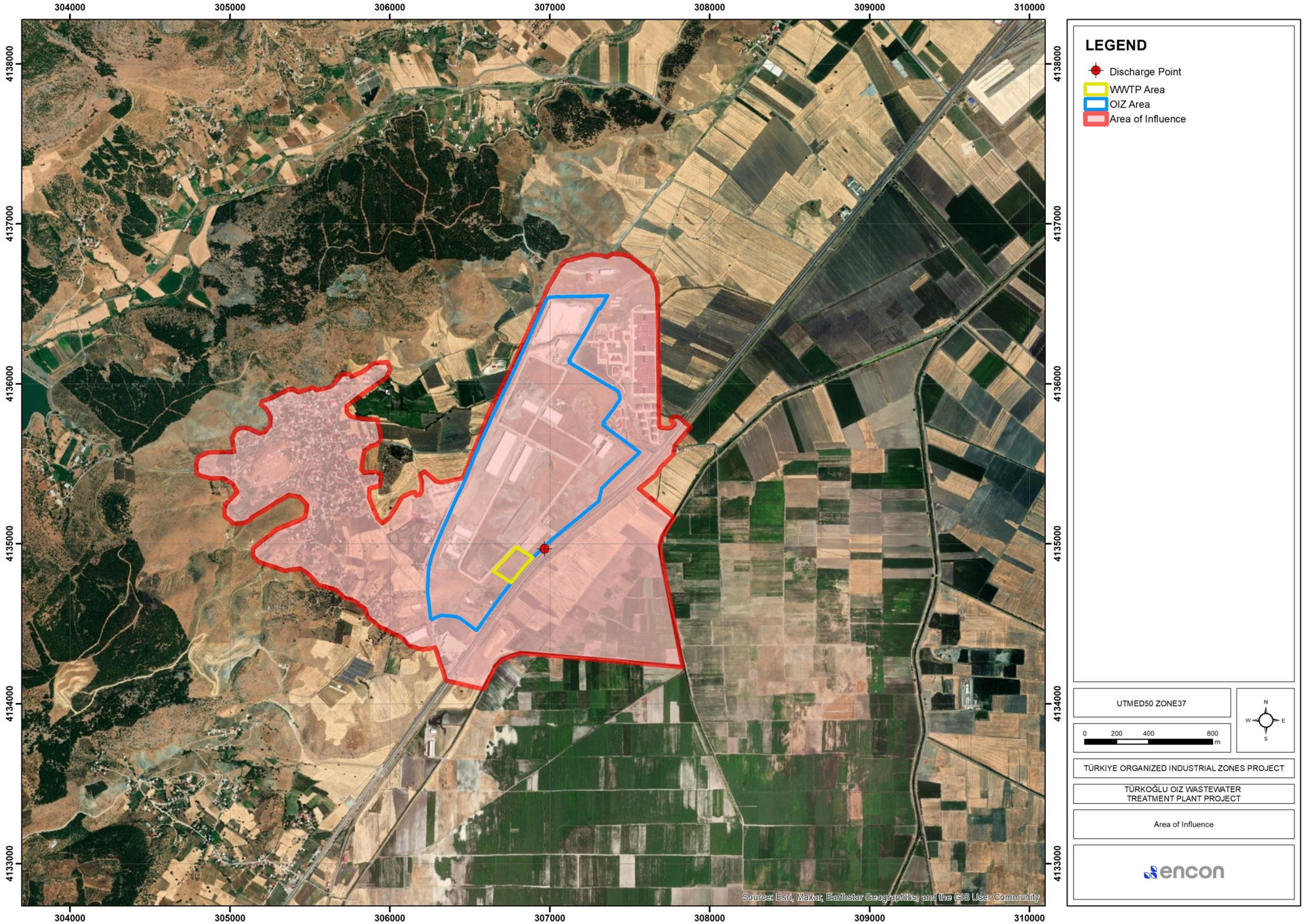


Figure- 14 Aol Map

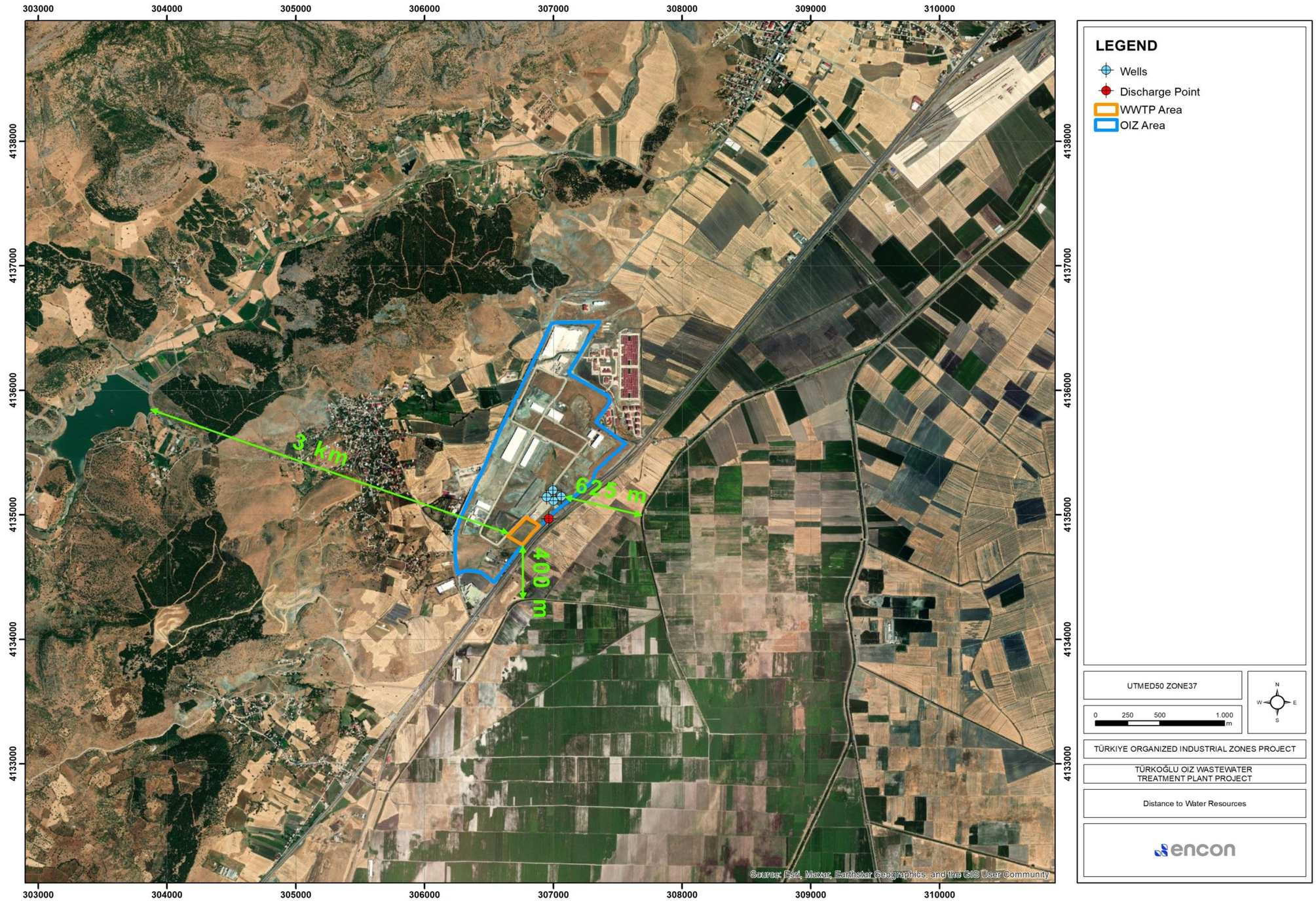
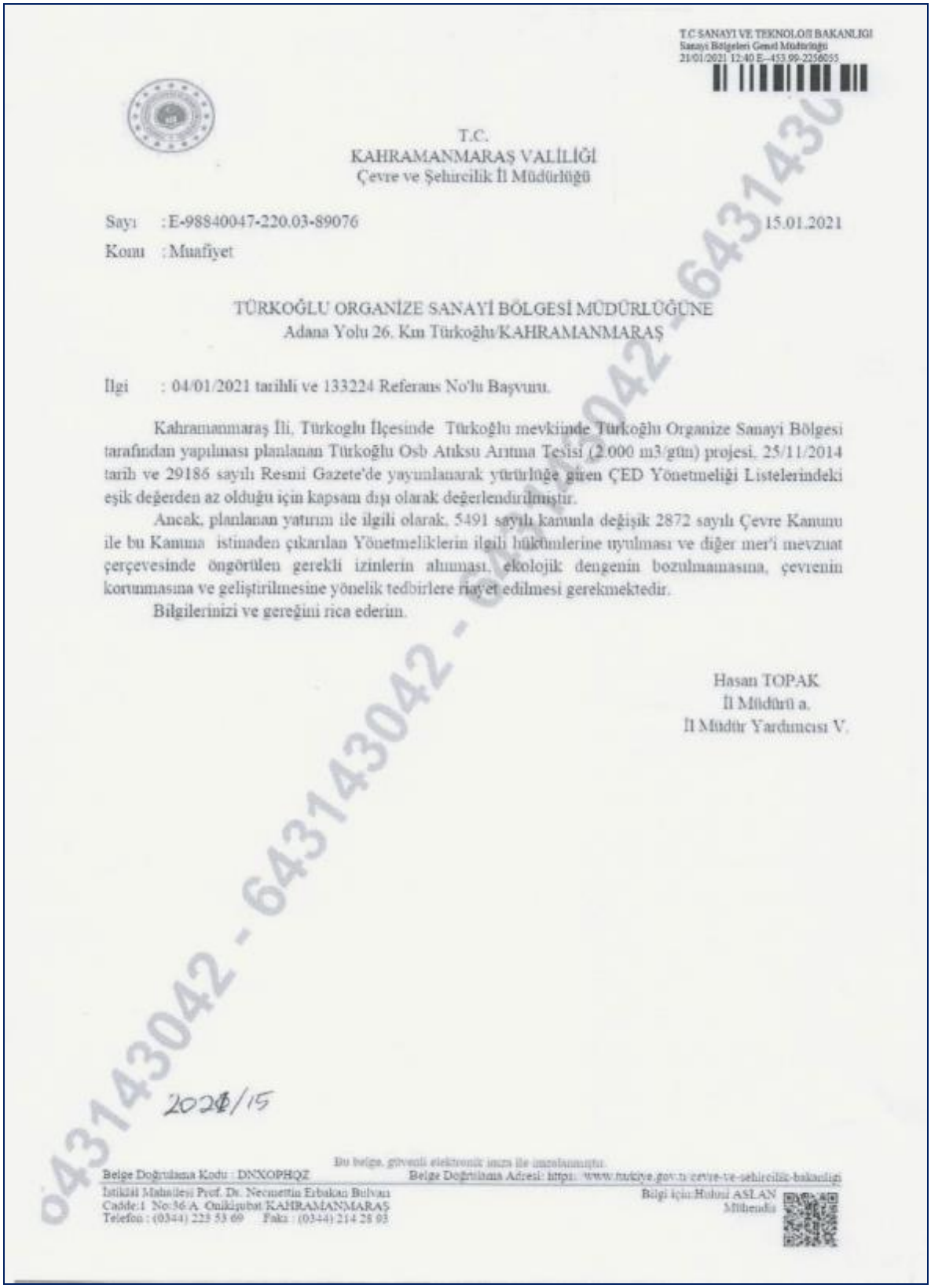


Figure- 15 Distance to Water Resources

ANNEX-4- "Outside The Scope of the EIA Regulation" Decision



T.C SANAYİ VE TEKNOLOJİ BAKANLIĞI
Sanayi Bölgeleri Genel Müdürlüğü
21/01/2021 12:40 E-453.99-2258055

T.C.
KAHRAMANMARAŞ VALİLİĞİ
Çevre ve Şehircilik İl Müdürlüğü

Sayı : E-98840047-220.03-89076 — 15.01.2021
Konu : Muafiyet

TÜRKOĞLU ORGANİZE SANAYİ BÖLGESİ MÜDÜRLÜĞÜNE
Adana Yolu 26. Km Türkoğlu/KAHRAMANMARAŞ

İlgi : 04/01/2021 tarihli ve 133224 Referans No'lu Başvuru.

Kahramanmaraş İli, Türkoglu İlçesinde Türkoğlu mevkiinde Türkoğlu Organize Sanayi Bölgesi tarafından yapılması planlanan Türkoğlu Osb Atıksu Arıtma Tesisi (2.000 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 ve gereğini rica ederim.

Hasan TOPAK
İl Müdürü a.
İl Müdür Yardımcısı V.

2021/15

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ANNEX-5- LEGAL FRAMEWORK

I. 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 conventions and standards explained in the following sections are also to be complied with during different stages of the Project, including pre-construction, construction and operation.

The 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, Department of Political Science and Public Administration, April, 2015*). At the local level, municipality mayors and the headmen of the villages/neighborhoods (mukhtar) are the representatives of the administrative structure.

I.1. National 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 pre-construction, construction and operational activities of the Project. National Legislation related to the Project is presented in the following sections under relevant subtopics.

I.1.1. National 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.

Occupational Health and Safety Law No. 6331, which is ratified June 2012 (Official Gazette dated 30.06.2012 and numbered 28339), is other principal legislation related to the Project. Occupational Health and Safety Law enforces various by-laws and decrees to regulate and uphold health and safety standards.

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 Identification 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.

Türkoğlu OIZ Wastewater Treatment Plant Project within the capacity 2,000 m^3/day, planned by Türkoğlu Organized Industrial Zone in Türkoğlu Kahramanmaraş was evaluated as “outside the

scope of the EIA regulation" due to capacity by Kahramanmaraş Governorship Provincial Directorate of Environment and Urbanization on 15/01/2021.

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

Table- 1 Turkish EHS Legislation Related to the Project

Legislation	Official Gazette Date	Official Gazette Number	Implications for the Project Phases
National Environmental, Legal and Political Framework			
Waste Management			
Regulation on the Control of Waste Batteries and Accumulators	August 31, 2004	25569	•This regulation applies on battery and accumulator wastes that may occur as a result of office or vehicle use throughout the lifetime of the Project.
Regulation on the Control of Excavation Soil, Construction and Demolition Waste	March 18, 2004	25406	•This regulation applies to activities that will cause to the generation of excavation soil, construction wastes, especially during the construction phase of the Project.
Regulation on the Control of End-of-Life Tires	November 25, 2006	26357	•This regulation applies on waste management of End-of-Life Tires generated during all phases of the project.
Regulation on the Control of End-of-Life Vehicles	December 30, 2009	27448	•This regulation applies on waste management of End-of-Life Vehicles generated during all phases of the project.
Regulation on Waste Management	April 2, 2015	29314	•This regulation is the main regulation applies on regarding the non-hazardous and hazardous wastes that will be generated as a result of all activities to be carried out throughout the lifetime of the Project.
Regulation on the Control of Waste Vegetable Oil	June 6, 2015	29378	•This regulation applies on waste vegetable oils during especially the operation phase of the Project.
Regulation on the Control of Medical Waste	January 25, 2017	29959	•This regulation applies for medical waste to be generated throughout the life of the Project.
Regulation on Zero Waste	July 12, 2019	30829	•This regulation applies on the establishment of zero-waste management system that aims to protect the environment and human health and all resources regarding the wastes that will be generated as a result of all activities to be carried out throughout operation phase.
Regulation on the Management of Waste Oil	December 21, 2019	30985	•This regulation applies on waste oils that may occur as a result of vehicle/equipment maintenance throughout the lifetime of the Project.
Regulation on the Control of Packaging Waste	June 26, 2021	31523	•This regulation applies on packaging waste that will occur as a result of activities that can be carried out throughout the lifetime of the Project.
Regulation on Management of Waste Electrical and Electronic Equipment	December 26, 2022	32055	•This regulation applies on electrical and electronic equipment waste as a result of activities to be carried out throughout the lifetime of the Project.
Water Quality Control and Management			
Regulation on Control of Water Pollution	December 31, 2004	25687	•This regulation applies on discharge of treated effluent during operation phase, wastewater generated by the site staff during pre-construction and construction phases.
Regulation on the Water Intended for Human Consumption	February 17, 2005	25730	•This regulation applies on the monitoring of the suitability for human consumption of water within the scope of the Project during all phases of the project.
Regulation on the Control of Pollution Caused by Hazardous Substances in and around Water Environment	November 26, 2005	26005	•This regulation applies on the hazardous substance impacts on the water and its surroundings that may occur during the Project lifetime.

Legislation	Official Gazette Date	Official Gazette Number	Implications for the Project Phases
Regulation on Urban Wastewater Treatment	January 8, 2006	26047	•This regulation applies on effluent quality and treatment efficiencies to be met during the operation phases of planned WWTP.
Regulation on the Protection of Groundwater against Pollution and Deterioration	April 7, 2012	28257	•This regulation applies on protection of groundwater sources against pollution during pre-construction, construction and operation phases.
Regulation on Surface Water Quality	November 30, 2012	28483	•This regulation applies on discharge of treated effluent and monitoring of water quality at receiving body during operation phase.
Regulation on the Monitoring of Surface Waters and Groundwater	February 11, 2014	28910	•This regulation applies on procedures and principles for revealing the current status of all surface waters and groundwater throughout the country in terms of quantity, quality and hydromorphological elements, monitoring waters with an approach based on ecosystem integrity, and ensuring standardization in monitoring and coordination between institutions and organizations that carry out monitoring during lifetime of Plan.
Regulation on Determination of Sensitive Water Bodies and the Areas Affecting these Bodies and Improvement of Water Quality	December 23, 2016	29927	•This regulation applies on determination of the receiving body sensitivity during pre-construction phase and discharge of treated effluent during operation phase.
Communiqué on Technical Procedures in Wastewater Treatment Plants	March 20, 2010	27527	•This Communiqué applies on the technical principles that will form the basis for wastewater treatment facility project design during pre-construction phase.
Communiqué on Technical Personnel Working in Wastewater Treatment Plants	May 23, 2019	30782	•This Communiqué applies on 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 during operation phase.
Air Quality Control and Management			
Regulation on the Air Quality Assessment and Management	June 6, 2008	26898	•This regulation applies on activities that may cause the deterioration of the air quality during the lifetime of the Project, especially the construction phase of the Project.
Regulation on Industrial Air Pollution Control	July 3, 2009	27277	• This regulation applies on activities that may cause air pollution during the lifetime of the Project, especially the construction phase of the Project.
Regulation on the Control of Odor Causing Emissions	July 19, 2013	28712	•This regulation applies on odor nuisance may occur due to activities arising from the WWTP throughout the life of the project.
Regulation on the Monitoring of Greenhouse Gas Emissions	May 17, 2014	29003	•This regulation applies on greenhouse gas emissions during the lifetime of the Project.
Regulation on Exhaust Gas Emission Control	March 11, 2017	30004	•This regulation applies on exhaust gas emissions sourced from project vehicles, machinery and equipment during the lifetime of the Project.
Noise Control and Management			
Regulation on the Environmental Noise Emissions Caused by Equipment Used Outdoors	December 30, 2006	26392	•This regulation applies on the noise emissions caused by equipment used outdoors within the Project especially throughout the construction phase.
Regulation on Environmental Noise Control	November 30, 2022	32029	•This regulation applies on the management of noise emissions during lifetime of the Project.
Soil Quality Control and Management			
Regulation on Soil Pollution Control and Point Source Contaminated Fields	June 8, 2010	27605	•This regulation applies on the protection of soil against pollution during lifetime of the Project.
Environmental Management, Permitting and Planning			

Legislation	Official Gazette Date	Official Gazette Number	Implications for the Project Phases
Environmental Law No: 2872	August 11, 1983	18132	•This general law regulates the main environmental rules for all activities to be carried out during the lifetime of the Project.
Organized Industrial Zones Law No: 4562	April 15, 2000	24021	•This law regulates the principles for the establishment and operation of organized industrial zones should be followed at all phases of the project since the Project is Wastewater Treatment Plant Project of Türkoğlu OIZ.
Regulation on Environmental Permits and Licensing	September 10, 2014	29115	•This regulation applies on the required environmental permits and licenses at all phases of the Project.
Regulation on Wastewater Collection and Disposal Systems	January 6, 2017	29940	•This Regulation applies on the procedures and principles regarding the planning, design and projecting, construction and operation of wastewater collection and disposal systems during the lifetime of the Project.
Regulation on Environmental Impact Assessment	July 29, 2022	31907	•This regulation applies on administrative and technical procedures and principles to be followed during the Environmental Impact Assessment (EIA) process at the pre-construction phase.
National Social, Legal and Political Framework			
Community Health and Safety			
Highways Traffic Law No: 2918	October 13, 1983	18195	•This law applies on ensuring traffic order on the highways during the all phases of the Project.
Regulation on Traffic Signs	June 19, 1985	18789	•This regulation applies on traffic sign for the purpose of ensuring traffic order and safety during all phases of the Project.
Regulation on Highway Traffic	July 18, 1997	23053	•This regulation applies on ensuring traffic order on the highways during the all phases of the Project.
Preparation, Completion and Cleaning Works Regulation	April 28, 2004	25446	•This regulation applies on the working conditions in the preparation, completion and cleaning works that must be carried out in order for the main work carried out in a workplace to be carried out in an orderly, healthy and safe manner during lifetime of the Project.
Labor and Working Conditions			
Labor Law No: 4857	June 10, 2003	25134	•This main law applies on the rights and responsibilities of the workers employed based on the labor contract with the employers, regarding the working conditions and working environment during the lifetime of the Project.
Regulation on the Procedures and Principles of Employment of Children and Young Workers	April 06, 2004	25425	•This regulation applies on 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 during lifetime of the Project.
Social Security and General Health Insurance Law No: 5510	June 16, 2006	26200	•This law applies on health and safety measures to be taken during lifetime of the Project.
Regulation on the Protection of Buildings from Fire	December 19, 2007	26735	•This regulation applies on measures to be taken for fire protection during construction and operation phases.
Occupational Health and Safety Law No. 6331	June 30, 2012	28339	•This law applies on occupational health and safety measures to be taken during lifetime of the Project.
Communiqué on Occupational Health and Safety Hazard Classes List	December 26, 2012	28509	•This Communiqué applies on determination of hazard classes during lifetime of the Project.
Regulation on Risk Assessment for Occupational Health and Safety	December 29, 2012	28512	•This regulation applies on preparation of occupational health and safety risk assessment and all related principles to be followed during lifetime of the Project.

Legislation	Official Gazette Date	Official Gazette Number	Implications for the Project Phases
Regulation on Health and Safety Conditions Regarding Use of Work Equipment	April 25, 2013	28628	•This regulation applies on ensuring the health and safety conditions for the use of work equipment to be used during life of the Project.
Manual Handling Operations Regulation	July 24, 2013	28717	•This regulation applies on health and safety measures to be taken during manual handling activities at all phases of the Project.
Regulation on the Use of Personal Protection Equipment at Workplaces	July 2, 2013	28695	•This regulation applies on personal protection equipment to be used at lifetime of the Project.
Regulation on the Protection of Workers Against the Dangers of Explosive Environments	April 30, 2013	28633	•This regulation applies on measures to be taken in case the use of explosive usage during pre-construction and construction phases.
Regulation on Emergency Situations in Workplaces	June 18, 2013	28681	•This regulation applies on measures to be taken during emergency situations in workplaces during lifetime of the Project.
Regulation on Health and Safety Precautions Regarding Working with Chemicals	August 12, 2013	28733	•This regulation applies on chemical handling and necessary precautions in workplaces during lifetime of the Project.
Regulation on the Methods and Essentials of Occupational Health and Safety Trainings for Workers	May 15, 2013	28648	•This regulation applies on health and safety training to be performed during lifetime of the Project.
Regulation on the Protection of Workers from Noise Related Risks	July 28, 2013	28721	•This regulation applies on health and safety measures to be taken against the noise impacts during lifetime of the Project.
Regulation on the Protection of Workers from Vibration Related Risks	August 22, 2013	28743	•This regulation applies on health and safety measures to be taken against the vibration impacts during lifetime of the Project.
Regulation on Management of Dust	cNovember 5, 2013	28812	•This regulation applies on management of to be generated dust during pre-construction and construction phases.
Regulation on Health and Safety Signs	September 11, 2013	28762	•This regulation applies on health and safety signs to be placed during lifetime of the Project.
Regulation on the Occupational Health and Safety for Temporary or Fixed Term Jobs	August 23, 2013	28744	•This regulation applies on health and safety measures to be taken for temporary workers during lifetime of the Project.
Regulation on the Occupational Health and Safety in Construction	October 5, 2013	28786	•This regulation applies on constructional health and safety measures to be taken during construction phase.
First Aid Regulation	July 29, 2015	29429	•This regulation applies on in case of a first aid requirement during construction and operation phases.
Regulation on Personal Protection Equipment	May 1, 2019	30761	•This regulation applies on personal protection equipment to be used during construction and operation phases.
Management of Chemicals and Other Dangerous Substances			
Regulation on the Classification, Labelling and Packaging of Materials and Mixtures	December 11, 2013	28848	•This regulation applies on chemicals and mixtures to be used during lifetime of the Project.
Regulation on Material Safety Data Sheets on Hazardous Materials and Mixtures	December 13, 2014	29204	•This regulation applies on 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 lifetime of the Project.

Legislation	Official Gazette Date	Official Gazette Number	Implications for the Project Phases
Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals	June 23, 2017	30105	•This regulation applies on 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 the Road Transportation of Hazardous Goods	June 18, 2022	31870	•This regulation applies on hazardous goods to be transported during lifetime of the Project.
Land Use			
Soil Conservation and Land Use Law No: 5403	July 19, 2005	25880	•This law applies on management of change in the land use during the planning phase of the Project.
Regulation on the Protection, Usage and Planning of Agricultural Lands	December 9, 2017	30265	•This regulation applies on management of change in the land use during the planning phase of the Project.
Stakeholder Engagement			
Constitution of the Republic of Turkiye	November 09, 1982	17863	•Citizens and foreigners resident in Turkiye, with the condition of observing the principle of reciprocity, have the right to apply in writing to the administrative authorities and the Grand National Assembly of Turkiye about the requests and complaints concerning themselves or the public. •Regarding with the Project Citizens and foreigners at the AoI have the right to apply in writing to the MoIT and the Grand National Assembly of Turkiye concerning the requests and complaints concerning themselves or the public.
Use of the Right to Petition Law No: 3071	November 10, 1984	18571	•Citizens and foreigners have the right to apply in writing to the MoIT and the Grand National Assembly of Turkiye concerning the requests and complaints concerning themselves or the public.
Right to Information Law No: 4982	October 24, 2003	25269	•Citizens can request information from MoIT and OIZ. •The institutions shall provide the requested information within 15 working days.
Regulation on Environmental Impact Assessment	July 29, 2022	31907	•Inform the investing public, to get their opinions and suggestions regarding the project, Public Participation Meeting. Participants raise issues related to the Project. •As the Project has EIA exemption, the Public Participation Meeting has not been held.
Others			
Law on Conservation of Cultural and Natural Assets No. 2863	July 21, 1983	18113	•The purpose of this Law is to determine the definitions related to movable and immovable cultural and natural assets that need to be protected, to organize the transactions and activities to be carried out, to determine the establishment and duties of the organization that will take the necessary principles and implementation decisions in this regard.
Regulation on the Implementation of the Law Concerning Private Security Services	October 7, 2004	25606	•This regulation applies on private security services to be used during construction and operation services.
Regulation on Contractors and Sub-contractors	September 27, 2008	27010	•This regulation applies on 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.

Legislation	Official Gazette Date	Official Gazette Number	Implications for the Project Phases
Regulation Concerning the Increase in the Efficiencies of Energy Consumption and Energy Resources	October 27, 2011	28097	•This regulation applies on the procedures and principles regarding the effective use of energy, prevention of energy waste, and increasing efficiency in the use of energy resources and energy to protect the environment during lifetime of the Project.
Protection of Personal Data Law No: 6698	April 7, 2016	29677	•This law applies on protection of fundamental rights and freedoms of individuals, especially the privacy of private life, in the processing of personal data during lifetime of the Project.
Regulation Concerning the Ozone Depleting Substances	April 7, 2017	30031	•This regulation applies on ozone depleting substances to be used during construction and operation phases.
Building Earthquake Regulation	March 18, 2018	30364	•This regulation applies on necessary rules and minimum conditions for the design and construction of all or parts of building-type structures under the influence of earthquakes and for the evaluation and strengthening of the performances of existing buildings under the influence of earthquakes during pre-construction and construction phases.

*Relevant amendments of the listed legislation will be applicable.

Türkoğlu OIZ shall comply with the requirements of the current national legislation and codes of practice and fulfil all other legal requirements. Therefore, during each stage 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. Furthermore, any license and/or permit required for the upcoming stages of the Project will be acquired accordingly.

I.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 a requirement 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.

I.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:

- Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) (1972),
- 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),
- The Convention for the Protection of Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) (1981),
- Bern Convention on Protection of Europe's Wild Life and Living Environment (1982),
- 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),
- Mediterranean Sea Protocol Concerning Specially Protected Areas and Biodiversity (1988), including related protocols,
- 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),
- Convention on Wetlands of International Importance, Especially as Waterfowl Habitat (RAMSAR) (1994),
- Basel Convention on the Control of Transboundary Movements of Hazardous Waste 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),
- United Nations Europe Economic Commission Convention on Transboundary Effects of Industrial Accidents (2000),
- European Landscape Convention (2001),
- Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention) (2001),
- UN Framework Convention on Climate Change (UNFCCC) (2004),
- 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 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),
- International Labor Organization (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 12 months.

I.2.1.1. 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- 2 with their explanations:

Table- 2 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 contamination, developing trainings for protection practices, promoting and coordinating the researches made regarding this subject. It has been signed by 26member 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 nations that are 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 conserving the 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- 3.

Table- 3 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- 4. 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 were published in 2001.

Table- 4 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

I.2.2. World Bank Environmental and Social Framework (ESF)

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

The Project has been categorized as Category B Project according to the definitions of WB OP/BP 4.01 on Environmental Assessment. In addition, the project classified as Moderate Risk according to WB'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.).

Reasons regarding to the risk characterization of the Project is given below:

- The capacity of the planned WWTP is a 2,000 m³/day.
- There is no nationally protected area nor 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 a positive impact on both the environment and public health.

The World Bank Group (WBG) Environmental, Health and Safety (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, the 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

The World Bank's Environmental and Social Framework (ESF) aims to create better long-term development outcomes. Environmental and Social Standards in the ESF have a more comprehensive approach, especially on social issues. The World Bank's Environmental and Social Standards included in the ESF are given in Table- 5.

Table- 5 ESS and Operational Policies (OP)/ Bank Procedures (BP) Relation

Environmental and Social Standards	Building on
ESS1: Assessment and Management of Environmental and Social Risks and Impacts	OP/BP4.01(Environmental Assessment)
ESS2: Labour and Working Conditions	OP/BP4.01 (Environmental Assessment) and EHS Guidelines
ESS3: Resource Efficiency and Pollution Prevention and Management	OP4.09 (Pest Management) and EHS Guidelines
ESS4: Community Health and Safety,	OP/BP4.37 (Safety of Dams) and EHS Guidelines
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources,	OP/BP4.04 (Natural Habitats) and OP/BP4.36 (Forests)
ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	OP/BP4.10 (Indigenous Peoples)
ESS8: Cultural Heritage	OP/BP4.11 (Physical Cultural Resources)
ESS9: Financial Intermediaries	OP/BP 4.01 (Environmental Assessment)
ESS10: Stakeholder Engagement and Information Disclosure	OP/BP4.01 (Environmental Assessment) and EHS Guidelines

In addition to the WBG General EHS Guidelines, WBG Industry Sector Guidelines for 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.

I.2.3. Comparison of Turkish EIA Regulation and WB ESSs

The gap analysis between the WB ESSs triggered by the Project and Turkish EIA Regulation is presented in Table- 6.

Table- 6 The Relevance of WB ESSs with the Project

ESS	Scope / Aim of the ESS	Gaps between the Turkish EIA Regulation and World Bank's ESF	Environmental and Social Studies conducted/to be conducted to fill the gap
ESS1 Assessment and Management of Environmental and Social Risks and Impacts	This Standard sets out Borrower's responsibilities for assessing, managing and monitoring Environmental and social risks and impacts related with each phase of the project supported by the World Bank through Investment Project Financing (IPF), so as to accomplish environmental and social results consistent with the Environmental and Social Standards (ESSs). The objectives of ESS1 are as follows: • To identify, evaluate, and manage the environment and social risks and impacts of the project in a manner consistent with the ESSs. • To adopt a mitigation hierarchy approach to: (a) Anticipate and avoid risks and impacts; (b) Where avoidance is not possible, minimize or reduce risks and impacts to acceptable levels; (c) Once risks and impacts have been minimized or reduced, mitigate; and (d) Where significant residual impacts remain, compensate for or offset them, where technically and financially feasible. • To adopt differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable, and they are not disadvantaged in sharing development benefits and opportunities resulting from the project. • To utilize national environmental and social institutions, systems, laws, regulations, and procedures in the assessment, development, and implementation of projects, whenever appropriate. • To promote improved environmental and social performance, in ways which recognize and enhance Borrower capacity.	**Environmental and Social Assessment and Management System (ESMS)** World Bank's ESF The Borrower will carry out an environmental and social assessment of the project to assess the environmental and social risks and impacts of the project throughout the project life cycle. The assessment will be proportionate to the potential risks and impacts of the project, and will assess, in an integrated way, all relevant direct, indirect, and cumulative environmental and social risks and impacts throughout the project life cycle, including those specifically identified in ESSs 2-10. The Borrower will: (a) Conduct an environmental and social assessment of the proposed project, including stakeholder engagement; (b) Undertake stakeholder engagement and disclose appropriate information in accordance with ESS10; (c) Develop an Environmental and Social Commitment Plan (ESCP), and implement all measures and actions set out in the legal agreement including the ESCP; and (d) Conduct monitoring and reporting on the environmental and social performance of the project against the ESSs. Turkish EIA Regulation Environmental risks and impacts of the Project are identified to some extent. However, the range of potential environmental and social impacts has not been identified, for example, there is no social assessment, or assessment of landscape and visual impacts, forestry and in many cases operation of the project has been omitted in assessing impacts.	Conduct a complete assessment of potential environment and social impacts associated with both WWTP construction and operation. Complete an assessment of potential cumulative impacts. Establish a Project ESMS that describes mitigation and performance improvement measures and actions that address the identified environmental and social risks and impacts of the Project. Where the identified risks and impacts cannot be avoided, the client should identify mitigation and performance measures and establish corresponding actions to ensure the project will be operated in compliance with applicable laws and regulations, and meet the requirements ESSs.
		Organizational Capacity and Competency World Bank's ESF Where the project involves specifically identified physical elements, aspects and facilities that are likely to generate impacts, the ESMS will establish and maintain an emergency preparedness and response system so that the client, in collaboration with appropriate and relevant third parties, will be prepared to respond to accidental and emergency situations associated with the project in a manner appropriate to prevent and mitigate any harm to people and/or the environment. Turkish EIA Regulation Organisational arrangements and the competency of construction personnel have not been incorporated into the EIA.	Define project environment and social resources (construction, consortium and operational) in terms of organisation and competency with regard to environment and social issues.
		Emergency Preparedness and Response World Bank's ESF	Prepare and implement an emergency response plan for both construction and operational phases.

ESS	Scope / Aim of the ESS	Gaps between the Turkish EIA Regulation and World Bank's ESF	Environmental and Social Studies conducted/to be conducted to fill the gap
		Where the project involves specifically identified physical elements, aspects and facilities that are likely to generate impacts, the ESMS will establish and maintain an emergency preparedness and response system so that the client, in collaboration with appropriate and relevant third parties, will be prepared to respond to accidental and emergency situations associated with the project in a manner appropriate to prevent and mitigate any harm to people and/or the environment. This preparation will include the identification of areas where accidents and emergency situations may occur, communities and individuals that may be impacted, response procedures, provision of equipment and resources, designation of responsibilities, communication, including that with potentially Affected Communities and periodic training to ensure effective response. The emergency preparedness and response activities will be periodically reviewed and revised, as necessary, to reflect changing conditions. Turkish EIA Regulation No emergency scenarios, including response mechanisms, have been identified within the EIA.	
		Monitoring and Review World Bank's ESF The project owner should establish procedures to monitor and measure the effectiveness of the management program, as well as compliance with any related legal and/or contractual obligations and regulatory requirements. Where the government or other third party has responsibility for managing specific risks and impacts and associated mitigation measures, the client will collaborate in establishing and monitoring such mitigation measures. Where appropriate, clients will consider involving representatives from Affected Communities to participate in monitoring activities. The client's monitoring program should be overseen by the appropriate level in the organization. For projects with significant impacts, the client will retain external experts to verify its monitoring information. The extent of monitoring should be commensurate with the project's environmental and social risks and impacts and with compliance requirements. Turkish EIA Regulation Although EIA is more limited in scope, it requires some environmental and social management plans. There is also a monitoring plan that indicates whether the environmental impacts of the project (in terms of air, water quality, noise and vibration) will comply with the Turkish Environmental Law and relevant legislation.	Once adequate baseline data has been captured and potential environmental and social impacts have been assessed for both construction and operational phases, a monitoring plan should be established to capture data to confirm that the project mitigation plans are delivering the desired results and that no unforeseen impacts are occurring.
		External Communications and Grievance Mechanisms World Bank's ESF The project owner should implement and maintain a procedure for external	A communications plan and procedure (including identification of Affected Communities) should be prepared that describe mechanisms for external

ESS	Scope / Aim of the ESS	Gaps between the Turkish EIA Regulation and World Bank's ESF	Environmental and Social Studies conducted/to be conducted to fill the gap
		communications that includes methods to (i) receive and register external communications from the public; (ii) screen and assess the issues raised and determine how to address them; (iii) provide, track, and document responses, if any; and (iv) adjust the management program, as appropriate. In addition, clients are encouraged to make publicly available periodic reports on their environmental and social sustainability. Where there are Affected Communities, the client will establish a grievance mechanism to receive and facilitate resolution of Affected Communities' concerns and grievances about the client's environmental and social performance. The grievance mechanism should be scaled to the risks and adverse impacts of the project and have Affected Communities as its primary user. It should seek to resolve concerns promptly, using an understandable and transparent consultative process that is culturally appropriate and readily accessible, and at no cost and without retribution to the party that originated the issue or concern. The mechanism should not impede access to judicial or administrative remedies. The client will inform the Affected Communities about the mechanism in the course of the stakeholder engagement process. Turkish EIA Regulation Stakeholder Engagement Plan: It is explained in EIA Regulation as a plan that explains how, what methods and tools will be used to communicate and inform legal/real persons (stakeholders) who may be affected by the project or have an interest in the project, at all stages of the planned project. Regulation does not address the issues of internal, external communication and grievance mechanism.	communications on environment and social topics. The plan should define how grievances and concerns can be made to the project and how these will be investigated, responded to and rectified, if appropriate.
		On-going Reporting to Affected Communities World Bank's ESF The project owner should provide periodic reports to the Affected Communities that describe progress with implementation of the project Action Plans on issues that involve on-going risk to or impacts on Affected Communities and on issues that the consultation process or grievance mechanism have identified as a concern to those Communities. If the management program results in material changes in or additions to the mitigation measures or actions described in the Action Plans on issues of concern to the Affected Communities, the updated relevant mitigation measures or actions will be communicated to them. The frequency of these reports will be proportionate to the concerns of Affected Communities but not less than annually. Turkish EIA Regulation The EIA does not define Affected Communities and therefore there is no definition of communication and reporting.	Reporting to Affected Communities should be included within the Communication Plan and Procedure.
ESS2 Labor and	ESS2 recognizes the importance of employment creation and income generation in	World Bank's ESF ESS2 requirements include the documentation and implementation of	Prepare a Human Resources Policy. Prepare a project handbook that covers

ESS	Scope / Aim of the ESS	Gaps between the Turkish EIA Regulation and World Bank's ESF	Environmental and Social Studies conducted/to be conducted to fill the gap
Working Conditions	the pursuit of poverty reduction and inclusive economic growth. Borrowers can promote sound worker management relationships and enhance the development benefits of a project by treating workers in the project fairly and providing safe and healthy working conditions. The objectives of ESS2 are as follows: • To promote safety and health at work. • To promote the fair treatment, non-discrimination, and equal opportunity of project workers. • To protect project workers, including vulnerable workers such as women, persons with disabilities, children (of working age, in accordance with this ESS) and migrant workers, contracted workers, community workers, and primary supply workers, as appropriate. • To prevent the use of all forms of forced labor and child labor. • To support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law. • To provide project workers with accessible means to raise workplace concerns.	workforce management procedures applicable to the project. These procedures will specify how project workers will be managed in accordance with the requirements of internal law and this ESS and explain the following; (i) working conditions and management of worker relationship including terms and conditions of employment, non-discrimination and equal opportunities, worker's organizations, (such as the preparation and implementation of workforce management procedures applicable to the project); (ii) protection of the workforce, including the establishment of a minimum age for workers and the prohibition of child labor and forced labor; (iii) grievance mechanism (for workers); (iv) occupational health and safety (OHS) ; (v) contracted workers; (vi) community workers and (vii) primary supply workers. The Borrower will develop and implement written labor management procedures applicable to the project. These procedures will set out the way in which project workers will be managed, in accordance with the requirements of national law and this ESS. The project owner should adopt and implement human resources policies and procedures appropriate to its size and workforce that set out its approach to managing workers consistent with the requirements of this Performance Standard and national law The project owner should establish a mechanism to maintain, and improve the worker-management relationship and should also promote compliance with national employment and labour laws. The project owner should establish a mechanism to protect workers, including vulnerable categories of workers such as children, migrant workers, forced labour, workers engaged by third parties, and workers in the client's supply chain while it should also provide a tool to promote safe and healthy working conditions, and the health of workers. In countries where national law recognizes workers' rights to form and to join workers' organizations of their choosing without interference and to bargain collectively, the client will comply with national law. Where national law substantially restricts workers' organizations, the client will not restrict workers from developing alternative mechanisms to express their grievances and protect their rights regarding working conditions and terms of employment. The client should not seek to influence or control these mechanisms. The client will provide a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns. The client will inform the workers of the grievance mechanism at the time of recruitment and make it easily accessible to them. The mechanism should involve an appropriate level of management and address concerns promptly, using an understandable and transparent process that provides timely feedback to those concerned, without any retribution. The mechanism should also allow for anonymous complaints to be raised and addressed. The mechanism should not impede access to other judicial or administrative remedies that might be available under the law or through existing arbitration procedures, or substitute for grievance mechanisms provided through collective agreements.	working conditions and employment arrangements. Prepare an Equality and Diversity Programme that defines protection of employees, contractors and suppliers. Establish a mechanism to protect workers. Provide a Grievance Mechanism.

ESS	Scope / Aim of the ESS	Gaps between the Turkish EIA Regulation and World Bank's ESF	Environmental and Social Studies conducted/to be conducted to fill the gap
		Turkish EIA Regulation There is no Human Resources (HR) Policy for the project. There are warnings about how the workers should prevent any harmful effects that may arise during construction and operation phases. However, detailed working conditions or terms of employment are not mentioned in the EIA report The EIA does not address worker employment and therefore, there is no documented or formal policy of non-discrimination, equal opportunity and fair treatment in the EIA.	
ESS3 Resource Efficiency and Pollution Prevention and Management	ESS3 recognizes that economic activity and urbanization often generate pollution to air, water, and land, and consume finite resources that may threaten people, ecosystem services, and the environment at the local, regional, and global levels. The current and projected atmospheric concentration of greenhouse gases (GHG) threatens the welfare of current and future generations. At the same time, more efficient and effective resource use, pollution prevention, and GHG emission avoidance, and mitigation technologies and practices have become more accessible and achievable. This ESS sets out the requirements to address resource efficiency and pollution prevention and management throughout the project life cycle consistent with Good International Industry Practice (GIIP). The objectives of ESS3 are as follows: • To promote the sustainable use of resources, including energy, water, and raw materials. • To avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities. • To avoid or minimize project-related emissions of short- and long-lived climate pollutants. • To avoid or minimize generation of hazardous and nonhazardous waste. • To minimize and manage the risks and impacts associated with pesticide use.	World Bank's ESF The project owner should implement technically and financially feasible and cost effective measures for improving efficiency in its consumption of energy, water, as well as other resources and material inputs, with a focus on areas that are considered core business activities. Such measures will integrate the principles of cleaner production into product design and production processes with the objective of conserving raw materials, energy, and water. Where benchmarking data are available, the client will make a comparison to establish the relative level of efficiency. The project owner should avoid the release of pollutants or, when avoidance is not feasible, minimize and/or control the intensity and mass flow of their release. This applies to the release of pollutants to air (including GHG emissions), water, and land due to routine, non-routine, and accidental circumstances with the potential for local, regional, and transboundary impacts. Where historical pollution such as land or ground water contamination exists, the project should seek to determine whether it is responsible for mitigation measures. It is also important to address potential adverse project impacts on existing ambient conditions, the client will consider relevant factors, including, for example (i) existing ambient conditions; (ii) the finite assimilative capacity of the environment; (iii) existing and future land use; (iv) the project's proximity to areas of importance to biodiversity; and (v) the potential for cumulative impacts with uncertain and/or irreversible consequences. In addition to applying resource efficiency and pollution control measures as required in this Performance Standard, when the project has the potential to constitute a significant source of emissions in an already degraded area, the project should consider additional strategies and adopt measures that avoid or reduce negative effects. These strategies include, but are not limited to, evaluation of project location alternatives and emissions offsets. Turkish EIA Regulation The EIA does not address resource consumption and resource efficiency measures. Baseline information is provided in the EIA on air emissions, wastewater, solid wastes, hazardous wastes and noise. The EIA assessments have focussed on construction phases and have not addressed operational phases for each of these elements. The EIA provides no information regarding the potential	Prepare an evaluation of potential resource efficiency during construction and operation. Define potential impacts and develop approaches for avoidance, minimisation and use of alternative materials in order to reduce the project impact on natural and scarce resources. Baseline information must be captured for topics such as potential contaminated land and environmental impacts associated with the soil movement required by the earthworks. All assessments should address current conditions and potential future impacts of project construction and operation

ESS	Scope / Aim of the ESS	Gaps between the Turkish EIA Regulation and World Bank's ESF	Environmental and Social Studies conducted/to be conducted to fill the gap
		contamination of land associated with historical use and does not discuss the environmental and social impacts associated with the volumes of soil movements proposed in the earthworks activities.	
ESS4 Community Health and Safety	ESS4 recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition, communities that are already subjected to impacts from climate change may also experience an acceleration or intensification of impacts due to project activities. ESS4 addresses the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable. The objectives of ESS4 are as follows: • To anticipate and avoid adverse impacts on the health and safety of project-affected communities during the project life cycle from both routine and nonroutine circumstances. • To promote quality and safety, and considerations relating to climate change in the design and construction of infrastructure, including dams. • To avoid or minimize community exposure to project-related traffic and road safety risks, diseases, and hazardous materials. • To have in place effective measures to address emergency events. • To ensure that the safeguarding of personnel and property is carried out in a manner that avoids or minimizes risks to the project-affected communities.	<u>World Bank's ESF</u> WB's ESF: The project should anticipate and avoid adverse impacts on the health and safety of the Affected Community and ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimizes risks to the Affected Communities. ESS4 requirements are as follows: (i) community health and safety, including infrastructure and equipment design and safety, safety of services, traffic and road safety, ecosystem services, community exposure to health issues, management and safety of hazardous materials, and emergency preparedness and response and security; and (ii) security personnel. <u>Turkish EIA Regulation</u> The EIA does not address regarding the environmental and social impacts associated with construction camps and the influx of temporary/migrant labour to support construction activities.	Assess the safety and security risks associated with construction and operation of the WWTP on the community and develop a plan to mitigate and manage risks..
ESS6 Biodiversity Conservation and Sustainable Management of Living Natural	ESS6 recognizes that protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development. Biodiversity is defined as the variability among living organisms from all sources, including inter alia, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are a part;	<u>World Bank's ESF</u> The environmental and social assessment as set out in ESS1 will consider direct, indirect, and cumulative project-related impacts on habitats and the biodiversity they support. This assessment will consider threats to biodiversity, for example, habitat loss, degradation and fragmentation, invasive alien species, overexploitation, hydrological changes, nutrient loading, pollution and incidental take, as well as projected climate change impacts. It will determine the significance of biodiversity or habitats based on their vulnerability and	Robust sampling methodologies and plans should be prepared to inform surveys for all identified habitats and species to ensure that robust baseline data is obtained to inform the assessment of potential impacts, mitigation and compensation strategies.

ESS	Scope / Aim of the ESS	Gaps between the Turkish EIA Regulation and World Bank's ESF	Environmental and Social Studies conducted/to be conducted to fill the gap
Resources	this includes diversity within species, between species, and of ecosystems. The objectives of ESS6 are as follows: • To protect and conserve biodiversity and habitats. • To apply the mitigation hierarchy and the precautionary approach in the design and implementation of projects that could have an impact on biodiversity. • To promote the sustainable management of living natural resources. • To support livelihoods of local communities, including Indigenous Peoples, and inclusive economic development, through the adoption of practices that integrate conservation needs and development priorities.	irreplaceability at a global, regional, or national level and will also take into account the differing values attached to biodiversity and habitats by project-affected parties and other interested parties. The Borrower will avoid adverse impacts on biodiversity and habitats. When avoidance of adverse impacts is not possible, the Borrower will implement measures to minimize adverse impacts and restore biodiversity in accordance with the mitigation hierarchy provided in ESS1 and with the requirements of this ESS. The Borrower will ensure that competent biodiversity expertise is utilized to conduct the environmental and social assessment and the verification of the effectiveness and feasibility of mitigation measures. Where significant risks and adverse impacts on biodiversity have been identified, the Borrower will develop and implement a Biodiversity Management Plan. <u>Turkish EIA Regulation</u> The EIA has provided inadequate baseline data regarding project biodiversity and natural habitats and the potential impacts associated with the project during construction and operation. The EIA reports that ecological species and habitat evaluations were undertaken through habitat evaluation and literature review.	
ESS10 Stakeholder Engagement and Information Disclosure	This ESS recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation. The objectives of ESS10 are as follows: • To establish a systematic approach to stakeholder engagement that will help Borrowers identify stakeholders and build and maintain a constructive relationship with them, in particular project affected parties. • To assess the level of stakeholder interest and support for the project and to enable stakeholders' views to be taken into account in project design and environmental and social performance. • To promote and provide means for effective and inclusive engagement with project-affected parties throughout the project life cycle on issues that could potentially affect them. • To ensure that appropriate project information	<u>World Bank's ESF</u> Borrowers will engage with stakeholders throughout the project life cycle, commencing such engagement as early as possible in the project development process and in a time frame that enables meaningful consultations with stakeholders on project design. The nature, scope, and frequency of stakeholder engagement will be proportionate to the nature and scale of the project and its potential risks and impactsThe process of stakeholder engagement will involve the following: (i) stakeholder identification and analysis; (ii) planning how the engagement with stakeholders will take place; (iii) disclosure of information; (iv) consultation with stakeholders; (v) addressing and responding to grievances; and (vi) reporting to stakeholders. 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. <u>Turkish EIA Regulation</u> The EIA reports that a single, formal, information disclosure exercise has been carried out regarding the project. This occurred at the start of the EIA process. No further information disclosure activities have been undertaken prior to the EIA report being finalized. The EIA does not describe any stakeholder engagement and therefore it is assumed that none has been undertaken. 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 of Environment,	A stakeholder engagement plan should be prepared to address project start up, construction and operation. This should be a two way process of giving and receiving information. It should involve the local, regional and national communities as applicable to the project.

ESS	Scope / Aim of the ESS	Gaps between the Turkish EIA Regulation and World Bank's ESF	Environmental and Social Studies conducted/to be conducted to fill the gap
	on environmental and social risks and impacts is disclosed to stakeholders in a timely, understandable, accessible, and appropriate manner and format. • To provide project-affected parties with accessible and inclusive means to raise issues and grievances, and allow Borrowers to respond to and manage such grievances.	Urbanization and Climate Change, 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. <u>Public Information and Participation Meeting:</u> In the Turkish EIA Regulation, public consultation is required for the purpose of "preliminary scope determination" only for projects requiring EIA, and for this purpose, only the environmental assessment must be announced with its justification. However, ESS 10 does not specify how many times and by what method public consultation and public information will be carried out, instead it is requested to adopt a continuous stakeholder participation approach throughout the project life cycle, which will be decided in proportion to the nature, scale and impact size of the project.	

ANNEX-6-ECOLOGY AND BIODIVERSITY

Studies of the biological environment of this Project Area and the potential impact area were carried out on 18 September 2023. The studies covered terrestrial and aquatic environments, including flora and fauna species, vegetation and habitat descriptions.

The distribution of flora and fauna species in the Project Area and their biological activities has been determined through the studies carried out with this ESMP report.

Within the scope of biodiversity baseline detection studies, the Project Area and its immediate surroundings have been researched. Research has been conducted to assess terrestrial flora species and vegetation within the footprint of project components and associated facilities.

The Biodiversity Study Area, devised based on expert opinions, was chosen to align with the few homogenous fauna components in the Project Area that have adapted to anthropogenic influences.

Methodologies

Flora

The species observed in the area were recorded. The data obtained from previous floristic studies in the area and literature review were used in the preparation of floristic lists.

The families were listed in the floristic lists in alphabetical order. The Turkish names of each plant species were also included in the list. For the Turkish names of plants, "Türkçe Bitki Adları Sözlüğü" (Dictionary of Turkish Plant Names) was used (Baytop, T., 1997). In addition, the phytogeography of the plant, its existence (or non-existence) in the area, its abundance, its endemism and IUCN categories (Ekim et al., 2000), the habitat types where it grows and the altitudes where it is observed were also included in the list. The list of plant species in the Project Area and its surroundings is presented in Table- 7. Definitions of abbreviations and symbols are also given in the legend.

The floristic list is prepared according to the phylogenetic order of Turkish flora as gymnosperms (Gymnospermae) and angiosperms (Angiospermae). The families under these groups have also been presented in the phylogenetic order of Turkish Flora. The names of the species were given with their authors and their local names, if any, phytogeographical areas, endemic species, threat categories for endemic and rare species, altitudes where they are observed, and their habitats and abundance were listed respectively.

Fauna

The basic principles and methods underlying the faunistic studies are summarised below. The faunistic studies involved direct field observations, surveys and literature reviews within the Project Area and its surroundings to determine the faunal components.

Faunistic fieldwork was carried out in the Project Area and its surroundings. To identify species and their preferred habitat, nests-offspring-footprints (especially for birds and mammals), droppings-faeces-food remains (especially for mammals), skin-horn-shield (e.g. carapax), and footprints were examined.

Species were not hunted, collected or killed during the identification process. Direct observation with advanced optical equipment was used to identify mammals and birds. To identify bird species, transect and point counting methods were used instead of netting and mantrap methods, and faunistic observations were made on foot and/or by vehicle.

Data on biotopes, biogenetic reserves, endemic species, threatened species and wildlife habitats were also collected and evaluated. The conservation status of the fauna components was

determined according to the Turkish Red Lists, Bern Convention, CITES and IUCN European Red Lists.

The fauna inventory includes mammals, birds, reptiles and amphibians. The scientific name, habitat, endemism, population density, risk category, status in the Bern Convention and possible risks for each species are also included in this study. All this information is given in Table- 8.

Aquatic Biodiversity

An aquatic habitat identification and assessment study was conducted at the planned discharge point. In this context, a biodiversity expert conducted a comprehensive examination, which included a literature review, fieldwork, and survey studies.

Following field studies, research and existing literature were examined to determine the status of the aquatic habitat.

Fish species were identified as an indicator group primarily affected by the construction activities. The impact of WWTP effluent on aquatic ecosystems and the necessary mitigation measures were also assessed.

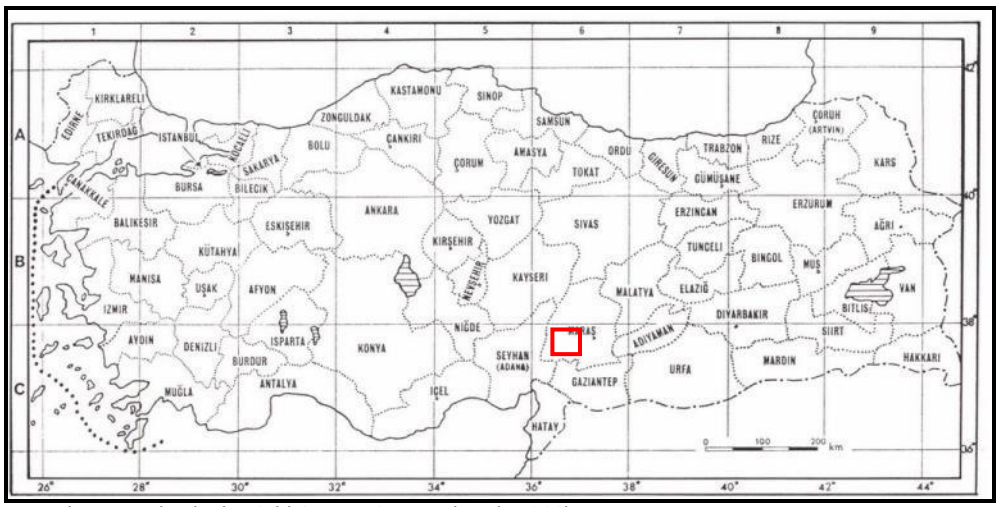
In this regard, the following studies were conducted as part of the aquatic research:

- Assessment of aquatic species' national and international protection status and endemism.
- Evaluate the project's impact on the aquatic environment and the proposed mitigation measures.

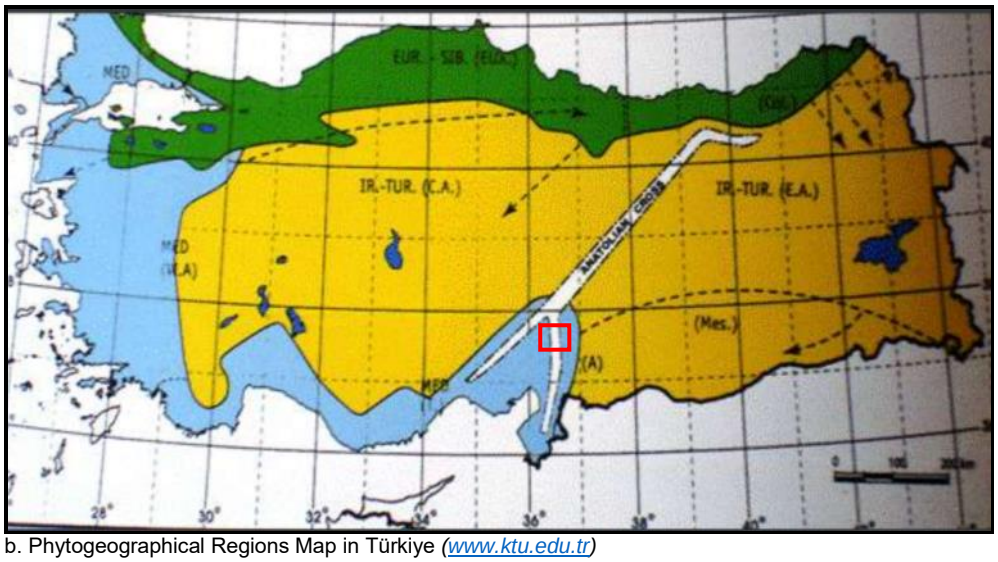
Terrestrial Flora and Habitats

Habitat Classification of the Project Area

The Project Area is in the transition zone of the Irano-Turanian Region (Eastern Anatolia) and Mediterranean Region (Taurus), as seen in Figure- 16. The Project Area is located in the C6 grid in the grid square system of the flora of Türkiye.



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.: Irano-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- 16 Bioecological Location of the Project Area

According to WB ESS6, natural habitat comprises viable assemblages of plant and/or animal species of largely native origin and/or where human activity has not essentially modified an area's primary ecological functions and species composition. Modified habitats may contain many plants and/or animal species of non-native origin and/or where human activity has substantially modified an area's primary ecological functions and species composition. Modified habitats may include areas managed for agriculture, forest plantations, reclaimed coastal zones, and reclaimed wetlands. Modified habitats have been determined in the Project Area.

The Project Area is located in the Türkoğlu OIZ and has been subjected to various human-induced impacts from industrial activities. As a result, it has been entirely transformed into an anthropogenic area, losing its natural or semi-natural habitat characteristics. There is no area with natural habitat status adjacent to the project area, but there are agricultural and industrial areas.

Observations were also made in creek, where the planned WWTP will be discharged. Riparian vegetation has been observed around the stream under anthropogenic influence.

The habitat types within the Study Area are determined with desktop studies using satellite imagery according to EUNIS Habitat Classifications. After the field studies, expert observations have been verified, and habitat types have been revised.

Photographs of the EUNIS habitat types identified within the Project Area can be found in Figure- 17, while the EUNIS habitat types map is shown in Figure- 18. The EUNIS habitat types present in the Biodiversity Study Area, along with their explanations, are detailed below:

- E5.1: Anthropogenic herb stands
- J2.3: Rural industrial and commercial sites still in active use
- C3.4: Species-poor beds of low-growing water-fringing or amphibious vegetation

The Project Area (E5.1)

Industrial area (J2.3)

Riperian vegetation around the Project Area (C3.4)

Figure- 17 Photographs of habitat types of the Project Area

Figure- 18 EUNIS Habitat Types of the Project Area

Terrestrial Flora

After conducting field and desktop studies, 31 flora species belonging to 15 families has been identified. The distribution of these flora species based on their phytogeographic regions is as follows:

Mediterranean Region: 2 species; 7%
Irano-Turanian Region: 6 species; 19%
Common: 23 species; 74%

The Project Area consists of modified and ruderal vegetation. Thus, it has been determined that the flora species consist of herbaceous plants and widely distributed species. According to field studies and literature reviews, the flora species in and around the Project Area are presented in Table-7.

None of the 31 identified flora species is endemic. In addition, there are no protected flora species as per the BERN and CITES conventions.

Table- 7 Flora Species in and around the Project Area

FAMILY	SPECIES	P.G.R	Endemism	IUCN	BERN Anx1	CITES	Resource
ASTERACEAE	*Anthemis hyalina DC.*	Common					O,L
	Carduus nutans L. subsp. nutans	Common					O,L
	Carduus pycnocephalus L.	Common					L
	Carthamus lanatus L.	Common					O,L
	Centaurea iberica Trev. ex Spreng.	Common					O
	Chardinia orientalis (L.) Kuntze.	Irano-Turanian					O,L
	Cichorium intybus L	Common					L
	Conyza canadensis (L.) Cronquist	Common		LC			O,L
	Crepis sancta (L.) Bornm.	Common					O
	Senecio vernalis Waldst. & Kit.	Common					O,L
BRASSICACEAE	*Alyssum strictum Willd.*	Irano-Turanian					L
	Lepidium draba L	Common					O
CAPRIFOLIACEAE	*Valerianella vesicaria (L.)*	Common					O,L
CARYOPHYLLACEAE	*Minuartia montana L.*	Common					O
CONVOLVULACEAE	*Convolvulus arvensis L.*	Common					O,L
	Convolvulus dorycnium L. subsp. dorycnium	Mediterranean					O
FABACEAE	*Astragalus aduncus Willd*	Common					O,L
	Astragalus triradiatus Bunge	Common					O,L
	Scorpiurus subvillosus L. var. subvillosus	Common					O,L
	Trigonella filipes Boiss.	Common					O,L
GERANIACEAE	*Erodium cicutarium (L.) L Hér.*	Common					O,L
JUNCACEAE	*Juncus inflexus L.*	Common		LC			O,L
LAMIACEAE	*Moluccella laevis L.*	Irano-Turanian					O
	Phlomis kurdica Rech.f.	Irano-Turanian					O,L
	Teucrium polium L. subsp. polium	Common					O,L
MALVACEAE	*Alcea acaulis (Cav.) Alef*	Irano-Turanian					O,L
MALVACEAE	*Malva neglecta Wallr.*	Common					O,L
POACEAE	*Aegilops triuncialis L.*	Common		LC			L
	Pennisetum orientale Rich.	Irano-Turanian		LC			O,L
	Phragmites australis (Cav.) Trin. Ex Steud	Common		LC			O
SCROPHULARIACEAE	*Scrophularia peyronii Post*	Mediterranean					O

Resource
O: Direct Observation
L: Literature
A: Public Survey
LC: Least Concern

Terrestrial Fauna

A total of eight species of mammals, 18 species of birds, eight species of reptiles and two species of amphibians are identified in the study area based on field observation, communication with local people and literature review. The complete list of all fauna is given in Table- 8, explaining the symbols and abbreviations used in the legend.

Reptiles and Amphibians

A total of eight reptile species and two amphibian species have been identified in the Study Area. Lizard species have been identified through direct observation, snake species' nests have been identified, and species have been confirmed through literature records.

The amphibians observed in the study area inhabit the streamside. All the reptile and amphibian species identified in the study area are widespread throughout Türkiye.

Aves

The habitats, habitat functions, and status of the 18-bird species observed in the Study Area. Of these, 7 (39%) are non-passerines, and 11 (61%) are passerines. The composition of bird species in the study area is relatively homogeneous, ranging from raptors to small passerines, due to the general availability of suitable foraging habitats. There are no endemic or protected bird species. The bird species observed in the project area are landscape species that have adapted to urban life.

Mammals

A total of eight mammals belonging to six families were identified in the Study Area. Rodentia nests were directly observed.

Other mammals were not directly observed but were reported by residents, and their presence was confirmed through animal tracks and signs. Literature also supports the existence of these species in the area.

Table- 8 Fauna Species in and around the Project Area

FAUNA GROUPS	FAMILY	SPECIES	English Name	END.	IUCN	BERN	CITES	PROJECT AREA		RESOURCES		
								Inside	Outside	O	L	A
AMPHIBIAN	BUFONIDAE	*Bufo bufo*	Common Toad	-	LC	Ann -2	-	-	X	X	X	-
	RANIDAE	*Rana macrocnemis*	Brusa Frog	-	LC	Ann -3	-	-	X	-	X	X
REPTILIAN	AGAMIDAE	*Stellagama stellio*	Starred Agama	-	LC	Ann -2	-	-	X	-	X	-
	ANGUIDAE	*Pseudopus apodus*		-	LC	Ann -2	-	-	X	-	X	-
	COLUBRIDAE	*Dolichophis caspius*	Large Whip Snake	-	LC	Ann -3	-	-	X	-	X	-
		Eirenis modestus	Ring-Headed Dwarf Snake	-	LC	Ann -3	-	-	X	-	X	-
		Natrix tessellata	Dice Snake	-	LC	Ann -2	-	-	X	-	X	-
		Platyceps najadum	Dahl's Whip Snake	-	LC	Ann -2	-	X	X	X	X	-
	LACERTIDAE	*Ophisops elegans*	Snake-eyed lizard	-	LC	Ann -2	-	X	X	X	X	X
	SCINCIDAE	*Ablepharus budaki*	Snake-Eyed Skink	-	LC	Ann -3	-	X	X	X	X	-
AVES	ACCIPITRIDAE	*Buteo buteo*	Common Buzzard	-	LC	Ann -2	App-II	-	X	-	X	-
	ALAUDIDAE	*Calandrella brachydactyla*	Greater Short-toed Lark	-	LC	Ann -2	-	-	X	-	X	-
		Galerida cristata	Crested lark	-	LC	Ann -3	-	X	X	X	X	-
		Melanocorypha calandra	Calandra Lark	-	LC	Ann -2	App-III	-	X	-	X	-
	CICONIIDAE	*Ciconia ciconia*	White stork	-	LC	Ann -2	-	-	X	X	X	X
	COLUMBIDAE	*Columba livia*	Rock pigeon	-	LC	Ann -3	-	X	X	X	X	-
		Spilopelia senegalensis	Laughing Dove	-	LC	Ann -3	-	-	X	-	X	-
		Streptopelia decaocto	Eurasian Collared-dove	-	LC	Ann -3	-	X	X	X	X	-
	CORVIDAE	*Corvus corone*	Carrion Crow	-	LC	Ann -3	-	X	X	X	X	X
	EMBERIZIDAE	*Emberiza cirlus*	Cirl Bunting	-	LC	Ann -2	-	-	X	-	X	-
	FALCONIDAE	*Falco subbuteo*	Eurasian Hobby	-	LC	Ann -2	App-II	-	X	X	X	X
	MUSCICAPIDAE	*Alauda arvensis*	Eurasian Skylark	-	LC	Ann -3	App-III	-	X	-	X	-
		Oenanthe isabellina	Isabelline Wheatear	-	LC	Ann -2	-	-	X	-	X	-
		Saxicola rubetra	Whinchat	-	LC	Ann -2	-	-	X	-	X	-
	PASSERIDAE	*Passer domesticus*	House sparrow	-	LC	-	-	X	X	X	X	-
		Passer hispaniolensis	Spanish Sparrow	-	LC	Ann -3	-	-	X	X	X	X
		Passer montanus	Eurasian Tree Sparrow	-	LC	Ann -3	-	X	X	X	X	-
		Petronia petronia	Rock Sparrow	-	LC	Ann -2	-	-	X	-	X	-
MAMMALIAN	CANIDAE	*Vulpes vulpes*	Red fox	-	LC	-	-	-	X	-	X	X
	CRICETIDAE	*Microtus socialis*	Social Vole	-	LC	-	-	X	X	X	X	-
	ERENACIDAE	*Erinaceus concolor*	Hedgehog	-	LC	-	-	-	X	X	X	X
	LEPORIDAE	*Lepus europaeus*	European Hare	-	LC	Ann -3	-	-	X	-	X	X
	MURIDAE	*Mus musculus*	House Mouse	-	-	-	-	X	X	X	X	X
		Apodemus sylvaticus	Long-tailed Field Mouse	-	LC	-	-	-	X	-	X	-
		Meriones tristrami	Tristram's Jird	-	LC	-	-	X	X	X	X	X
	SORICIDAE	*Crocidura suaveolens*	Lesser Shrew	-	LC	Ann -2	-	X	X	X	X	X

Resource
O: Direct Observation
L: Literature
A: Public Survey

Aquatic Biodiversity

The primary objective of researching the aquatic environment is to identify fish species, the indicator group most impacted by pre-construction, construction and operational activities.

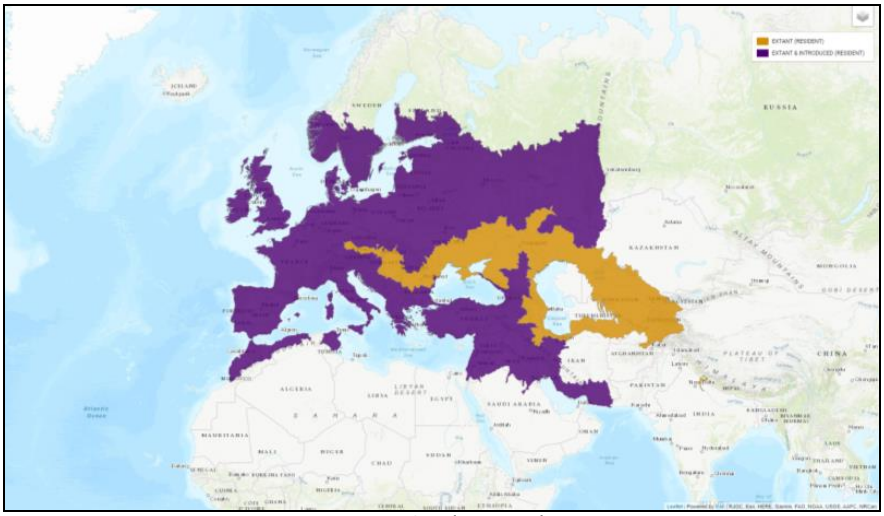
Currently and after WWTP, treated wastewater will be discharged to the dry creek bed, which is connected to Aksu Stream, right next to the project area, via an existing collector line within the borders of OIZ.

Small riverside vegetation communities with anthropogenic effects have been observed around the creek to be discharged.

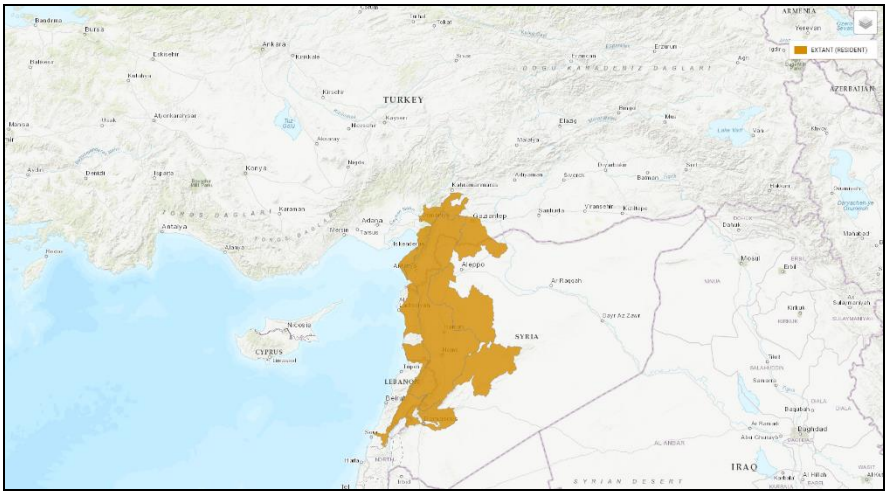
There are no fish species in the dry stream bed which is discharged. Fish species in the Aksu Stream have been determined by meetings with local people in the field and reviewing literature studies.

According to literature studies, the fish species given in Table- 9 have been determined in the Aksu Stream.

These fish species are not protected species. Cyprinus carpio and *Alburnus orontis* are in the VU category by the IUCN. *Cyprinus carpio* is a common species in Türkiye inland waters. According to the IUCN, *Alburnus orontis* is still quite common locally in Türkiye, and in Syria, the species is now found only in small isolated subpopulations (see Figure- 19).



Cyprinus carpio



Alburnus orontis

Figure- 19 IUCN Distribution Map of Fish Species in Aksu Stream

Table- 9 Possible Fish Species in Aksu Stream

ORDER	FAMILY	SPECIES	ENGLISH NAME	IUCN
Cypriniformes	Cyprinidae	*Cyprinus carpio*	Eurasian Carp	VU
		Garra rufa	Red Garra	LC
		Capoeta capoeta	Caucasian Scraper	LC
	Leuciscidae	*Alburnus orontis*	Orontes spotted bleak	VU
Salmoniformes	Salmonidae	*Salmo trutta*	Brown Trout	LC

Protected Areas

Nationally Protected Areas

To identify and evaluate the protected areas within the Project Area and its immediate vicinity, desktop studies and literature research were carried out using the databases of the relevant institutions within the scope of the Project.

No National Parks, Nature Parks, Nature Monuments or Nature Reserve Areas defined in Articles 2 and 3 of the National Parks Law are in the Project Area. No Wildlife Protection Areas, Wildlife Development Areas or Wild Animal Nestling Areas are determined by the Land Hunting Law in the Project Area.

According to the Regulation on Identification of Sensitive Water Bodies and the Areas Affecting These Water Bodies (Official Gazette No.29927 Date 23.12.2016), Aksu Stream, where the discharge creek meets, is defined as a sensitive water body.

Internationally Recognized Areas

Internationally recognized areas exclusively defined according to WB ESS6 (2012) are UNESCO World Heritage Natural Sites, Biosphere Reserves, Ramsar Wetlands of International Importance, Key Biodiversity Areas (KBA), Important Bird Areas, and Alliance for Zero Extinction Sites.

Using up-to-date data, internationally recognized areas in and around the Project Area have been researched, and it has been determined that the Project Area is in the Gavur Lake KBA/IBA according to up-to-date database of many NGO's and volunteer organizations including Doga Dernegi[4], Dogal Hayati Koruma Dernegi[5], and Key Biodiversity Areas[6] (see Figure- 20).

Gavur Lake KBA, an area of 6,664 ha, was evaluated as KBA in 2017. According to KBA website data, the site lies south of the town of Türkoğlu in the Sağlık Plain and comprises a complex of fields and small reedbeds (Phragmites) inundated during the winter but largely dry and cultivated during the summer. The area is fed by springs and streams. The biodiversity element triggering KBA criteria is *Phalacrocorax pygmeus*. This species has not been habitated in the project area and area of influence.

Gavur Lake drying works started in the 1950s. The streams feeding the lake were channeled and directed directly to the Aksu River. The dried lands were given to TİGEM. Since 1230 ha of these

[4] *dogadernegi.org*
https://dogadernegi.org/gavur-golu/
[5] *cloudfront.org*
https://d2hawiim0tjbd8.cloudfront.net/downloads/turkiye_nin_onemli_kus_alanlari.pdf
[6] *© 2024 keybiodiversityareas.org*

lands are still swamps, drying efforts are continuing. For this reason, the lake area is constantly shrinking [7].

As a result of drying, the peat bogs on the lake bottom were burned, and therefore collapses occurred on the lake bottom. Collapses occasionally caused ponds and TİGEM agricultural lands faced flooding due to these ponds. Today, both TİGEM and DSI continue to work to prevent this situation. Some official initiatives are being carried out for the KBA to regain its water holding qualities to the same extent as before[8].

According to the map data, although the Project Area is within the KBA, the entire OIZ area is also within the KBA. As a result of the field studies, it was determined that the area is a modified habitat within the OIZ. As a result of the meetings with OIZ employees in the Project Area, it was stated that there has been no ponding in the area where Gavur Lake is located since 2015 and that the area where there was ponding in the past (i.e. the area considered as Gavur Lake KBA) is the region with agricultural areas on the opposite side of the Project Area. Species and habitats that trigger KBA do not exist in the Project Area. In addition, the wastewater currently discharged without treatment will be treated after the Project is in the operation phase, and it is expected to impact the Gavur Lake system positively.

The Gavur Lake KBA, which is prepared according to current data[1], OIZ and WWTP area, Gavur Lake ponding area determined according to Doga Dernegi data[1], and areas converted into agricultural lands within KBA (according to land observation, current satellite, and CORINE data) are shown in Figure- 20.

Species and habitats that trigger KBA do not exist in the Project Area. In addition, the wastewater currently discharged without treatment will be treated after the Project is in the operation phase, and it is expected to impact the Gavur Lake system positively.

[7] *Korkmaz, Yrd. Doç. Dr. Hüseyin (2008). "Antakya-Kahramanmaraş Graben Alanında Kurutulan Sulak Alanların (Amik Gölü, Emen Gölü ve Gâvur Gölü Bataklığı) Modellerinin Oluşturulması". Mustafa Kemal Üniversitesi Sosyal Bilimler Enstitüsü Dergisi. dergipark.org.tr.*

[8] *Derneği, Doğa. "Türkiye'nin Önemli Doğa Alanları." Cilt 2 (2015)*

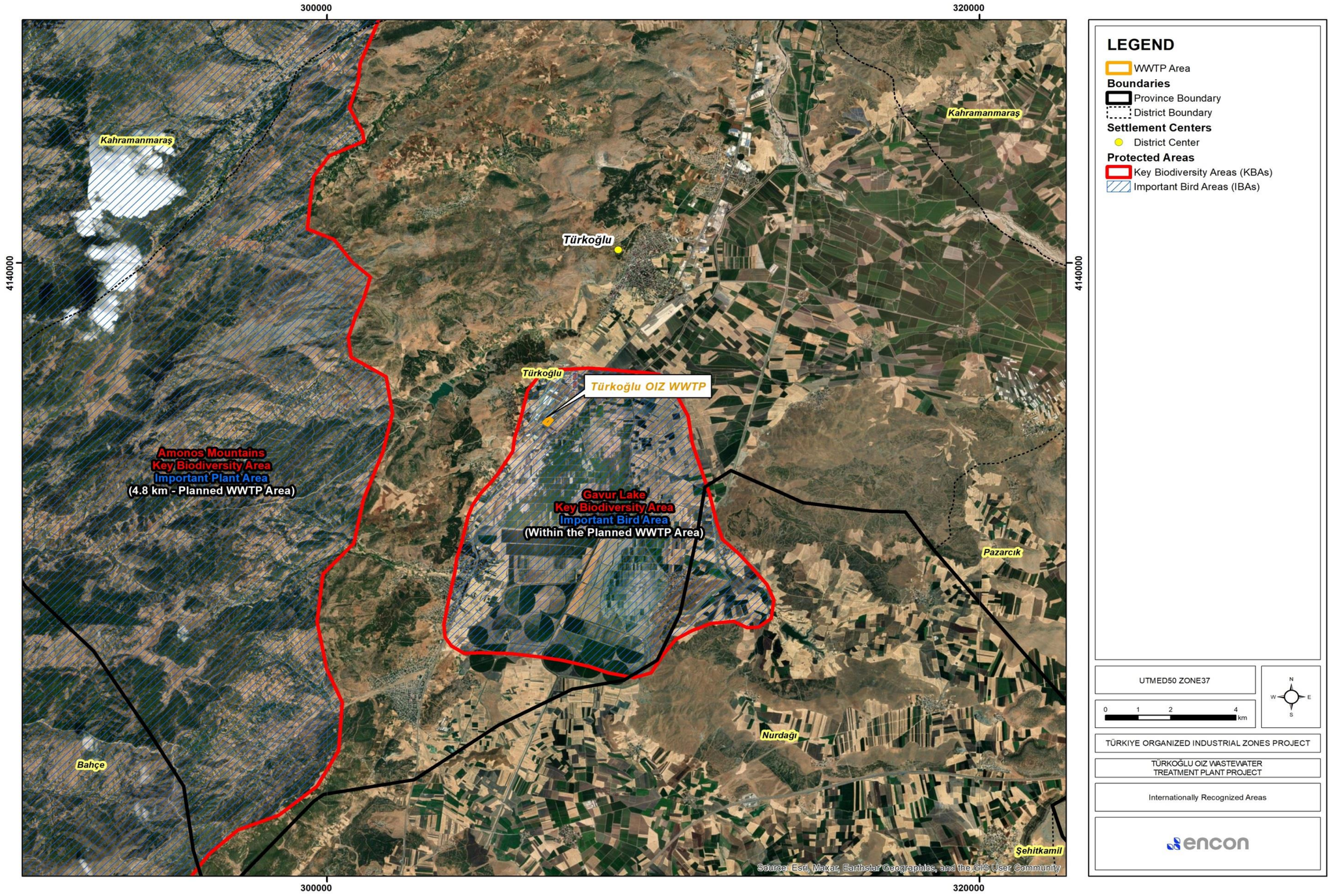


Figure- 20 Internationally Recognized Areas around the Project Area

ANNEX-7-AIR QUALITY IMPACT CALCULATIONS

Pre-Construction Phase

In the pre-construction phase of the Project, topsoil stripping will be carried out during the land preparation process. In the feasibility report of the Project prepared in November 2020, the total Project area was given as 25.6 decares and total construction area determined as 22.4 decares. It is estimated that a minimum of 30 cm of topsoil stripping will be carried out. Table-10 showing the dust emission factors is given below to calculate the dust emissions resulting from the topsoil stripping process.

Table-10 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.

- Volume of topsoil to be stripped = Area x Height = Volume
- Selected average depth of topsoil stripped is 0.3 m

= 22,400 m^2 (area determined based on desk studies) x 0.30 m = 6,720 m^3

- Density of topsoil: 1.6 ton/m^3 (data provided by Turkoglu OIZ, based on desk studies)
- Amount of topsoil to be stripped: 6720 m^3 x 1.6 ton/m^3 = 10,752 ton
- Duration of pre-construction phase of Project = 30 days
- Daily amount of topsoil to be stripped: 10,752 ton/30 days = 358.4 ton/day
- Storage area = Area = Volume / Height

= 6,720 m^3 / 2.5 m (assumed average storage height) = 0.269 ha

Uncontrolled emissions:

Uncontrolled emissions amount of dismantling/excavation works is calculated by multiplying the related dismantling/excavation factor (see Table-10) with working time of topsoil stripping and daily amount of topsoil stripped. Similarly, uncontrolled emissions amount sourced by excavation storage is calculated by multiplying related factor given in Table-10 with the storage area of the excavated material. Storage area is calculated in the previous paragraph by dividing volume of excavated soil (also given in previous paragraph) with assumed average height of the stored excavation (2.5 m).

Amount of PM_{10} emissions (dismantling/excavation):
Dismantling/Excavation emission factor (uncontrolled): 0.025 kg/ton (see Table-10)
One working day = 8 hours;
Hourly excavated mass = 358.4 ton/day x 1/8 day/hour = 44.8 ton/hour (unit conversion)
Amount of PM_{10} emissions = Hourly excavated material amount x Related factor

= 44.8 ton/hour * 0.025 kg/ton = **1.12 kg/hour**

Amount of PM_{10} emissions (storage):
Storage emission factor (uncontrolled): 5.8 kg/ha (see Table-10)
Average storage time = 1 day (assumption)
Amount of PM_{10} emissions = Storage area x Related factor x Average storage time
= 0.269 ha x 5.8 kg/ha x 1 day x 1/24 day/hour = **0.065 kg/hour**

Controlled emissions:

Controlled emissions amount of dismantling/excavation works is calculated by multiplying the related dismantling/excavation factor (see Table-10) with working time of topsoil stripping and daily amount of topsoil stripped. Similarly, controlled emissions amount sourced by excavation storage is calculated by multiplying related factor given in Table-10 with the storage area of the excavated material. Size of the storage area is same with uncontrolled emissions calculations.

Amount of PM_{10} emissions (dismantling/excavation):
Dismantling/Excavation emission factor (controlled): 0.0125 kg/ton (see Table-10)
One working day = 8 hours;
Hourly excavated mass (unit conversion) = 358.4 ton/day x 1/8 day/hour = 44.8 ton/hour
Amount of PM_{10} emissions: Hourly excavated material amount x Related factor
= 44.8 ton/hour * 0.0125 kg/ton = **0.56 kg/hour**

Amount of PM_{10} emissions (storage):
Storage emission factor (controlled): 2.9 kg/ha (see Table-10)
Average storage time = 1 day (assumption)
Amount of PM_{10} emissions = Storage area x Related factor x Average storage time
= 0.269 ha x 2.9 kg/ha x 1 day x 1/24 hours = **0.0325 kg/hour**

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, SO_x 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. The equipment to be used during pre-construction phase is given in Table- 11.

Table- 11 Equipment List to be Used During Pre-construction Phase

Construction Machinery/Equipment	Number
Truck	1
Loader	1

Dust and gas emission from vehicles are calculated as below. The emission factors for CO, SO_2, NOx, PM and particulate matter are given in Table- 12.

Table- 12 Emission Factors for 1 L Diesel Consumption

Pollutant	Emission Factor (g/L)
CO	0.49
SO_2	0.01
NOx	3.0
PM	0.12

Source: Environmental Protection Agency (EPA), 2023.

The diesel consumption by each construction vehicle is assumed as 25 L/hour. Total diesel consumption for 2 construction vehicles given in Table- 11 is 50 L/hour. The results of calculation by using emission factors and diesel consumption of construction vehicles are as:

For CO: 50 L/h x 0.49 g/L = **0.0245 kg/h**
For SO_2: 50 L/h x 0.01 g/L = **0.0005 kg/h**
For NO_x: 50 L/h x 3.0 g/L = **0.15 kg/h**
For PM: 50 L/h x 0.12 g/L = **0.006 kg/h**

Construction Phase

The excavation resulting from construction activities will be used as foundation filling material, and in case of excess, it will be stored and disposed of as specified in the "Regulation on the Control of Excavation Soil, Construction and Demolition Waste". Calculations regarding the excavation that will occur during the construction phase are as follows:

- Total volume of excavation:
  Volume = Area x Height = 71,680 m^3 (data provided by Turkoglu OIZ, based on desk studies)
- Density of excavation material: 1.60 ton/m^3 (data provided by Turkoglu OIZ, based on field studies)
- Total mass of excavation material:
  Mass = Volume x Density = 71,680 m^3 x 1.60 ton/m^3 = 114,488 ton
- Working hours per day = 8
- Total work days: 4 months x 30 days/month = 120 days
- Total work hours = 120 days x 8 hours/day = 960 hours
- Hourly excavated material amount:
  Mass Rate = Mass / Time = 114,488 ton / 960 hours = 119.47 ton/hour
- Ratio of excavation to be used as filling material: 50%
- Volume of excavation to be disposed of: 35,840 m^3
- Total mass of excavation to be disposed of: 57,344 ton
- Volume of excavation to be used as filling material: 35,840 m^3
- Assumed storage height = 3 m
- Area for storage of excavation to be used as filling material:
  Area = Volume / Height = 11,947 m^2

The uncontrolled and controlled dust emissions are calculated by using the emission factors given in Table-10 and presented as follows.

Uncontrolled emissions:

Uncontrolled emissions amount of dismantling/excavation works is calculated by multiplying the related dismantling/excavation factor (see Table-10) with working time of excavation works done (in construction phase only) and daily amount of excavation (again, in construction phase only). Similarly, uncontrolled emissions amount sourced by excavation storage is calculated by multiplying related factor given in Table-10 with the storage area of the excavated material. Storage area is calculated in the previous paragraph by dividing volume of excavated soil (also given in previous paragraph) with assumed average height of the stored excavation (3 m). Uncontrolled transport emissions are calculated as mass rate, first determining total emission's mass over the construction phase, then divided by total work time. Lastly loading emissions are calculated with multiplying related emission factor from Table-10 with hourly loaded material amount.

Amount of PM10 emissions (excavation):
Excavation emission factor (uncontrolled): 0.025 kg/ton (see Table-10)
Hourly excavated material amount: 119.47 ton/hour (see Mass Rate calculations above)
Amount of PM10 emissions (excavation) = Hourly excavated material amount x Related factor
= 119.47 ton/hour * 0.025 kg/ton = **2.99 kg/hour**

Amount of PM10 emissions (loading):
Loading emission factor (uncontrolled): 0.010 kg/ton (see Table-10)
Hourly excavated material amount: 119.47 ton/hour (see Mass Rate calculations above)
Amount of PM10 emissions (loading) = Hourly loaded material amount x Related factor
= 119.47 ton/hour * 0.010 kg/ton = **1.19 kg/hour**

Amount of PM10 emissions (transport):
Average travel distance = 10 km (assumption made based on project map)
Total travel number = Excess excavation mass / Average truck load capacity
= 57,344 ton / 40 ton = 1434 (total travels by vehicles – unitless)
Number of vehicles = 5 (see Table- 13)
Travels per vehicle = Total travel number / vehicle number
= 1434 / 5 = 287 travels per vehicle (unitless)
Transportation emission factor (uncontrolled): 0.700 kg/km-vehicle (see Table-10)
PM10 mass = Average travel distance x Related factor x Vehicle number x Travels per vehicle
= 10 km x 0.700 kg/km-vehicle x 287 x 5 vehicle = 1038 kg
Total work time = 12 months (total construction time) - 1 monhts (pre-construction phase)
= 11 months x 30 days x 8 hour/day = 2640 hours
Amount of PM10 emissions = Rate = Mass / Time
= 1038 kg / 2640 hours = **0.39 kg/hour**

Amount of PM_{10} emissions (storage):
Storage emission factor (uncontrolled): 5.8 kg/ha (see Table-10)
Average storage time = 1 day (assumption)
Amount of PM_{10} emissions = Storage area x Related factor x Average storage time
= 11.95 ha x 5.8 kg/ha x 1 day 1/24 hours = **2.89 kg/hour**

Controlled Dust Emissions:

Controlled emissions amount of excavation works is calculated by multiplying the related dismantling/excavation factor (see Table-10) with working time of excavation works done (in construction phase only) and daily amount of excavation (again, in construction phase only). Similarly, controlled emissions amount sourced by excavation storage is calculated by multiplying related factor given in Table-10 with the storage area and average storage time of the excavated material. Size of the storage area is same with uncontrolled emissions calculations. Controlled transport emissions are calculated as mass rate, first determining total emission's mass over the construction phase, then divided by total work time. Lastly loading emissions are calculated by multiplying related emission factor from Table-10 with hourly loaded material amount.

Amount of PM_{10} emissions (excavation):
Excavation emission factor (controlled): 0.0125 kg/ton (see Table-10)
One working day = 8 hours;
Amount of PM_{10} emissions = Hourly excavated material amount x Related factor
= 119.47 ton/hour * 0.0125 kg/ton = **1.49 kg/hour**

Amount of PM10 emissions (loading):
Loading emission factor (uncontrolled): 0.005 kg/ton (see Table-10)
Hourly excavated material amount: 119.47 ton/hour (see Mass Rate calculations above)
Amount of PM10 emissions (loading) = Hourly excavated material amount x Related factor
= 119.47 ton/hour * 0.005 kg/ton = **0.60 kg/hour**

Transportation emission factor (controlled): 0.350 kg/km-vehicle
Amount of PM_{10} emissions: 5 km x 0.350 kg/km-vehicle x (1/120 days) x (1/8 hours)
= **0.0018 kg/hour**

Amount of PM10 emissions (transport):
Average travel distance = 10 km (assumption made based on project map)
Total travel number = Excess excavation mass / Average truck load capacity
= 57,344 ton / 40 ton = 1434 (total travels by vehicles – unitless)
Number of vehicles = 5 (see Table- 13)
Travels per vehicle = Total travel number / vehicle number
= 1434 / 5 = 287 travels per vehicle (unitless)
Transportation emission factor (uncontrolled): 0.350 kg/km-vehicle (see Table-10)
PM10 mass = Average travel distance x Related factor x Vehicle number x Travels per vehicle
= 10 km x 0.350 kg/km-vehicle x 287 x 5 vehicle = 519 kg
Total work time = 12 months (total construction time) - 1 monhts (pre-construction phase)
= 11 months x 30 days x 8 hour/day = 2640 hours
Amount of PM10 emissions = Rate = Mass / Time
= 519 kg / 2640 hours = **0.20 kg/hour**

Amount of PM_{10} emissions (storage):
Storage emission factor (uncontrolled): 2.9 kg/ha (see Table-10)
Average storage time = 1 day (assumption)

Amount of PM_{10} emissions = Storage area x Related factor x Average storage time
= 11.95 ha x 2.9 kg/ha x 1 day 1/24 hours = **1.44 kg/hour**

As in the pre-construction phase of the Project, there will be exhaust emissions of heavy construction machinery, in addition to the dust emissions. Primary emissions from exhaust gases of vehicles are NO_x, CO, 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. The construction machinery and equipment list are given in Table- 13

Table- 13 Construction Machinery and Equipment List

Construction Machinery/Equipment	Number
Truck	5
Excavator	2
Loader	1
Sprinkler	1
Tower crane	1

Dust and gas emission from vehicles are calculated as below. In calculations, the emission factors for CO, SO_2, NOx, and particulate matter given in Table- 12 are used.

The diesel consumption by each construction vehicle is assumed as 25 L/hour. Total diesel consumption by 10 construction vehicles given in Table- 13 equals to 250 L/hour. The results of calculation by using emission factors and diesel consumption of construction vehicles are as:

For CO: 250 L/h x 0.49 g/L = **0.1225 kg/h**
For SO_2: 250 L/h x 0.01 g/L = **0.0025 kg/h**
For NOx: 250 L/h x 3.0 g/L = **0.75 kg/h**
For PM: 250 L/h x 0.12 g/L = **0.03 kg/h**

ANNEX-8- NOISE LEVEL CALCULATIONS

The total equivalent noise level created by noise sources is calculated with the help of the formula given below.

$$L_{wT} = 10 \times \log \sum_{i=1}^{n} 10^{\frac{L_{wi}}{10}} \quad (1)$$ (METU, 2023).

Where;

n: Number of noise sources
Lwi: Noise level (dBA) of each source
LwT: Total equivalent noise level

The noise level originating from the machine/equipment and reaching a certain distance is calculated by the formula below.

$$L_p = L_{wT} + 10 \times \log \frac{Q}{4\pi r^2} \quad (2)$$ (SRL,1988).

Where;

Q: 1
r: Distance (m)
Lp: Noise level (dBA)

Pre-construction Phase

The equipment to be used in the pre-construction phase and their noise levels are given below.

Table- 14 Noise Levels of Machinery/Equipment

Equipment	Number	Lwi
Excavator	1	104
Truck	1	108

Using the information given in Table- 14 and the formula numbered 1, total equivalent noise level is calculated as 109.5.

In addition, using formula numbered 2, the noise levels depending on distance for pre-constrution phase are calculated and given in Table- 15.

Table- 15 Noise Levels of Depending on Distance

Distance (m)	Lp (dBA)	Project Standard (dBA)
15	74.9	55
50	64.5	55
100	58.5	55
200	52.4	55
300	48.9	55
400	46.4	55
500	44.5	55
600	42.9	55
700	41.6	55

800	40.4	55
900	39.4	55
1000	38.5	55
1500	34.9	55
2000	32.4	55
2500	30.5	55

Construction Phase

The equipment to be used in the pre-construction phase and their noise levels are given below.

Table- 16 Noise Levels of Machinery/Equipment

Equipment	Number	Lwi
Excavator	2	104
Loader	1	115
Tower Crane	1	112
Truck	5	108
Sprinkler	1	109

Using the information given in Table- 16 and the formula numbered 1, total equivalent noise level is calculated as 119.6.

In addition, using formula numbered 2, the noise levels depending on distance for pre-constrution phase are calculated and given in Table- 17.

Table- 17 Noise Levels of Depending on Distance

Distance (m)	Lp (dBA)	Project Standard (dBA)
15	85.1	55
50	74.7	55
100	68.6	55
200	62.6	55
300	59.1	55
400	56.6	55
500	54.7	55
600	53.1	55
700	51.7	55
800	50.6	55
900	49.6	55
1000	48.6	55
1500	45.1	55
2000	42.6	55
2500	40.7	55

ANNEX-9- CHANCE FIND PROCEDURE

9.1. Introduction

Türkoğlu OIZ is responsible to avoid or mitigate 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.

9.2. Roles and Responsibilities

Türkoğlu OIZ and all the contractors are responsible to comply with the procedure during the project construction activities. In this regard, Türkoğlu OIZ would be providing training to their and 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.

9.3. Chance Find Process and Procedure

The step by step process and procedure to be followed upon a chance find discovery is provided below. In the case of any chance find, as detailed below, the Contractor will give due consideration and follow the necessary steps.

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 put in place
- Contractor contacts the Türkoğlu OIZ and the archaeological museum in the province is informed immediately
- Chance find location is secured through flagging, or no-entry signs, etc.
- Chance find should not be moved, removed or further disturbed

Step 2 – Recording

- Chance Find Form Part A is filled in by the contractor and sent to Türkoğlu OIZ 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
- Contractor informs the Türkoğlu OIZ
- Contractor records the decision on Part B of Chance Find form and sends a copy to the Türkoğlu OIZ
- A copy of Chance Find form Part B is kept for records
- No further actions required
- This step closes out the chance find procedure
- Construction activities may resume

Step 4.B – Significance to site

- The museum declares that the site/finding is considered to be of significance
- Museum decides on further actions and informs the contractor and the contractor informs the Türkoğlu OIZ
- Contractor records the decision on Part B of Chance Find form
- Proceed to Step 5

Step 5 – Site investigation

Step 5.A - After field investigation Museum declares the site/finding has minor significance

- Contractor informs the Türkoğlu OIZ
- Contractor records the decision on Part C of Chance Find form and sends a copy to the Türkoğlu OIZ
- A copy of Chance Find form Part B is kept for records
- No further actions required
- This step closes out the chance find procedure
- Construction activities may resume

Step 5.B - After field investigation Museum declares the site/finding has moderate significance

- Further studies such as test pit/salvage excavations or remote sensing investigation are to be completed
- Museum provides instructions, and/or supervision for the studies
- Contractor informs the Türkoğlu OIZ
- Türkoğlu OIZ provides an archaeological work team of qualified archaeologist and workers to work under the supervision of the museum.
- After excavation is completed, 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 Türkoğlu OIZ
- Contractor records the decision on Part C of Chance Find form and sends a copy to the Türkoğlu OIZ
- A copy of Chance Find form Part B is kept for records
- No further actions required
- This step closes out the chance find procedure
- Construction activities may resume

Step 5.C - After field investigation Museum declares the site/finding has major significance

- Salvage excavation is to be completed
- Site is to be treated according to Law on the Protection of Cultural and Natural Assets Law (No. 2863 dated 21.07.1983)
- Museum provides instructions, and/or supervision for test pit/salvage archaeological excavation
- Contractor informs the Türkoğlu OIZ
- Türkoğlu OIZ 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 Türkoğlu OIZ
- Site will be officially recorded and protected according to Turkish regulations
- Contractor records the decision on Part C of Chance Find form and sends a copy to the municipality
- A copy of Chance Find form Part B is kept for records
- No further actions 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.

9.4. 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-9.4.1). 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-9.4.2).

Annex 9.4.1 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 9.4.2 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-10- WATER QUALITY MEASUREMENTS

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Numunenin HSL'ye Geliş Tarihi/Saati	12.06.2023 / 14:08
Protokol No / Numune Barkod No	2023-1034 - 1 / 2083237850
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Rapor Sayfa Sayısı	2

Numuneyi Gönderen Kişi/Kurum/Kuruluş	TÜRKOĞLU İLÇE SAĞLIK MÜDÜRLÜĞÜ				
Numunenin Alındığı Adres	ORGANİZE SAN. BÖL. 499ADA28 PARSEL/TÜRKOĞLU/KAHRAMANMARAŞ				
Numune İzleme Noktası	ARGENTO TEKSTIL ŞEBEKE				
Numunenin Geliş Sebebi	ÖZEL İSTEK ANALİZLER		*İçme- Kullanma Suları (Kimyasal+Mikrobiyolojik) (Arıtım Yok)		
Numune Lab. Sevk Tarihi - Saati / Alınış Neden	12.06.2023 - 14:09				
Numune Grubu	SU ANALİZLERİ				
Numunenin Cinsi / Adı /Markası /Üret.Firma Adı	İÇME KULLANMA SUYU		---	---	---
Numunenin Ambalaj Şekli / Etiketi / Miktarı	Steril Pet Şişe + Pet Şişe		ETİKETLİ	500+500cc	
Numunenin Üret.Tar./ Son Kul.Tar./ Parti No/ Seri	---	---	---	---	
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Makbuz Tarih ve No / Dekont Tarih ve No	---		---		
Beyan. Tarih Sayı / İthal Ön İzin Belge Tarih Sayı					
Numunenin Durumu	Analize Uygun				
Numune Bilgileri	---		---		
Analize Başlama/Bitiş Tarihi	12.06.2023 14:19		14.06.2023 08:58		
Raporlama Tarihi	14.06.2023 12:30				

MİKROBİYOLOJİK ANALİZLER

Çalışılan Analizler	Birim	Yöntem	Tayin Limiti (LOQ)	Mevzuat Limiti	Analiz Sonucu
Escherichia coli	kob/100mL	TS EN ISO 9308-1		0	0
Koliform Bakteri	kob/100mL	TS EN ISO 9308-1		0	0
Enterokok / Fekal Streptococ	kob/100mL	TS EN ISO 7899-2		0	0

KİMYASAL ANALİZLER

Çalışılan Analizler	Birim	Yöntem	Tayin Limiti (LOQ)	Mevzuat Limiti	Analiz Sonucu
Amonyum(fotometrik)	mg/L	Fotometrik (Hazır Kit)		0,5	Tespit Edilemedi

Rapor Baskı Tarihi : 15.06.2023 **1/4**

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Form no: F55/KMHSL

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ANALİZ RAPORU

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Protokol No / Numune Barkod No	2023-1034 - 1 / 2083237850
CSBYS No	---
Rapor Sayfa Sayısı	2

KİMYASAL ANALİZLER

Çalışılan Analizler	Birim	Yöntem	Tayin Limiti (LOQ)	Mevzuat Limiti	Analiz Sonucu
İletkenlik	20° C'de µS/cm	TS 9748 EN 27888		2500	663
pH	pH Birimi	TS EN ISO 10523		6,5 - 9,5	7,82
Koku(Fiziksel)	TKEDY	Fiziksel		TKEDY	UYGUN
Bulanıklık (Fiziksel)	TKEDY	Fiziksel		TKEDY	UYGUN
Renk (Fiziksel)	TKEDY	Fiziksel		TKEDY	UYGUN

Değerlendirme : Sonuçlar çalışılan analizler yönünden 17.02.2005 tarih ve 25730 sayılı Resmi Gazete'de yayımlanan İnsani Tüketim Amaçlı Sular Hakkında Yönetmeliği'ne göre uygundur.

Açıklamalar:
- Sonuçlar 17.02.2005 tarih ve 25730 sayılı Resmi Gazete'de yayımlanan İnsani Tüketim Amaçlı Sular Hakkında Yönetmeliğine göre değerlendirilmektedir.
- Koyu renkte yazılmış olan analiz sonuçları ilgili mevzuat limitleri dışındadır.
-Numune tarafımızca alınmamış olup, müşteri tarafından sağlanan bilgiler esas alınarak, KAHRAMANMARAŞ HALK SAĞLIĞI LABORATUVARI Numune Kabul Kriterlerine uygun olarak kabul edilmiştir.
-Özel istek amaçlı analizlerde,müşteri tarafından belirtilen bilgiler esas alınarak analize alınmış ve ilgili yönetmeliğe göre uygunluk değerlendirmesi yapılmıştır.
- Bu rapordaki sonuçlar ve görüşler yukarıda belirtilen ve deneyi yapılan numunenin teslim alındığı hâli için geçerlidir.Bu raporun hiçbir bölümü tek başına veya kısmen kullanılamaz ve KAHRAMANMARAŞ HALK SAĞLIĞI LABORATUVARInın izni olmadan çoğaltılamaz. İmzasız raporlar geçersizdir. Özel istek numune analiz raporları adli ve idari işlemlerde ve reklam amaçlı kullanılamaz.
- Genişletilmiş ölçüm belirsizlikleri müşteri talebi veya yasal mevzuatlar zorunlu kıldığı durumlarda belirtilir.
- TKEDY: Tüketicilerce kabul edilebilir veya herhangi bir anormal değişim yok.
- kob (cfu): Koloni oluşturan birim (colony forming unit)

Su Mikrobiyoloji Laboratuvarı	Su Kimyası Laboratuvarı	
Birim Sorumlusu	Birim Sorumlusu	Laboratuvar Sorumlusu
KEZİBAN BAYDAĞ	**YASEMİN KAMALAK**	**Osman Turan DAL**
BİYOLOG		Uzman Biyolog
14.06.2023	14.06.2023	14.06.2023

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Rapor Sayfa Sayısı	2

Numuneyi Gönderen Kişi/Kurum/Kuruluş	TÜRKOĞLU İLÇE SAĞLIK MÜDÜRLÜĞÜ				
Numunenin Alındığı Adres	ORGANİZE SAN. BÖL. 499ADA28 PARSEL/TÜRKOĞLU/KAHRAMANMARAŞ				
Numune İzleme Noktası	ARGENTO TEKSTIL KUYU SUYU				
Numunenin Geliş Sebebi	ÖZEL İSTEK ANALİZLER		*İçme- Kullanma Suları (Kimyasal+Mikrobiyolojik) (Arıtım Yok)		
Numune Lab. Sevk Tarihi - Saati / Alınış Neden	12.06.2023 - 14:09				
Numune Grubu	SU ANALİZLERİ				
Numunenin Cinsi / Adı /Markası /Üret.Firma Adı	İÇME KULLANMA SUYU		---	---	---
Numunenin Ambalaj Şekli / Etiketi / Miktarı	Steril Pet Şişe + Pet Şişe		ETİKETLİ	500+500cc	
Numunenin Üret.Tar./ Son Kul.Tar./ Parti No/ Seri	---	---	---	---	
Mühür Durumu / Tutanak-Sözleşme Tarihi / No	MÜHÜRLÜ	---	---	---	
Fatura Edilecek Kişi/Kurum/Kuruluş	ARGENTO TEKSTIL SAN. VE TIC. A.Ş.				
Makbuz Tarih ve No / Dekont Tarih ve No	---		---		
Beyan. Tarih Sayı / İthal Ön İzin Belge Tarih Sayı					
Numunenin Durumu	Analize Uygun				
Numune Bilgileri	---		---		
Analize Başlama/Bitiş Tarihi	12.06.2023 14:19		14.06.2023 12:30		
Raporlama Tarihi	14.06.2023 12:30				

MİKROBİYOLOJİK ANALİZLER

Çalışılan Analizler	Birim	Yöntem	Tayin Limiti (LOQ)	Mevzuat Limiti	Analiz Sonucu
Escherichia coli	kob/100mL	TS EN ISO 9308-1		0	0
Koliform Bakteri	**kob/100mL**	**TS EN ISO 9308-1**		**0**	**14**
Enterokok / Fekal Streptococ	kob/100mL	TS EN ISO 7899-2		0	0

KİMYASAL ANALİZLER

Çalışılan Analizler	Birim	Yöntem	Tayin Limiti (LOQ)	Mevzuat Limiti	Analiz Sonucu
Amonyum(fotometrik)	mg/L	Fotometrik (Hazır Kit)		0,5	Tespit Edilemedi

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CSBYS No	---
Rapor Sayfa Sayısı	2

KİMYASAL ANALİZLER

Çalışılan Analizler	Birim	Yöntem	Tayin Limiti (LOQ)	Mevzuat Limiti	Analiz Sonucu
İletkenlik	20° C'de µS/cm	TS 9748 EN 27888		2500	1228
pH	pH Birimi	TS EN ISO 10523		6,5 - 9,5	7,45
Koku(Fiziksel)	TKEDY	Fiziksel		TKEDY	UYGUN
Bulanıklık (Fiziksel)	TKEDY	Fiziksel		TKEDY	UYGUN
Renk (Fiziksel)	TKEDY	Fiziksel		TKEDY	UYGUN

Değerlendirme : Sonuçlar çalışılan analizler yönünden 17.02.2005 tarih ve 25730 sayılı Resmi Gazete'de yayımlanan İnsani Tüketim Amaçlı Sular Hakkında Yönetmeliği'ne göre Koliform Bakteri parametreleri yönünden uygun değildir.

Açıklamalar:
- Sonuçlar 17.02.2005 tarih ve 25730 sayılı Resmi Gazete'de yayımlanan İnsani Tüketim Amaçlı Sular Hakkında Yönetmeliğine göre değerlendirilmektedir.
- Koyu renkte yazılmış olan analiz sonuçları ilgili mevzuat limitleri dışındadır.
-Numune tarafımızca alınmamış olup, müşteri tarafından sağlanan bilgiler esas alınarak, KAHRAMANMARAŞ HALK SAĞLIĞI LABORATUVARI Numune Kabul Kriterlerine uygun olarak kabul edilmiştir.
-Özel istek amaçlı analizlerde,müşteri tarafından belirtilen bilgiler esas alınarak analize alınmış ve ilgili yönetmeliğe göre uygunluk değerlendirmesi yapılmıştır.
- Bu rapordaki sonuçlar ve görüşler yukarıda belirtilen ve deneyi yapılan numunenin teslim alındığı hâli için geçerlidir.Bu raporun hiçbir bölümü tek başına veya kısmen kullanılamaz ve KAHRAMANMARAŞ HALK SAĞLIĞI LABORATUVARInın izni olmadan çoğaltılamaz. İmzasız raporlar geçersizdir. Özel istek numune analiz raporları adli ve idari işlemlerde ve reklam amaçlı kullanılamaz.
- Genişletilmiş ölçüm belirsizlikleri müşteri talebi veya yasal mevzuatlar zorunlu kıldığı durumlarda belirtilir.
- TKEDY: Tüketicilerce kabul edilebilir veya herhangi bir anormal değişim yok.
- kob (cfu): Koloni oluşturan birim (colony forming unit)

Su Kimyası Laboratuvarı	Su Mikrobiyoloji Laboratuvarı	
Birim Sorumlusu	Birim Sorumlusu	Laboratuvar Sorumlusu
YASEMİN KAMALAK	**Osman Turan DAL**	**Osman Turan DAL**
	Uzman Biyolog	Uzman Biyolog
14.06.2023	14.06.2023	14.06.2023

Rapor Baskı Tarihi : 15.06.2023 **4/4**

YÖRÜK SELİM MAHALLESİ GAZİ MUSTAFA KUŞKU CADDESİ NO:34 12 ŞUBAT/KAHRAMANMARAŞ TEL:0344-223-18-46 FAX:0344 -214-48-58 e-posta: kahramanmaras.hsl@thsk.gov.tr **Form no: F55/KMHSL**

ANNEX-11- GROUNDWATER SEARCH CERTIFICATE

T.C.
ORMAN VE SU İŞLERİ BAKANLIĞI
Devlet Su İşleri Genel Müdürlüğü 20. Bölge Müdürlüğü

K-Q TSE-ISO-EN 9000

Sayı : B.23.1.DSİ.1.20.14.00-152.02.02-**479836** 09.10.2012
Konu : Yeraltısuyu Belgesi

Türkoğlu Organize Sanayi Bölgesi
Y.Sanayi sit.23.Çarşı no.34
K.MARAŞ

İlgi : 02.10.2012 tarihli dilekçeniz.

İlgi dilekçede, K.Maraş ili, Türkoğlu ilçesi, Ceceli Köyü mevkiindeki arazide sınai, içme ve kullanma suyunun yeraltısuyundan temini gayesiyle açtıracağınız kuyuya **Yeraltısuyu Arama Belgesi** verilmesi istenilmektedir.

6111 sayılı Kanunun 127. maddesi ile 167 sayılı Kanuna eklenen geçici 2. madde de öngörülen, 07.06.2011 tarih ve 27957 sayılı Resmi Gazete de yayınlanan "DSİ Yeraltısuyu Ölçüm Sistemleri Yönetmeliği" gereği kuyunuza ölçüm cihazı takılması şartıyla **Yeraltısuyu Arama Belgesi** tanzim edilerek yazımız ekinde gönderilmiştir.

Bilgilerinizi ve gereğini rica ederim.

Durmuş YÜZBAŞI
Bölge Müdür Yardımcısı

EK/EKLER :
1 ad.YAS.Ara.Bel.
1 ad.Kuyu Projesi

Adres : DSİ 20. Bölge Müdürlüğü Gaziantep Karayolu Erkenez Mevkii. 46100 KAHRAMANMARAŞ
Ayrıntılı Bilgi İçin : S. ÇANKAYA Memur Telefon : 03442360080/341 Fax: 03442360306
e-posta : scankaya@dsi.gov.tr Elektronik Ağ: www.dsi.gov.tr

KUYU İNŞA VE TATBİK PROJESİ

A - GENEL DURUM

İli	K. Maraş
İlçesi	Türkoğlu
Mah./Köyü	Ceceli
Mevkii	--
Koordinatlar	307048D-4135018K
Açılış Gayesi	Sınai İçme Kullanma
Su İhtiyacı	936,00 ton/gün
Sulanacak Saha	--- m^2

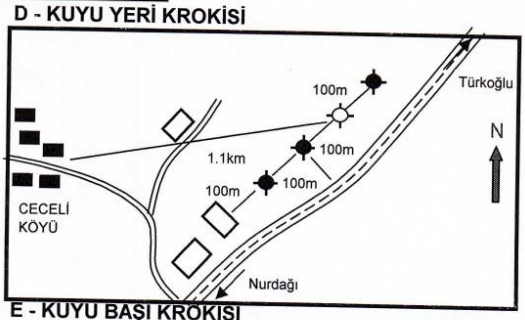
B - AÇACAK FİRMA

Adı	MT Mühendislik
Makinanın Tipi	Rotary
Sondaj (m)	100
Adres	Y. Sanayi Sit. 23. Çarşı No: 34 K.MARAŞ

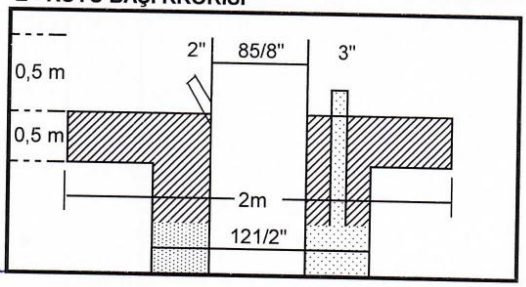
C - MESUL ŞAHISLAR

Mesleği	Adı ve Soyadı	Dip.No	İmzası
Jeoloji Müh.	Mahmut TÜKENMEZ	249/546	
Sondör	Fahri Kaplan	2390	
Kuyu Sahibi	Türkoğlu Organize Sanayi Bölgesi		

D - KUYU YERİ KROKİSİ



E - KUYU BAŞI KROKİSİ



Kuyu Açılışında Karşılaşılan Özellikler	Delik Çapı (")	Teçhiz Çapı (")	Kuyu Şeması	m	Litolojik Kesit	Su Veren Tabakalar	Düşünceler
DONELER	121/2"	85/8"		2			0-2m. N. Toprak
Akifer Cinsi: Serbest				5			2-5m. Killi çakıl
Akifer Malz: Killi Çakıl-Serpantin				10			5-10m. Kil
				20			10-30m. Killi Çakıl
				30			
				40			30-40m. Kil
Statik Seviye (m): 30				50			40-70m. Killi Çakıl
Proje Debisi (lt/s): 13,00				60			
				70			
				80			70-100m. Serpantin
Transmissibilite:				90			
150 m^3/gün/m				100			
				102			Kuyu derinliği 100m. düşünülmektedir.
PROJE HESABI				104			
				106			
Teorik Özgül Debi (Q):				108			
Q = T/100 = 150/100				110			
Q = 1,5 lt/s/m				112			
				114			
Hakiki Özgül Debi (Q_s):				116			
Q_s = Q x 0,60				118			
Q_s = 1,5 x 0,60				120			
Q_s = 0,9 lt/s/m				122			
				124			
Toplam Dinamik Yük.(Hm)				126			
Hm (m) = 60				128			
alındı.				130			
				132			
				134			
				136			
				138			

Mehmet KURUÇAY
Jeotek. Hiz. ve Yas. Şube Mür.

KUYU İNŞA VE TATBİK PROJESİ

A - GENEL DURUM

İli	K. Maraş
İlçesi	Türkoğlu
Mah./Köyü	Ceceli
Mevkii	--
Koordinatlar	306943D-4134928K
Açılış Gayesi	Sınai İçme Kullanma
Su İhtiyacı	936,00 ton/gün
Sulanacak Saha	--- m^2

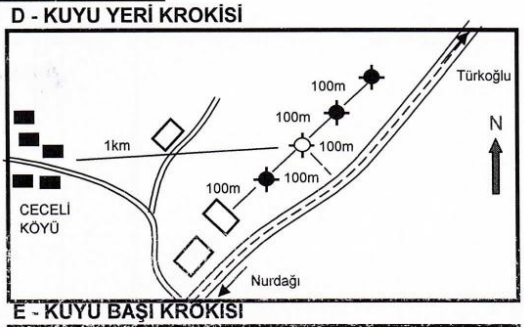
B - AÇACAK FİRMA

Adı	MT Mühendislik
Makinanın Tipi	Rotary
Sondaj (m)	100
Adres	Y. Sanayi Sit. 23. Çarşı No: 34 K.MARAŞ

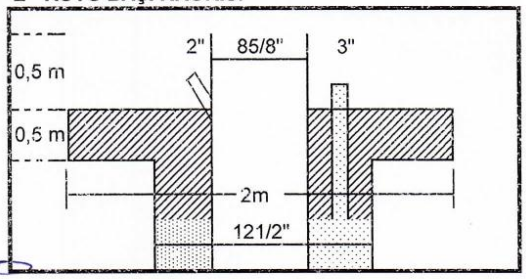
C - MESUL ŞAHISLAR

Mesleği	Adı ve Soyadı	Dip.No	İmzası
Jeoloji Müh.	Mahmut TÜKENMEZ	249/546	
Sondör	Fahri Kaplan	2390	
Kuyu Sahibi	Türkoğlu Organize Sanayi Bölgesi		

D - KUYU YERİ KROKİSİ



E - KUYU BAŞI KROKİSİ



Kuyu Açılışında Karşılaşılan Özellikler	Delik Çapı (")	Teçhiz Çapı (")	Kuyu Şeması	m	Litolojik Kesit	Su Veren Tabakalar	Düşünceler
DONELER	121/2"	85/8"		2			0-2m. N. Toprak
				5			2-5m. Killi çakıl
Akifer Cinsi: Serbest				10			5-10m. Kil
Akifer Malz: Kİlİ Çakıl-Serpantin				20			
				30			10-30m. Killi Çakıl
				40			30-40m. Kil
				50			
Statik Seviye (m): 30				60			40-70m. Killi Çakıl
Proje Debisi (lt/s): 13,00				70			
				80			
				90			70-100m. Serpantin
Transmissibilite:				100			
150 m^3/gün/m				102			Kuyu derinliği 100m.
				104			düşünülmektedir.
PROJE HESABI				106			
				108			
Teorik Özgül Debi (Q):				110			
Q = T/100 = 150/100				112			
Q = 1,5 lt/s/m				114			
				116			
Hakiki Özgül Debi (Q_s):				118			
Q_s = Q x 0,60				120			
Q_s = 1,5 x 0,60				122			
Q_s = 0,9 lt/s/m				124			
				126			
				128			
Toplam Dinamik Yük.(Hm)				130			
Hm (m) = 60				132			
alındı.				134			
				136			
				138			

Mehmet KURUÇAY
Jeotek. Hiz. ve Yas. Şube Müd.

T.C.
ORMAN VE SU İŞLERİ BAKANLIĞI
Devlet Su İşleri Genel Müdürlüğü 20. Bölge Müdürlüğü

K-Q TSE-ISO-EN 9000

Sayı : B.23.1.DSİ.1.20.14.00-152.02.02-**479839** 09.10.2012
Konu : Yeraltısuyu Belgesi

Türkoğlu Organize Sanayi Bölgesi
Y.Sanayi sit.23.Çarşı no.34
K.MARAŞ

İlgi : 02.10.2012 tarihli dilekçeniz.

İlgi dilekçede, K.Maraş ili, Türkoğlu ilçesi, Ceceli Köyü mevkiindeki arazide sınai, içme ve kullanma suyunun yeraltısuyundan temini gayesiyle açtıracağınız kuyuya **Yeraltısuyu Arama Belgesi** verilmesi istenilmektedir.

6111 sayılı Kanunun 127. maddesi ile 167 sayılı Kanuna eklenen geçici 2. madde de öngörülen, 07.06.2011 tarih ve 27957 sayılı Resmi Gazete de yayınlanan "DSİ Yeraltısuyu Ölçüm Sistemleri Yönetmeliği" gereği kuyunuza ölçüm cihazı takılması şartıyla **Yeraltısuyu Arama Belgesi** tanzim edilerek yazımız ekinde gönderilmiştir.

Bilgilerinizi ve gereğini rica ederim.

Durmuş YUZBAŞI
Bölge Müdür Yardımcısı

EK/EKLER :
1 ad.YAS.Ara.Bel.
1 ad.Kuyu Projesi

Adres : DSİ 20. Bölge Müdürlüğü Gaziantep Karayolu Erkenez Mevkii. 46100 KAHRAMANMARAŞ
Ayrıntılı Bilgi İçin : S. ÇANKAYA Memur Telefon : 03442360080/341 Fax: 03442360306
e-posta : scankaya@dsi.gov.tr Elektronik Ağ: www.dsi.gov.tr

T.C.
ORMAN VE SU İŞLERİ BAKANLIĞI
Devlet Su İşleri Genel Müdürlüğü 20. Bölge Müdürlüğü

Belge Tar. :09.10.2012
Belge Tipi :

YERALTISUYU ARAMA BELGESİ

1 – Belge Sahibi :Türkoğlu Organize Sanayi Bölgesi

2 – Teknik Sorumlu :Mahmut TÜKENMEZ
Y.Sanayi sit.23.çarşı no.34 K.MARAŞ

3 – Sondör, Kuyucu ,Galerici : Fahri KAPLAN
Y.Sanayi sit.23.çarşı no.34 K.MARAŞ

4 – Arama yapılacak Arazinin
a) İli :K.Maraş e)Yüzölçümü m^2
b) İlçesi :Türkoğlu f) Kuyu yeri Tarifi
c) Bucağı :
d) Mah. veya Köy :Ceceli

5 - Kuyunun
a)Tipi :Derin Kuyu 6 - Galerinin
b)Delme usulü :Rotary a)Kesiti :
c)DSİ Nosu : b)Açma usulü :

7 - Talep edilen su miktarı 13 L/s 936 Ton/gün 336960 Ton/yıl

02.10.2012 tarihli dilekçe ile usulüne uygun olarak yapılan müracaat incelenerek yukarda yüzölçümü ve yeri belirtilen alan içerisinde ve yukarda belirtilen kişilerce yeraltısuyu aramak amacıyla ekli ve onaylı projesine uygun bir adet derinkuyu inşaasına sakınca görülmediğinden,167 sayılı Yeraltısuları Kanununun 9.maddesi uyarınca bir yıl süreli olarak bu arama belgesi verilmiştir.

Durmuş YÜZBAŞI
Bölge Müdürü Yrd.

Eki :1 Ad. Onaylı Proje

NOT:Arama belgesi müddeti 1 yıl olup
kuyu açıldığında kullanma belgesi
alınacaktır. Civarda keson kuyu varsa 0-20 m ler
arası çimentolanacaktır.
Tapu ve kuyu yeri ile ilgili ihtilaflar belge sahibine aittir.

KUYU İNŞA VE TATBİK PROJESİ

A - GENEL DURUM

İli	K. Maraş
İlçesi	Türkoğlu
Mah./Köyü	Ceceli
Mevkii	--
Koordinatlar	306943D-4134928K
Açılış Gayesi	Sınai İçme Kullanma
Su İhtiyacı	936,00 ton/gün
Sulanacak Saha	--- m^2

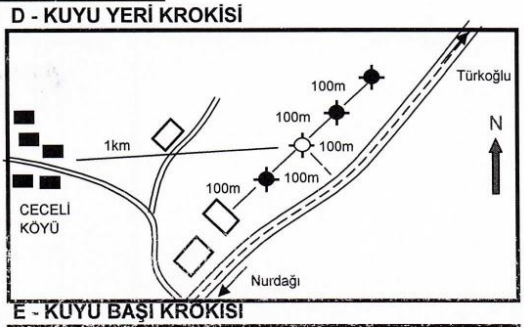
B - AÇACAK FİRMA

Adı	MT Mühendislik
Makinanın Tipi	Rotary
Sondaj (m)	100
Adres	Y. Sanayi Sit. 23. Çarşı No: 34 K.MARAŞ

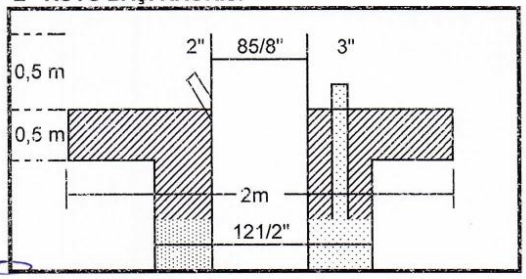
C - MESUL ŞAHISLAR

Mesleği	Adı ve Soyadı	Dip.No	İmzası
Jeoloji Müh.	Mahmut TÜKENMEZ	249/546	
Sondör	Fahri Kaplan	2390	
Kuyu Sahibi	Türkoğlu Organize Sanayi Bölgesi		

D - KUYU YERİ KROKİSİ



E - KUYU BAŞI KROKİSİ



Kuyu Açılışında Karşılaşılan Özellikler	Delik Çapı (")	Teçhiz Çapı (")	Kuyu Şeması	m	Litolojik Kesit	Su Veren Tabakalar	Düşünceler
DONELER	121/2"	85/8"		2			0-2m. N. Toprak
				5			2-5m. Killi çakıl
Akifer Cinsi: Serbest				10			5-10m. Kil
Akifer Malz: Killi Çakıl-Serpantin				20			
				30			10-30m. Killi Çakıl
				40			30-40m. Kil
				50			
Statik Seviye (m): 30				60			40-70m. Killi Çakıl
Proje Debisi (lt/s): 13,00				70			
				80			
				90			70-100m. Serpantin
Transmissibilite:				100			
150 m^3/gün/m				102			Kuyu derinliği 100m.
				104			düşünülmektedir.
PROJE HESABI				106			
				108			
				110			
Teorik Özgül Debi (Q):				112			
Q = T/100 = 150/100				114			
Q = 1,5 lt/s/m				116			
				118			
Hakiki Özgül Debi (Q_s):				120			
Q_s = Q x 0,60				122			
Q_s = 1,5 x 0,60				124			
Q_s = 0,9 lt/s/m				126			
				128			
Toplam Dinamik Yük.(Hm)				130			
Hm (m) = 60				132			
alındı.				134			
				136			
				138			

Mehmet KURUÇAY
Jeotek. Hiz. ve Yas. Şube Müd.

T.C.
ORMAN VE SU İŞLERİ BAKANLIĞI
Devlet Su İşleri Genel Müdürlüğü 20. Bölge Müdürlüğü

K-Q TSE-ISO-EN 9000

Sayı : B.23.1.DSİ.1.20.14.00-152.02.02-**479837** 09.10.2012
Konu : Yeraltısuyu Belgesi

Türkoğlu Organize Sanayi Bölgesi
Y.Sanayi sit.23.Çarşı no.34
K.MARAŞ

İlgi : 02.10.2012 tarihli dilekçeniz.

İlgi dilekçede, K.Maraş ili, Türkoğlu ilçesi, Ceceli Köyü mevkiindeki arazide sınai, içme ve kullanma suyunun yeraltısuyundan temini gayesiyle açtıracağınız kuyuya **Yeraltısuyu Arama Belgesi** verilmesi istenilmektedir.

6111 sayılı Kanunun 127. maddesi ile 167 sayılı Kanuna eklenen geçici 2. madde de öngörülen, 07.06.2011 tarih ve 27957 sayılı Resmi Gazete de yayınlanan "DSİ Yeraltısuyu Ölçüm Sistemleri Yönetmeliği" gereği kuyunuza ölçüm cihazı takılması şartıyla **Yeraltısuyu Arama Belgesi** tanzim edilerek yazımız ekinde gönderilmiştir.

Bilgilerinizi ve gereğini rica ederim.

Durmuş YÜZBAŞI
Bölge Müdür Yardımcısı

EK/EKLER :
1 ad.YAS.Ara.Bel.
1 ad.Kuyu Projesi

Adres : DSİ 20. Bölge Müdürlüğü Gaziantep Karayolu Erkenez Mevkii. 46100 KAHRAMANMARAŞ
Ayrıntılı Bilgi İçin : S. ÇANKAYA Memur Telefon : 03442360080/341 Fax: 03442360306
e-posta : scankaya@dsi.gov.tr Elektronik Ağ: www.dsi.gov.tr

T.C.
ORMAN VE SU İŞLERİ BAKANLIĞI
Devlet Su İşleri Genel Müdürlüğü 20. Bölge Müdürlüğü

Belge Tar. :09.10.2012
Belge Tipi :

YERALTISUYU ARAMA BELGESİ

1 – Belge Sahibi :Türkoğlu Organize Sanayi Bölgesi

2 – Teknik Sorumlu :Mahmut TÜKENMEZ
Y.Sanayi sit.23.çarşı no.34 K.MARAŞ

3 – Sondör, Kuyucu ,Galerici : Fahri KAPLAN
Y.Sanayi sit.23.çarşı no.34 K.MARAŞ

4 – Arama yapılacak Arazinin
a) İli :K.Maraş e)Yüzölçümü m^2
b) İlçesi :Türkoğlu f) Kuyu yeri Tarifi
c) Bucağı :
d) Mah. veya Köy :Ceceli

5 - Kuyunun
a)Tipi :Derin Kuyu 6 - Galerinin
b)Delme usulü :Rotary a)Kesiti :
c)DSİ Nosu : b)Açma usulü :

7 - Talep edilen su miktarı 13 L/s 936 Ton/gün 336960 Ton/yıl

02.10.2012 tarihli dilekçe ile usulüne uygun olarak yapılan müracaat incelenerek yukarda yüzölçümü ve yeri belirtilen alan içerisinde ve yukarda belirtilen kişilerce yeraltısuyu aramak amacıyla ekli ve onaylı projesine uygun bir adet derinkuyu inşaasına sakınca görülmediğinden,167 sayılı Yeraltısuları Kanununun 9.maddesi uyarınca bir yıl süreli olarak bu arama belgesi verilmiştir.

Durmuş YÜZBAŞI
Bölge Müdürü Yrd.

Eki :1 Ad. Onaylı Proje

NOT:Arama belgesi müddeti 1 yıl olup
kuyu açıldığında kullanma belgesi
alınacaktır. Civarda keson kuyu varsa 0-20 m ler
arası çimentolanacaktır.
Tapu ve kuyu yeri ile ilgili ihtilaflar belge sahibine aittir.

KUYU İNŞA VE TATBİK PROJESİ

A - GENEL DURUM

İli	K. Maraş
İlçesi	Türkoğlu
Mah./Köyü	Ceceli
Mevkii	--
Koordinatlar	306819D-4134823K
Açılış Gayesi	Sınai İçme Kullanma
Su İhtiyacı	936,00 ton/gün
Sulanacak Saha	--- m^2

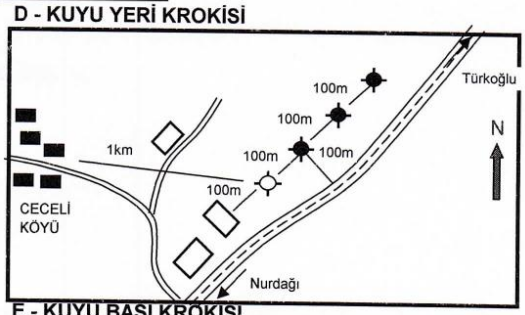
B - AÇACAK FİRMA

Adı	MT Mühendislik
Makinanın Tipi	Rotary
Sondaj (m)	100
Adres	Y. Sanayi Sit. 23. Çarşı No: 34 K.MARAŞ

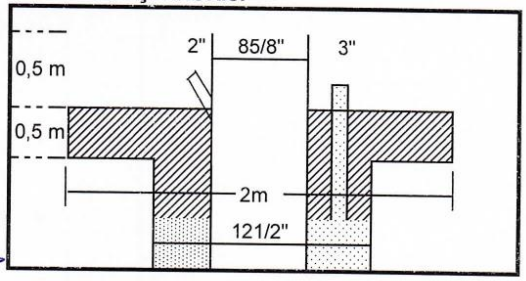
C - MESUL ŞAHISLAR

Mesleği	Adı ve Soyadı	Dip.No	İmzası
Jeoloji Müh.	Mahmut TÜKENMEZ	249/546	
Sondör	Fahri Kaplan	2390	
Kuyu Sahibi	Türkoğlu Organize Sanayi Bölgesi		

D - KUYU YERİ KROKİSİ



E - KUYU BAŞI KROKİSİ



Kuyu Açılışında Karşılaşılan Özellikler	Delik Çapı (")	Teçhiz Çapı (")	Kuyu Şeması	m	Litolojik Kesit	Su Veren Tabakalar	Düşünceler
DONELER Akifer Cinsi: Serbest Akifer Malz: Killi Çakıl-Serpantin Statik Seviye (m): 30 Proje Debisi (lt/s): 13,00 Transmissibilite: 150 m^3/gün/m	121/2"	85/8"		2 5 10 20 30 40 50 60 70 80 90 100			0-2m. N. Toprak 2-5m. Killi çakıl 5-10m. Kil 10-30m. Killi Çakıl 30-40m. Kil 40-70m. Killi Çakıl 70-100m. Serpantin
PROJE HESABI Teorik Özgül Debi (Q): Q = T/100 = 150/100 Q = 1,5 lt/s/m Hakiki Özgül Debi (Q_s): Q_s = Q x 0,60 Q_s = 1,5 x 0,60 Q_s = 0,9 lt/s/m Toplam Dinamik Yük.(Hm) Hm (m) = 60 alındı.				102 104 106 108 110 112 114 116 118 120 122 124 126 128 130 132 134 136 138			Kuyu derinliği 100m. düşünülmektedir.

Mehmet KURUÇAY
Jeotek. Hiz. ve Yas. Şube Müd

T.C.
ORMAN VE SU İŞLERİ BAKANLIĞI
Devlet Su İşleri Genel Müdürlüğü 20. Bölge Müdürlüğü

K-Q TSE-ISO-EN 9000

Sayı : B.23.1.DSİ.1.20.14.00-152.02.02-**479838** 09.10.2012
Konu : Yeraltısuyu Belgesi

Türkoğlu Organize Sanayi Bölgesi
Y.Sanayi sit.23.Çarşı no.34
K.MARAŞ

İlgi : 02.10.2012 tarihli dilekçeniz.

İlgi dilekçede, K.Maraş ili, Türkoğlu ilçesi, Ceceli Köyü mevkiindeki arazide sınai, içme ve kullanma suyunun yeraltısuyundan temini gayesiyle açtıracağınız kuyuya **Yeraltısuyu Arama Belgesi** verilmesi istenilmektedir.

6111 sayılı Kanunun 127. maddesi ile 167 sayılı Kanuna eklenen geçici 2. madde de öngörülen, 07.06.2011 tarih ve 27957 sayılı Resmi Gazete de yayınlanan "DSİ Yeraltısuyu Ölçüm Sistemleri Yönetmeliği" gereği kuyunuza ölçüm cihazı takılması şartıyla **Yeraltısuyu Arama Belgesi** tanzim edilerek yazımız ekinde gönderilmiştir.

Bilgilerinizi ve gereğini rica ederim.

Durmuş YÜZBAŞI
Bölge Müdür Yardımcısı

EK/EKLER :
1 ad.YAS.Ara.Bel.
1 ad.Kuyu Projesi

Adres : DSİ 20. Bölge Müdürlüğü Gaziantep Karayolu Erkenez Mevkii. 46100 KAHRAMANMARAŞ
Ayrıntılı Bilgi İçin : S. ÇANKAYA Memur Telefon : 03442360080/341 Fax: 03442360306
e-posta : scankaya@dsi.gov.tr Elektronik Ağ: www.dsi.gov.tr

T.C.
ORMAN VE SU İŞLERİ BAKANLIĞI
Devlet Su İşleri Genel Müdürlüğü 20. Bölge Müdürlüğü

Belge Tar. :09.10.2012
Belge Tipi :

YERALTISUYU ARAMA BELGESİ

1 – Belge Sahibi :Türkoğlu Organize Sanayi Bölgesi

2 – Teknik Sorumlu :Mahmut TÜKENMEZ
Y.Sanayi sit.23.çarşı no.34 K.MARAŞ

3 – Sondör, Kuyucu ,Galerici : Fahri KAPLAN
Y.Sanayi sit.23.çarşı no.34 K.MARAŞ

4 – Arama yapılacak Arazinin
a) İli :K.Maraş e)Yüzölçümü m^2
b) İlçesi :Türkoğlu f) Kuyu yeri Tarifi
c) Bucağı :
d) Mah. veya Köy :Ceceli

5 - Kuyunun
a)Tipi :Derin Kuyu 6 - Galerinin
b)Delme usulü :Rotary a)Kesiti :
c)DSİ Nosu : b)Açma usulü :

7 - Talep edilen su miktarı 13 L/s 936 Ton/gün 336960 Ton/yıl

02.10.2012 tarihli dilekçe ile usulüne uygun olarak yapılan müracaat incelenerek yukarda yüzölçümü ve yeri belirtilen alan içerisinde ve yukarda belirtilen kişilerce yeraltısuyu aramak amacıyla ekli ve onaylı projesine uygun bir adet derinkuyu inşaasına sakınca görülmediğinden,167 sayılı Yeraltısuları Kanununun 9.maddesi uyarınca bir yıl süreli olarak bu arama belgesi verilmiştir.

Durmuş YÜZBAŞI
Bölge Müdürü Yrd.

Eki :1 Ad. Onaylı Proje

NOT:Arama belgesi müddeti 1 yıl olup
kuyu açıldığında kullanma belgesi
alınacaktır. Civarda keson kuyu varsa 0-20 m ler
arası çimentolanacaktır.
Tapu ve kuyu yeri ile ilgili ihtilaflar belge sahibine aittir.

KUYU İNŞA VE TATBİK PROJESİ

A - GENEL DURUM

İli	K. Maraş
İlçesi	Türkoğlu
Mah./Köyü	Ceceli
Mevkii	--
Koordinatlar	307175D-4135090K
Açılış Gayesi	Sınai İçme Kullanma
Su İhtiyacı	936,00 ton/gün
Sulanacak Saha	--- m^2

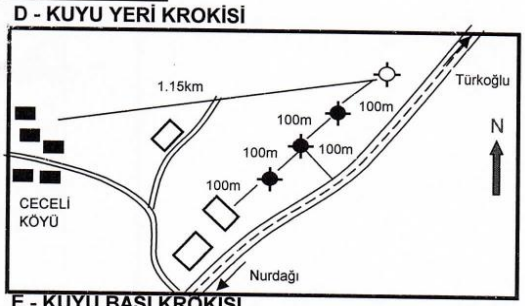
B - AÇACAK FİRMA

Adı	MT Mühendislik
Makinanın Tipi	Rotary
Sondaj (m)	100
Adres	Y. Sanayi Sit. 23. Çarşı No: 34 K.MARAŞ

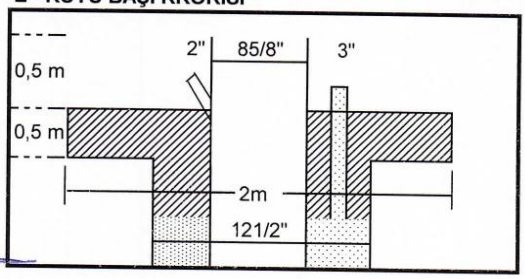
C - MESUL ŞAHISLAR

Mesleği	Adı ve Soyadı	Dip.No	İmzası
Jeoloji Müh.	Mahmut TÜKENMEZ	249/546	
Sondör	Fahri Kaplan	2390	
Kuyu Sahibi	Türkoğlu Organize Sanayi Bölgesi		

D - KUYU YERİ KROKİSİ



E - KUYU BAŞI KROKİSİ



Kuyu Açılışında Karşılaşılan Özellikler	Delik Çapı (")	Teçhiz Çapı (")	Kuyu Şeması	m	Litolojik Kesit	Su Veren Tabakalar	Düşünceler
DONELER Akifer Cinsi: Serbest Akifer Malz: Killi Çakıl-Serpantin Statik Seviye (m): 30 Proje Debisi (lt/s): 13,00 Transmissibilite: 150 m^3/gün/m	121/2"	85/8"		2 5 10 20 30 40 50 60 70 80 90 100			0-2m. N. Toprak 2-5m. Killi çakıl 5-10m. Kil 10-30m. Killi Çakıl 30-40m. Kil 40-70m. Killi Çakıl 70-100m. Serpantin
PROJE HESABI Teorik Özgül Debi (Q): Q = T/100 = 150/100 Q = 1,5 lt/s/m Hakiki Özgül Debi (Q_s): Q_s = Q x 0,60 Q_s = 1,5 x 0,60 Q_s = 0,9 lt/s/m Toplam Dinamik Yük.(Hm) Hm (m) = 60 alındı.				102 104 106 108 110 112 114 116 118 120 122 124 126 128 130 132 134 136 138			Kuyu derinliği 100m. düşünülmektedir.

Mehmet KURUÇAY
Jeotek. Hiz. ve Yas. Şube Müd

ANNEX-12- PROJECT APPROVAL LETTER

T.C.
ÇEVRE VE ŞEHİRCİLİK BAKANLIĞI
Çevre Yönetimi Genel Müdürlüğü

Sayı : E-53177711-755.01-1139503 24.06.2021

Konu : Türkoğlu Organize Sanayi Bölgesi Müdürlüğü AAT Proje Onay Dosyası

DAĞITIM YERLERİNE

İlgi : a) 23.02.2021 tarihli ve sayılı yazı.
b) 25.03.2021 tarihli ve E-53177711-755.01-602560 sayılı yazı.
c) 15.04.2021 tarihli ve sayılı yazı.
ç) 01.06.2021 tarihli ve E-53177711-755.01-1013870 sayılı yazı.
d) 11.06.2021 tarihli ve 312-2021-1-3 sayılı yazı.

İlgi (a) yazı ile Bakanlığımız onayına sunulan Türkoğlu Organize Sanayi Bölge Müdürlüğü'ne (OSB) ait Atıksu Arıtma Tesisi (AAT) proje dosyası 2018/14 sayılı Atıksu Arıtma/Derin Deniz Deşarjı Tesisi Proje Onay Genelgesi kapsamında incelenmiş olup, belirlenen eksiklikler ilgi (b) ve (ç) yazılarımız ile ilgili proje firması ve OSB Müdürlüğüne bildirilmiştir. Bildirilen eksiklikler doğrultusunda hazırlandığı ifade edilen proje dosyası ilgi (c) ve (d) yazılar ile yeniden tarafımıza sunulmuştur.

Bu kapsamda, anılan Genelge çerçevesinde incelenen ve eksiklikleri tamamlandığı tespit edilen, Türkoğlu OSB AAT proje dosyası sonuçlandırılarak onaylanmış olup, bahsi geçen onaylı projeler yazımız ekinde gönderilmektedir.

Bununla birlikte tesisin çevre izni kapsamında deşarj standartlarını sağladığının tespitine kadar projeyi hazırlayan, inşaatını ve/veya işletmesini yapanların kendi konuları ile ilgili hususlarda sorumlulukları devam etmektedir.

Ayrıca, bahse konu AAT'nin yapım süreciyle ilgili İl Müdürlüğümüze iş termin planının sunulması, tesisin yapılacağı alan için gerekli arazi çalışmaları ve zemin etüdü yapılarak onaylı projeyi esas alan uygulama projeleri tamamlandıktan sonra inşaat sürecinin başlatılması, tesisin inşaatının tamamlanması ve işletmeye alınması aşamasında İl Müdürlüğümüze bilgi verilmesi ve İl Müdürlüğümüzce onaylı projeye uygunluğunun sağlanması, işletmeye alınmasından itibaren söz konusu tesise ait bilgilerin Bakanlığımız https://ecbs.cevre.gov.tr/ adresinde yer alan Atıksu Bilgi Sistemine kaydedilmesi, güncelliğinin sağlanması ve Çevre İzin ve Lisans Yönetmeliği kapsamında ivedilikle çevre izni başvurusunda bulunulması önem arz etmektedir.

Bilgilerinizi ve gereğini rica ederim.

28.06.2021/125

Eyyüp KARAHAN
Bakan a.
Genel Müdür

Bu belge, güvenli elektronik imza ile imzalanmıştır.
Doğrulama Kodu: CC117B54-BA00-4DC8-9850-679375007C65 Doğrulama Adresi: https://www.turkiye.gov.tr/ebd

Mustafa Kemal Mah. Eskişehir Devlet Yolu 9. km. No:278 Çankaya/ANKARA
Kep Adresi: cevrevesehircilikbakanligi@hs01.kep.tr

Bilgi için:Yakup ÖZBAL
Çevre Mühendisi
Telefon No:(312) 586 32 81

1 / 2

THE WORLD BANK
IBRD • IDA | WORLD BANK GROUP

encon

Ek: Onaylı Proje Dosyası (1 takım)

Dağıtım:

Gereği:

TÜRKOĞLU ORGANİZE SANAYİ MÜDÜRLÜĞÜNE
SUMA MÜHENDİSLİK MÜŞ. İNŞ. TAAH. İÇ VE DIŞ TİC. LTD. ŞTİ.NE
KIZILIRMAK MAH. DUMLUPINAR BULV.
NO:3 NEXT LEVEL A BLOK KAT 16
ÇANKAYA / ANKARA

Bilgi:

KAHRAMANMARAŞ VALİLİĞİNE
(Çevre ve Şehircilik İl Müdürlüğü)

Mustafa Kemal Mah. Eskişehir Devlet Yolu 9. km. No:278 Çankaya/ANKARA
Kep Adresi: cevresehircilikbakanligi@hs01.kep.tr

Bilgi için:Yakup ÖZBAL
Çevre Mühendisi
Telefon No:(312) 586 32 81

ANNEX-13- PROJECT BASE MAP (PLANKOTE) APPROVAL

T.C.
SANAYİ VE TEKNOLOJİ BAKANLIĞI
Sanayi Bölgeleri Genel Müdürlüğü

Sayı :E-12631110-453.05-5173656 **24/10/2023**
Konu :Etüt ve Proje

TÜRKOĞLU ORGANİZE SANAYİ BÖLGESİ
YÖNETİM KURULU BAŞKANLIĞINA

İlgi : Türkoğlu Organize Sanayi Bölgesi Yönetim Kurulu Başkanlığının 09/10/2023 tarihli ve UEHXGPHISM kodlu başvurusu.

İlgi başvuru ile Türkoğlu Organize Sanayi Bölgesi atıksu arıtma tesisi altyapı projeleri kapsamında hazırlanan atıksu arıtma tesisi alanına ait hazırlanan plankote onaylanmak üzere Bakanlığımıza sunulmuştur.

Yapılan inceleme neticesinde, mahallinde yapılan arazi kontrolü sonucu imzalanan tutanakta belirtilen hususlara uygun olarak hazırlandığı görülen plankote, 5070 sayılı Elektronik İmza Kanunu çerçevesinde e-imza ile onaylanmıştır.

Bilgilerinizi ve gereğini rica ederim.

Orhan KILINÇ
Bakan a.
Daire Başkanı

27.10.2023
/229

Ek:
1- Plankote
2- Teknik Dosya

Bu belge güvenli elektronik imza ile imzalanmıştır.
Belge Doğrulama Kodu:E11819F1-EBFF-4CDA-8CEE-5E13A384256D Belge Doğrulama Adresi:https://www.turkiye.gov.tr/stb-ebys
Mustafa Kemal Mahallesi Dumlupınar Bulvarı Eskişehir Yolu 2151.Cadde No:154 06510 Çankaya /ANKARA
Telefon :4446100-19475 Bilgi İçin: Serhat AKALIN Mühendis
Faks:03122015853 e-posta:serhat.akalin@sanayi.gov.tr
Kep:sanayiveteknolojibakanligi.sanayibolgeleri@hs01.kep.tr İnternet adresi: www.sanayi.gov.tr

ANNEX-14- STATE HYDRAULIC WORKS (DSI) DISCHARGE PERMIT LETTER

T.C.
TARIM VE ORMAN BAKANLIĞI
Devlet Su İşleri Genel Müdürlüğü
20. Bölge Müdürlüğü
Havza Yönetimi, İzleme ve Tahsisler Şube Müdürlüğü

Sayı : E-43971328-622.03[622.03]-902404 21.01.2021

Konu : Bilgi ve Belge Talepleri

TÜRKOĞLU ORGANİZE SANAYİ BÖLGESİNE
ADANA YOLU 26 KM. PK.40 TÜRKOĞLU / Kahramanmaraş

İlgi : a) Türkoğlu Organize Sanayi Bölgesi'nin 30.12.2020 tarihli ve 205 sayılı yazısı.
b) Türkoğlu Organize Sanayi Bölgesi'nin 12.01.2021 tarihli ve 205 sayılı yazısı.

İlgi yazılarınızda; Kahramanmaraş Türkoğlu OSB'de oluşan atıksuların arıtılması için Sanayi ve Teknoloji Bakanlığının finansmanı ile mülkiyeti Türkoğlu OSB'ye ait 499 ada 15 parsel üzerinde günlük 2000 m³ kapasiteli Atıksu Arıtma Tesisi yapım işine yönelik projelendirme çalışmalarının devam ettiği belirtilerek, tesiste arıtılmış suyun yazılarınız ekinde yer alan Çevre ve Şehircilik İl Müdürlüğünüm İnceleme Formunda ve Halihazır Haritasında koordinatları belirtilen Kuru Dereye deşarjına ilişkin Kurumumuz görüşü sorulmaktadır.

Konu yerinde incelenmiştir. Kahramanmaraş Türkoğlu OSB'ye ait 499 ada 15 parsel üzerinde günlük 2000 m³ kapasiteli Atıksu Arıtma Tesisinde arıtılan suyun, belirtilen deşarj noktasından itibaren kurutma kanalı aracılığı ile Gavur Gölüne tahliye edilmesinin planlandığı belirlenmiştir.

Günlük 2000 m³ arıtılmış atıksuyun deşarjı; yazınız ekinde yer alan Halihazır Haritasında koordinatları belirtilen noktadan itibaren Gavur Gölüne kadar olan kurutma kanalının akışını engelleyen bitkilenme ve rüsubat birikmelerine karşı düzenli olarak Kurumunuz tarafından temizliğin yapılması, kurutma kanalı kenarında bulunan tarım arazilerinde her hangi bir taşkın ve su basmasına karşı gerekli tedbirlerin alınması, kurutma kanalı güzergahında bulunan tarla içi ulaşım yollarında büz yerine uygun ebatlarda geçiş yapıları tesis edilmesi, ayrıca günlük 2000 m³ arıtılmış atıksuyun gün içerisine yayılarak deşarj edilmesi şartlarıyla, Kurumumuzca her hangi bir sakınca bulunmamaktadır.

Bilgilerinizi ve gereğini rica ederim.

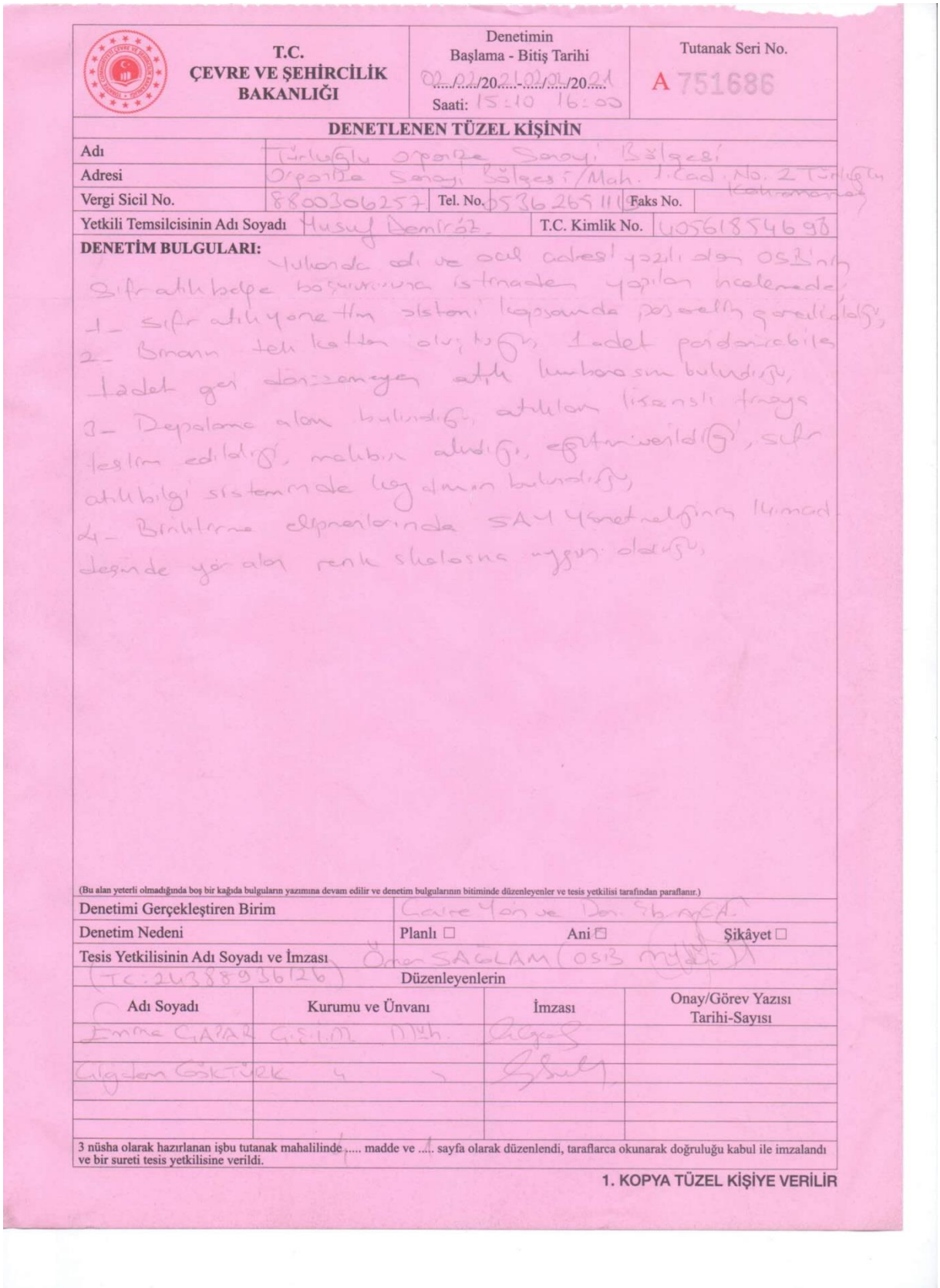
Abdulkadir ŞAHİN
Bölge Müdürü a.
Bölge Müdür Yardımcısı

21.01.2021/18

Bu belge, güvenli elektronik imza ile imzalanmıştır.
Belge Doğrulama Kodu : XDABNNTG Belge Doğrulama Adresi: https://www.turkiye.gov.tr/devlet-su-isleri-ebys

Adres: DSİ 20. Bölge Müdürlüğü, Gaziantep Karayolu Üzeri. Erkenez Mah. Recep Tayyip ERDOĞAN Bul. No:157 Dulkadiroğlu/Kahramanmaraş
Telefon: (0344) 236 00 80Faks: (0344) 236 03 06
KEP Adresi: dsi.gnlmud@hs01.kep.tr
Bilgi için:Mehmet ERDOĞAN
Mühendis

ANNEX-15- ZERO WASTE REGULATION INSPECTION REPORT



T.C.
ÇEVRE VE ŞEHİRCİLİK BAKANLIĞI

Denetimin Başlama - Bitiş Tarihi
02/02/2021 - 02/02/2021
Saati: 15:10 16:00

Tutanak Seri No.
A 751686

DENETLENEN TÜZEL KİŞİNİN

Adı	Türkoğlu Organize Sanayi Bölgesi			
Adresi	Organize Sanayi Bölgesi/Mah. 1.Cad. No. 2 Türkoğlu Kahramanmaraş			
Vergi Sicil No.	8800306257	Tel. No.	5362651110	Faks No.
Yetkili Temsilcisinin Adı Soyadı	Yusuf Demiröz	T.C. Kimlik No.	10561855490	

DENETİM BULGULARI:

Yukarıda adı ve açık adresi yazılı olan OSB'nin sıfır atık belge başvurusuna istinaden yapılan incelemede;
1- sıfır atık yönetim sistemi kapsamında personelin görevlendirildiği,
2- Binanın tek kattan oluştuğu, 1 adet paslanmaz 1 adet geri dönüşümden atık kumbarasının bulunduğu,
3- Depolama alanı bulunduğu, atıkların lisanslı firmaya teslim edildiği, malzeme alındığı, eğitim verildiği, sıfır atık bilgi sisteminde kayıtların bulunduğu,
4- Binalarına alınanlarında SAY yönetmeliğinin 11.maddesinde yer alan renk skalasına uygun olduğu,

(Bu alan yeterli olmadığında boş bir kağıda bulguların yazımına devam edilir ve denetim bulgularının bitiminde düzenleyenler ve tesis yetkilisi tarafından paraflanır.)

Denetimi Gerçekleştiren Birim	Çevre Yön. ve Den. Şb. Md.		
Denetim Nedeni	Planlı ☐	Ani ☐	Şikâyet ☐
Tesis Yetkilisinin Adı Soyadı ve İmzası	Ömer SAĞLAM (OSB müdürü)		
(TC: 26388936126)	Düzenleyenlerin		

Adı Soyadı	Kurumu ve Ünvanı	İmzası	Onay/Görev Yazısı Tarihi-Sayısı
Emine ÇAPAR	Çevre Müh.		
Çağdem Göktürk	"		

3 nüsha olarak hazırlanan işbu tutanak mahalilinde ..... madde ve ..... sayfa olarak düzenlendi, taraflarca okunarak doğruluğu kabul ile imzalandı ve bir sureti tesis yetkilisine verildi.

1. KOPYA TÜZEL KİŞİYE VERİLİR

ANNEX-16- STAKEHOLDER CONSULTATION MEETING

Annex-16.1 Announcements and Presentation for the Stakeholder Consultation Meeting

ilan.gov.tr
Türkiye'nin ilan portalı

Tüm İlanlar ▾ Kurumsal Destek İletişim Üye Ol Giriş Yap

Ana Sayfa / Tüm İlanlar / Tebligat ve Duyurular / Kurumsal Tebligat ve Duyurular / ÇED ve ÇSED Başvuru ve Toplantı Davetleri

Kelime ya da ilan numarası ile arayınız

Paydaş katılımı ve bilgilendirme toplantısına davet ilanı

İlan Metni | Tam Ekran

TÜRKOĞLU ORGANİZE SANAYİ BÖLGESİ
DUYURU

Türkoğlu Organize Sanayi Bölgesinin yararlanıcısı olduğu; T.C. Sanayi ve Teknoloji Bakanlığı koordinasyonunda ve Dünya Bankası finansmanlı, Türkiye Organize Sanayi Bölgeleri projesi kapsamında "Türkoğlu OSB Atiksu Arıtma Tesisi Projesi "nin gerçekleştirilmesi planlanmaktadır.
Söz konusu proje ve faaliyetleri hakkında başta Proje Alanı çevresindeki sakinler olmak üzere Proje paydaşlarının Proje hakkında bilgilendirilmesi, görüş ve önerilerinin alınabilmesi adına, aşağıda belirtilen yer, gün ve saatte "Paydaş Katılımı ve Bilgilendirme Toplantısı" düzenlenecektir.

Toplantı Tarihi, Saati ve Yeri
Yer : Türkoğlu Organize Sanayi Bölgesi İdari Binası Toplantı Salonu
Adres : OSB Mah. 1. Cad. No:2 Türkoğlu / Kahramanmaraş
Tarih : 04.07.2024
Saat : 13:00
Dokümanlar ve projeye ilişkin soru, görüş önerilerinizi http://www.turkogluosb.org/ yer alan iletişim kanalları üzerinden iletebilirsiniz.

İlan Bilgileri

İlan Sahibi
TÜRKOĞLU ORGANİZE SANAYİ BÖLGESİ

İlan Numarası
ILN02051281

Şehir
KAHRAMANMARAŞ

İlçe
Türkoğlu

İlan Türü
TEBLİGAT

Tebligat Muhatabı
Paydaşlar

Yayınlandığı Gazeteler
26/06/2024 : TÜRKOĞLU HABER

Figure- 21 Local Newspaper Announcement of SCM

Figure- 22 Website Announcement of SCM

Kahramanmaraş Türkoğlu OSB Atıksu Arıtma Tesisi Projesi ("Proje"), Türkiye Organize Sanayi Bölgeleri Projesi kapsamındaki alt projelerden biridir. Proje, Türkiye'deki Organize Sanayi Bölgelerinin (OSB) verimliliğini, çevresel sürdürülebilirliğini ve rekabet gücünü artırmayı hedeflemektedir.

Dünya Bankası (DB)/Uluslararası İmar ve Kalkınma Bankası (IBRD) tarafından finanse edilen proje, T.C. Sanayi ve Teknoloji Bakanlığı (STB) aracılığı ile Kahramanmaraş Türkoğlu OSB tarafından uygulanacaktır.

Proje, Kahramanmaraş Türkoğlu OSB çevresinde atıksu arıtımı eksikliğinden kaynaklanabilecek çevre kirliliğini önlemeyi ve halk sağlığını iyileştirmeyi amaçlamaktadır.

Halihazırda, Türkoğlu Organize Sanayi Bölgesi'ndeki faal firmalar tarafından üretilen endüstriyel atıksu, kuru bir dere kanalı vasıtasıyla Aksu Çayı'na deşarj edilmektedir. Bu bertaraf yöntemi çevresel zorluklara yol açmakta ve daha sürdürülebilir bir yaklaşımın aciliyetinin altını çizmektedir. Atıksu Arıtma Tesisinin (AAT) hayata geçirilmesinden sonra, tüm endüstriyel atıksular sistematik olarak OSB'nin en düşük kotunda stratejik olarak konumlandırılmış olan AAT'ye iletilecektir.

Kahramanmaraş Türkoğlu OSB AAT Projesi, mevcut OSB'nin yerleşik sanayi alanında inşa edilecektir. AAT alanı Türkoğlu OSB'ye aittir (parsel no: 499/15). (Bkz. Şekil.1)

2

Planlanan AAT'nin tasarımı, 1000+1000 m³/gün olmak üzere iki aşamada uygulanacak olan 2.000 m³/gün kapasite içindir. Bu alt proje kapsamında sadece 1. aşama uygulanacaktır.

AAT için tahsis edilen alan 25 hektardır. AAT, hem mevcut hem de potansiyel işletmeler tarafından üretilen ağırlıklı olarak endüstriyel atıksuların arıtılması ihtiyacını karşılamak üzere tasarlanmış olup, fiziksel arıtma üniteleri, kimyasal arıtma üniteleri, biyolojik arıtma üniteleri ve çamur arıtma üniteleri dahil olmak üzere çeşitli üniteleri kapsayacaktır

Projenin beklenen sonuçları aşağıdaki gibidir:

- Proje, Türkoğlu Organize Sanayi Bölgesi'ndeki hem mevcut hem de potansiyel işletmeler tarafından üretilen tüm endüstriyel atıksuların arıtılmasını sağlayacak ve böylece halk sağlığı, çevre ve doğal kaynaklara yönelik risklerin azalmasını sağlayacaktır,
- Proje, su kalitesinin iyileştirilmesi, kirliliğin azaltılması, hassas su kütlelerinin korunması ve sıkı çevre düzenlemelerine bağlılık sağlayacaktır.
- 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.

3

Proje, ulusal mevzuatın yanı sıra DB Koruma Politikaları, yönergeler, standartlar ve en iyi uygulama belgeleri de dâhil olmak üzere iyi uluslararası uygulamalarla uyumlu olacaktır.

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 kaçınılacaktır. İnşaat faaliyetleri nedeniyle proje çevresindeki işletmelerin kapanması beklenmemektedir.

Şekil 1: Kahramanmaraş Türkoğlu OSB Atıksu Arıtma Tesisi 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 hazırlanmıştır.

4

Ayrıca ÇSYP kapsamında uygulanacak **izleme ve denetim faaliyetleri** de tanımlanmıştır. ÇSYP çalışmaları kapsamında toprak ve hava ortamları, gürültü, koku, su kaynakları, atıklar, trafik üzerinde oluşabilecek etkiler belirlenmiş ve ilgili etki azaltma önlemleri belirtilmiştir.

İzleme gereklilikleri de ÇSYP kapsamındaki izleme tablolarında tanımlanarak sunulmuştur. 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 ÇSYP'nin uygulanmasından sorumlu ana kuruluş Türkoğlu OSB'dir. Operasyonel ve idari görevleri yürütmek üzere bir Proje Yönetim Birimi (PYB) kurulacaktır. Ayrıca, Projenin farklı aşamalarında (inşaat öncesi, inşaat ve işletme), ÇSYP kapsamındaki çeşitli işler için farklı taraflar (Danışman, Yükleniciler, İnşaat Denetim Danışmanı, STB/PUB) sorumluluk alacaktır. Söz konusu tüm çalışmalar Türkoğlu OSB tarafından koordine edilecektir.

Proje dokümanları Türkoğlu OSB'nin internet sitesi (http://www.turkogluosb.org) ve STB Proje Uygulama Birimi (PUB) internet sitesi (https://yesilosb.sanayi.gov.tr) üzerinden kamuya açık olacaktır.

5

Bölge 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 Türkoğlu OSB olacaktır. Bu kapsamda proje ile ilgili beklenti, görüş, öneri ve şikâyetlerin paylaşılması için aşağıda verilen iletişim kanalları da ayrıca kullanılabilecektir:

Paydaş Katılım Toplantıları

Kahramanmaraş Türkoğlu OSB ile iletişim kanalları:

Telefon: +90 344 618 17 85
E-mail: info@turkogluosb.org
http://www.turkogluosb.org/iletisim

Tüm iç ve dış paydaşlar, projeyle ilgili şikâyetlerini ve geri bildirimlerini doğrudan devlet yetkililerine iletmek için 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**

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T.C. Sanayi ve Teknoloji Bakanlığı
Sanayi Bölgeleri Genel Müdürlüğü
Türkiye Organize Sanayi Bölgeleri Projesi

Kahramanmaraş Türkoğlu Organize Sanayi Bölgesi
Atıksu Arıtma Tesisi Projesi

Bilgilendirme Broşürü

TEMMUZ 2024

THE WORLD BANK
IBRD • IDA | WORLD BANK GROUP

TÜRKOĞLU ORGANİZE SANAYİ BÖLGESİ

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Figure- 23 Brochure Distributed During the SCM

TÜRKİYE ORGANİZE SANAYİ BÖLGELERİ PROJESİ

KAHRAMANMARAŞ TÜRKOĞLU
ORGANİZE SANAYİ BÖLGESİ
ATIKSU ARITMA TESİSİ PROJESİ

PAYDAŞ KATILIMI TOPLANTISI

BİLGİLENDİRME SUNUMU

TEMMUZ 2024

T.C. SANAYİ VE TEKNOLOJİ BAKANLIĞI | THE WORLD BANK IBRD • IDA | WORLD BANK GROUP | TÜRKOĞLU ORGANİZE SANAYİ BÖLGESİ | encon

PROJE YÜRÜTÜCÜSÜ KİMDİR?
PROJE UYGULAYICISI KİMDİR?
PROJE FİNANSÖRÜ KİMDİR?

PROJE YÜRÜTÜCÜSÜ: Sanayi ve Teknoloji Bakanlığı

PROJE UYGULAYICISI: Kahramanmaraş Türkoğlu Organize Sanayi Bölgesi

PROJE FİNANSÖRÜ: Dünya Bankası

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PROJENİN AMACI ve FAYDALARI

- Planlanan Atıksu Arıtma Tesisi (AAT)'nin tasarımı 2.000 m³/gün kapasiteli olup, 1000+1000 m³/gün olmak üzere iki aşamada gerçekleştirilecektir. Bu proje kapsamında, 1000 m³/gün kapasiteli ilk aşama inşaatı gerçekleştirilecektir.
- Proje, Türkoğlu Organize Sanayi Bölgesi (OSB)'ndeki hem mevcut hem de potansiyel işletmeler tarafından üretilen tüm endüstriyel atıksuların arıtılmasını sağlayacaktır. Böylece halk sağlığı, çevre ve doğal kaynaklara yönelik riskler azalacaktır.
- Proje ile su kalitesinin iyileştirilmesi, kirliliğin azaltılması, hassas su kütlelerinin korunması sağlanacaktır.
- Çevre mevzuatına ve uluslararası standartlara uyum sağlanacaktır.
- Proje ile Türkiye'nin atıksu sektöründe ulusal ve uluslararası kalite standartlarına uyum çabalarına katkı sağlanacaktır.
- Proje ile Halkın sağlık standartları iyileştirilecektir.

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PROJENİN YERİ

- Proje, Kahramanmaraş'ın Türkoğlu ilçesinde uygulanacaktır.
- Kahramanmaraş Türkoğlu OSB AAT Projesi, mevcut OSB'nin yerleşik sanayi alanında inşa edilecektir.
- AAT için tahsis edilen alan 25 hektar olup bu alan Türkoğlu OSB'ye aittir.

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PROJENİN ÖZELLİKLERİ

- Halihazırda, Türkoğlu OSB'de bulunan ve faaliyette olan tesisler tarafından üretilen endüstriyel atıksular, kuru bir dere kanalı vasıtasıyla Aksu Çayı'na deşarj edilmektedir. Bu bertaraf yöntemi çevresel zorluklara yol açmakta ve daha sürdürülebilir bir yaklaşımın aciliyetinin altını çizmektedir.
- AAT'nin hayata geçirilmesinden sonra, tüm endüstriyel atıksular sistematik olarak AAT'ye iletilecektir.
- Projenin inşaat aşamasında 30 kişinin, işletme aşamasında 7 kişinin çalışması öngörülmektedir ve işe alım sürecinde yerel halka öncelik verilecektir.
- Projenin inşaat faaliyetlerinin 12 ay sürmesi öngörülmektedir.

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DEŞARJ NOKTASI

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Çevresel Hassas ve Koruma Alanları

- Proje alanı herhangi bir koruma alanı içerisinde yer almamaktadır.
- Projenin sadece bölgeye değil, Ceyhan Havzası'nın tamamına olumlu etki yapması beklenmektedir.
- Atıksuların uygun şekilde arıtılması ve deşarj edilmesi, deşarj deresinin birleştiği hassas su kütlesi olarak tanımlanan Aksu Çayı için olumlu olarak değerlendirilmektedir.
- Proje, atık suyun gerekli standartlara uygun şekilde arıtılmasını amaçlamaktadır.

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ÇEVRESEL VE SOSYAL ÇALIŞMALARIN KAPSAMI

	FİZİKSEL ve BİYOLOJİK ÇEVRE	SOSYO-EKONOMİK ÇEVRE
Etki Kaynağı Faaliyetler/Durumlar	İlgili Çevresel ve Sosyal Unsurlar	
• Tesviye, Kazı ve Dolgu • Malzeme Temini ve Taşınması • Atık Oluşumu • İstihdam • İşletme sırasında oluşabilecek teknik hatalar	• Toprak • Su Kaynakları • Biyolojik Ortam • Atıklar • Koku • Hava Kalitesi ve Gürültü • Sosyo-ekonomik Çevre	

Çevresel Etkiler - Toprak

Olası Etkiler

- Üst toprak kaybı,
- Fosil yakıt ve kimyasallardan kaynaklı kirlenme riskleri,
- Atıkların yanlış yönetiminden kaynaklanan potansiyel toprak kirliliği.

Alınacak Önlemler

- ✓ Üst toprağın bulunduğu yerlerde, arazi hazırlama faaliyetleri başlamadan önce üst toprak yeterli derinliğe kadar (üst toprak derinliğine bağlı olarak 15-30 cm) sıyrılacaktır. Sıyrılan üst toprak, depolama sırasında drenaj, erozyon vb önlemler alınarak korunacaktır. Erozyona sebep olmamak için üst toprağın sıyrılması gereğinden erken yapılmayacaktır ve sıyrılan toprak uygun koşullarda (çevre düzenlemesi vs) yeniden kullanılmak üzere depolanacaktır.
- ✓ Sadece belirlenen çalışma sahaları ve güzergahları kullanılarak kirlenmeye maruz kalacak toprak miktarı minimuma indirilecektir.
- ✓ Şantiyede kullanılacak iş makinesi ve araçlar için gerekli olan yakıt, öncelikle en yakın istasyondan sağlanacak; gerekli görülmesi halinde sahada depolanabilecek yakıtlar için gerekli sızdırmazlık önlemleri alınacaktır.
- ✓ Atıklar toprak kirliliği yaratmayacak şekilde yönetilecektir.

Çevresel Etkiler - Su Kaynakları

Olası Etkiler

- Faaliyetler sırasında içme ve kullanım amaçlı su tüketiminden kaynaklı kaynak sarfiyatı,
- İnşaat döneminde yağışlı günlerde yağmur suyunun toprak taşımasıyla yüzeysel suları kirletme potansiyeli,
- Oluşan atıksuyun yüzey suyu ve yeraltı suyu kalitesinde kirliliğe sebep olabilecek sızıntı olasılığı,
- Yakıt, kimyasal madde depolama, taşıma veya ekipmanlarda kullanım sırasında hidrolik yağların veya yakıtların kazara sızması/ yayılması,
- Uygunsuz atık depolama, taşıma nedeniyle yakındaki su kaynaklarında kalitenin bozulması.
- İşletme sırasında atıksuyun yeterince arıtılmaması neticesinde su kaynakları üzerinde kirletici etkiye sebep olması.

Alınacak Önlemler

- ✓ Su Kaynakları Yönetim Planı hazırlanacak ve uygulanacaktır. Çalışanlar, bu konuda eğitilecektir. Bu konu, Yüklenicilerin sözleşmelerine dahil edilecektir.
- ✓ Yağmursuyundan kaynaklanan yüzey akışı için gerekli drenaj önlemleri alınacaktır.
- ✓ Dizel yakıt ve tehlikeli sıvı atık varilleri/konteynerleri de dahil olmak üzere tüm kimyasal depolama konteynerleri, inşaat sırasında toprak, yüzey suyu ve yeraltı suyu kirlenmesi riskini en aza indirmek için geçici depolama alanında ikincil muhafaza içine yerleştirilecektir.
- ✓ AAT'nin çıkış suyu kalitesi ilgili yönetmelikte belirtilen sınır değerlerle uyumlu olacak ve deşarj edilen su, Aksu Çayı'nın kirlenmesine neden olmayacaktır. Tüm atıksu arıtma sistemi için gerekli koruyucu bakım ve onarım işleri zamanında yapılacaktır.

Çevresel Etkiler - Biyolojik Ortam

Olası Etkiler

- Proje Alanı habitatı halihazırda değiştirilmiş olduğundan, alandaki türlerin çeşitliliği ve sayısı düşük olduğundan ve söz konusu türler kritik veya endemik öneme sahip olmadığından, bu türler üzerinde Proje nedeniyle önemli bir etki beklenmemektedir.
- Halihazırda oluşan atıksular, arıtılmadan Aksu Çayı'na verildiği için sucul ortam üzerinde mevcut bir olumsuz etki bulunmaktadır.
- Projenin dolaylı etkileri; gürültü, toz ve insan faaliyetlerinden kaynaklanan rahatsızlıklardır. İnşaat öncesi aşamanın bir diğer etkisi de araç trafiği olacaktır.

Alınacak Önlemler

- ✓ 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.
- ✓ İnşaat öncesinde ve sırasında toz, gürültü ve insan faaliyetlerinden kaynaklı etkilere maruz kalabilecek fauna türlerinin, inşaat alanlarını terk etmesi ve yakın çevredeki benzer habitatlara doğru hareket etmesi beklenmektedir.
- ✓ AAT'nin işletmeye alınmasıyla birlikte, arıtılmış endüstriyel atıksu mevcut kolektör hattı üzerinden Aksu Deresi'ne kontrollü ve çevreye duyarlı bir deşarj sağlanacaktır.

Çevresel Etkiler - Atıklar

Olası Etkiler

- Atıkların ayrıştırılmaması ve/veya atıkların uygunsuz şekilde depolanması, taşınması veya aktarılması nedeniyle kaynakların verimsiz yönetimi ve atık miktarının artması,
- Tehlikeli atıkların uygunsuz depolanması, taşınması ve aktarılması nedeniyle halk sağlığı tehlikesi risklerinin artması, yüzey suyu, yeraltı suyu ve hava kalitesinin bozulması ve/veya toprak kirlenmesi olasılığı,
- Sahada atıkların izinsiz gömülmesi ve yakılması nedeniyle hava ve/veya toprak kirliliği riski olasılığı.

Alınacak Önlemler

- ✓ Atık Yönetim Planı, Yüklenici tarafından hazırlanacak ve çalışanlara plan hakkında eğitim verilecektir.
- ✓ Proje kapsamında oluşacak atıklar, atık yönetimi hiyerarşisine uygun olarak yönetilecektir.
- ✓ Atıklar ayrıştırılacak (tehlikeli/tehlikesiz, geri dönüştürülebilir/geri dönüştürülemez) ve belirlenen geçici depolama alanlarında depolanacaktır.
- ✓ Atıkların geri dönüşümü, taşınması ve bertarafı lisanslı firmalar ve/veya ilgili Türkoğlu Belediyesi araçları ile gerçekleştirilecektir;
- ✓ Atıkların sahada herhangi bir şekilde yakılmasına veya gömülmesine ve/veya atıkların yakındaki yollara veya su kaynaklarına dökülmesine izin verilmeyecektir;
- ✓ Geri dönüştürülemeyen ve değerlendirilemeyen katı atıklar şantiye sahasındaki çöp konteynırlarında toplanacak ve belediye tarafından uzaklaştırılacaktır.

Atık Üretecek 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

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Çevresel Etkiler - Koku

Olası Etkiler

- Atıksu arıtma tesisi kaynaklı tesis çevresinde düşük miktarda koku oluşumu görülebilir. Ancak en yakın hassas alıcı, atıksu arıtma tesisinden 1.41 km mesafedeki en yakın yerleşim yeri olan Ceceli mahallesidir. Proje alanı çevresindeki tarım alanlarında ve sanayi tesislerinde etki görülme olasılığı vardır.

Alınacak Önlemler

- ✓ Arıtma işlemi sonrası oluşan fazla çamur, kokuya neden olmayacak şekilde stabilize edilecektir.
- ✓ Koku oluşumunu önlemek için çamurun uygun şekilde ve zamanında bertaraf edilmesi sağlanacaktır.
- ✓ Kokulu gazların kontrolü için düzenli olarak emisyon ölçümleri gerçekleştirilecektir.
- ✓ Koku ile ilgili şikayetleri yönetmek için işleyen bir şikayet giderme mekanizması kurulacaktır.

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Çevresel Etkiler - Hava Kalitesi 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, egzoz emisyonları ile sera gazı emisyonları kaynaklı olacaktır.
- Sahanın hazırlanması ve inşaat faaliyetleri için kullanılacak ulaşım araçları, makineler ve dış mekan ekipmanları tarafından gürültü oluşması beklenmektedir.

Alınacak Önlemler

- ✓ İnşaat başlamadan önce Hava Kalitesi ve Emisyon Yönetim Planı ve Gürültü ve Titreşim Yönetim Planı Yüklenici tarafından hazırlanacak ve tüm çalışmalar bu plana uygun olarak yürütülecektir.
- ✓ Toprak yığınları da dahil olmak üzere açık alan kaynaklarından kaynaklanan toz, muhafazalar ve örtüler kurmak ve sulama gibi toz kontrol önlemleri kullanılarak en aza indirilecektir.
- ✓ İnşaat araçları için hız sınırlamaları tanımlanacak ve bunlara uyulacaktır. Olabildiğince asfalt yollar kullanılacaktır.
- ✓ İnşaat sırasında gerekirse toz ve gürültü bariyerleri kullanılarak toz ve gürültü azaltımı sağlanacaktır.
- ✓ İnşaat araçlarının şantiyeye girmeyi beklerken veya şantiyede beklerken motorlarını çalışır durumda tutmalarına izin verilmeyecektir.
- ✓ Proje kapsamında gürültü seviyesi düşük ekipman seçimine özen gösterilecektir.
- ✓ İnşaat faaliyetleri mümkün olduğunca gündüz saatlerinde yapılacaktır.

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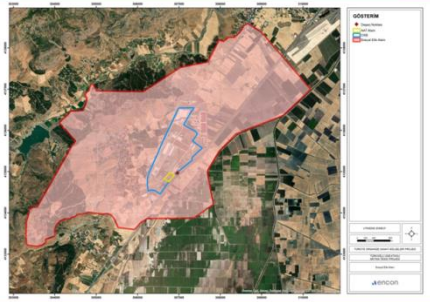
SOSYO-EKONOMİK ETKİLER



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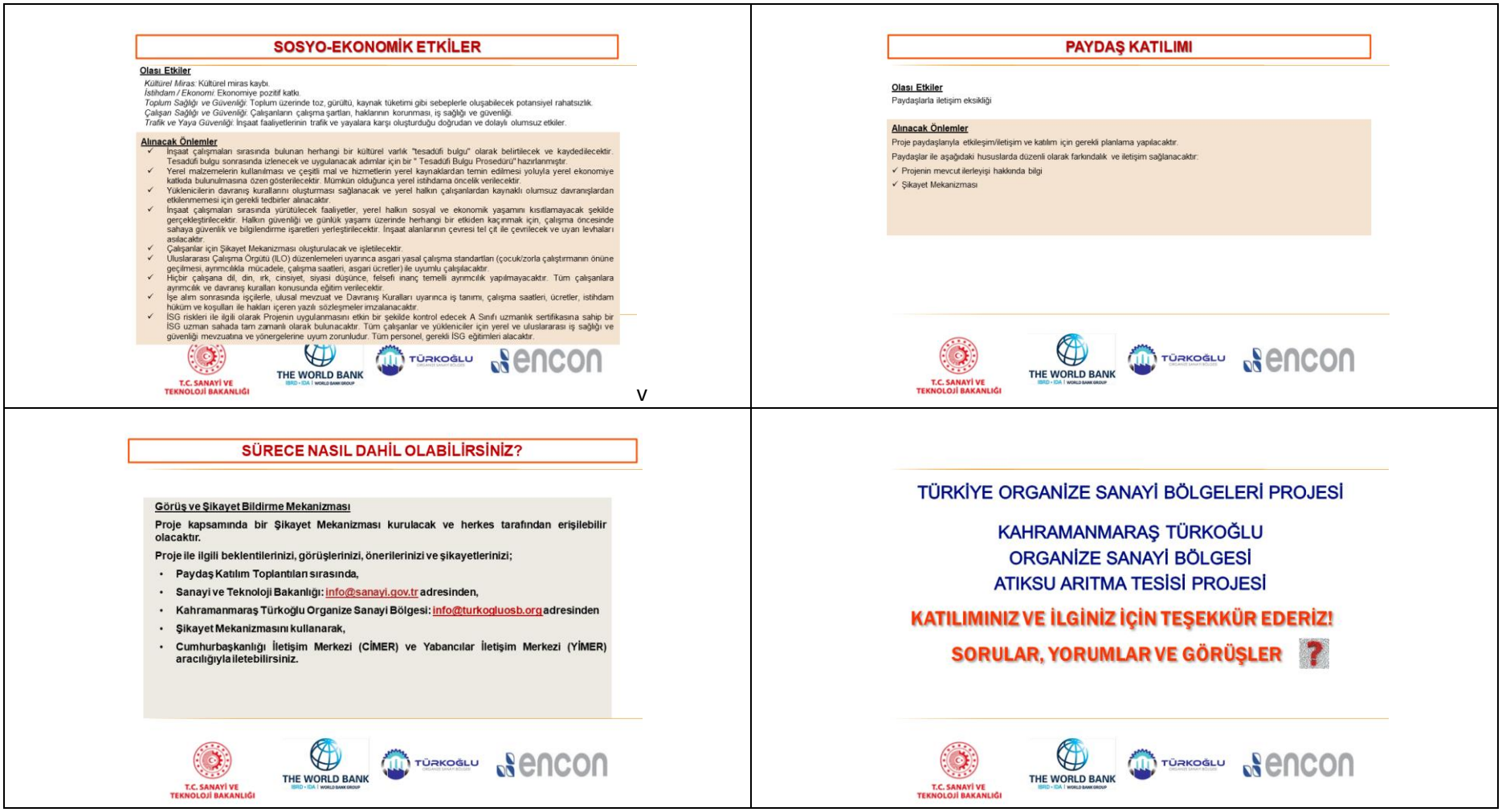

Figure- 24 Project Information Presentation that was presented at the SCM

Annex-16.2 Stakeholder Consultation Meeting Photos

Figure- 25 During the SCM

ANNEX-17- CONTRIBUTORS

Name-Surname	Profession
Dr. Okan BİLKAY	Mechanical Engineer
Dr. İ.Haluk ÇERİBAŞI	Environmental Engineer
Hüseyin TEKİN	Environmental Engineer, M.Sc.
Ülkü ÖZEREN	Environmental Engineer, M.Sc.
Ebru Güler	Environmental Engineer
Reyyan KARAHAN	Environmental Engineer, M.Sc.
Kübra ÇİBUK	Environmental Engineer
Mehmet Emre ÇALIŞIR	Environmental Engineer
Zafer AYAŞ	Biologist
Sümeyra ÇAKIR	Biologist
Nazan Duygu YIGITER	Urban Planner, Msc
Barış Uslu	Hydrogeology Engineer
Hüseyin ÇİÇEK	Sociologist, Ph.D.