Kayseri Mimarsinan Organized Industrial Zone/Capacity Increase of Existing Wastewater Treatment Plant

Final Draft ESMP Report

THE WORLD BANK
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REPUBLIC OF TÜRKİYE
MINISTRY OF INDUSTRY
AND TECHNOLOGY

KAYSERİ MİMARSİNAN OSB

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MOTT MACDONALD

Kayseri Mimarsinan Organized Industrial Zone/Capacity Increase of Existing Wastewater Treatment Plant

Final Draft Environmental and Social Management Plan (ESMP)

2025

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Mott MacDonald
Mesa Koz
Sahrayıcedit District
Atatürk Street No. 69 / 255
34734 Kadıköy
Istanbul
Turkey

T +90 (0) 216 766 3118
mottmac.com

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Contents

List of Acronyms ix
Executive Summary 1

1 INTRODUCTION 5

2 PROJECT DESCRIPTION 7
2.1 Background of the Project 7
2.2 Objectives of the Project 10
2.3 Project Location 10
2.4 Project Components and Timeline 12
2.5 Associated Facilities 13
2.6 Permits and Management System of the OIZ 13
2.6.1 Management Systems of the OIZ 13
2.6.2 Permits 13

3 LEGAL FRAMEWORK 15
3.1 National Legal Framework 15
3.2 International Standards 15
3.2.1 World Bank Group (WBG) Environmental and Social Standards 15
3.2.2 Other International Standards 19
3.3 Project Standards 20

4 METHODOLOGY 26
4.1 Screening and Scoping 26
4.2 Baseline Survey 27
4.2.1 Desktop Study – Initial Document Review 27
4.2.2 Site Survey 28
4.2.3 E&S Screening Report Review 29
4.2.4 Definition of the Area of Influence for the Project 29
4.3 Impact Assessment and Mitigation Measures 29
4.3.1 Magnitude Criteria 29
4.3.2 Sensitivity Criteria 30
4.3.3 Evaluation of Impacts 30
4.3.4 Types of Impact 31
4.3.5 Determining Significance 31
4.3.6 Mitigation and Enhancement Measures 31
4.3.7 Residual Impacts 32
4.4 Stakeholder Consultation 32
4.5 Monitoring 32

5 ENVIRONMENTAL BASELINE OF THE PROJECT 33
5.1 Project Location 33
5.2 Land Use 36
5.3 Topography 42
5.4 Geology 43
5.5 Climate 44
5.6 Soil Quality 46
5.7 Air Quality and Odor 51
5.8 Noise 54
5.9 Water Resources and Use 55
5.10 Wastewater Management 57
5.10.1 Existing Physical Preliminary Treatment 59
5.10.2 Chemical Treatment Units 60
5.10.3 Biological Treatment Units 60
5.10.4 Sewage Sludge Treatment Units 61
5.11 Waste Management 63
5.12 Natural Disaster Potential 64
5.12.1 Landslide Risk 64
5.12.2 Earthquake and Seismicity 64
5.12.3 Flood Risk 66
5.13 Biodiversity and Protected Areas 69
5.13.1 Methodology 69
5.13.2 Habitats 71

6 SOCIAL BASELINE OF THE PROJECT 80
6.1 Demography and Population 80
6.2 Cultural Heritage 81
6.2.1 Tangible Cultural Heritage 81
6.2.2 Intangible Cultural Heritage 83
6.3 Livelihood and Employment 85
6.3.1 Major Economic Activities in Settlements Located in the Project AoI 86
6.4 Education and Health Services 86
6.5 Vulnerable Groups and Social Equity 88
6.6 Infrastructure Services 88
6.7 Traffic and Transportation 89

7 ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS OF THE PROJECT 91
7.1 Environmental Risks and Impact of the Project 91
7.1.1 Land Use 91
7.1.2 Geology 92
7.1.3 Hydrogeology 93
7.1.4 Climate and Vegetation 93
7.1.5 Soil Quality 94

7.1.6 Air Quality and Odor 95
7.1.7 Noise 97
7.1.8 Water Resources and Use 100
7.1.9 Wastewater Management 102
7.1.10 Waste Management 103
7.1.11 Natural Disaster Potential 109
7.1.12 Biodiversity and Protected Areas 110
7.1.13 Pesticide Use and Management 111
7.2 Social Impacts of the Project 112
7.2.1 Population/Demography 112
7.2.2 Cultural Heritage 113
7.2.3 Economy/Employment 114
7.2.4 Vulnerable/Disadvantaged Groups 115
7.2.5 Land Acquisition 115
7.2.6 Working Conditions and Labour Management 115
7.2.7 Community Health and Safety 118
7.2.8 Traffic and Transportation 119
7.2.9 Occupational Health and Safety 119

8 ENVIRONMENTAL AND SOCIAL ASPECTS AND BEST PRACTICE MITIGATION MEASURES 122
8.1 Mitigation Plan for the Pre-Construction Phase 122
8.2 Mitigation Plan for the Construction Phase 125
8.3 Mitigation Plan for the Operation Phase 136

9 ENVIRONMENTAL AND SOCIAL MONITORING PLAN 143
9.1 Monitoring Plan for the Pre-Construction Phase 143
9.2 Monitoring Plan for the Construction Phase 145
9.3 Monitoring Plan for the Operation Phase 149

10 INSTITUTIONAL ARRANGEMENT AND TRAINING 153
10.1 Roles and Responsibilities 153
10.2 Reporting 159
10.3 Training 160

11 STAKEHOLDER MANAGEMENT UNDER ESMP 162
11.1 Previous Stakeholder Engagement Activities 165
11.2 Disclosure and Consultation of the ESMP 167
11.3 Grievance Mechanism 167
11.3.1 GM at National Level 167
11.3.2 Project Level Grievance Mechanism 168
11.3.3 Procedural Steps of Grievance Mechanism 168
11.4 Grievances Related GBV/SH/SEA 170

12 List of Annex 172

12.1 OIZ Management System Certificates 172
12.2 The EIA Exempt Letters 176
12.3 WWTP Environmental Permit 178
12.4 Environmental Permit on Air Quality- Noise Control 180
12.5 Title Deed 181
12.6 Zoning Plan 182
12.7 WWTP Layout 183
12.8 Air Quality Impact Calculations 184
12.9 Noise Impact Calculations 188
12.10 Waste Sludge Generation Calculations 190
12.11 Groundwater Use Permit 191
12.12 National Legal Framework 192
12.13 Chance Find Procedure 200

13 General Notes 201

Tables

Table 1.1. Sub-Management Plans for the Project 4
Table 2.1. Sectors in Mimarsinan OIZ 7
Table 2.2. Timeline for Project Stages 12
Table 3.1. Project Standards for the Project 21
Table 4.1. Documents and databases that are reviewed 28
Table 4.2. Criteria for Determining Impact Magnitude 30
Table 4.3. Criteria for determining sensitivity of a receptor 30
Table 4.4. Effect evaluation matrix 31
Table 5.1. Closest Settlements and Receptors 34
Table 5.2. Plot Statistics 37
Table 5.3. Total Maximum Daily Rainfall, Maximum Daily Wind Speed, Maximum Thickness of Snow Recorded in the Measurement History of 1931-2023 46
Table 5.4.Soil Texture Properties 49
Table 5.5. Gradual reduction in limit values and warning thresholds in air quality assessment and management* 51
Table 5.6: Water Consumption of Municipal Water within the OIZ 57
Table 5.7. WWTP Effluent Flowmeter Results 57
Table 5.8. Analysis Results and Discharged Limits Determined by WPCR 58
Table 5.9 Habitats in the Area of Influence 71
Table 5.10 Flora Species in and Around the Project Area 74
Table 5.11 Fauna Species in and Around the Project Area 75
Table 5.12 Possible Fish Species in Söğüt Stream 76
Table 5.13 Protected Areas 78
Table 6.1. Population of the Settlements in the Project AoI (TurkStat, 2023) 80

Table 6.2 Tangible Cultural Heritage Sites within and in the Vicinity of the Project Area 82
Table 6.3 Intangible Cultural Heritage Items Registered in UNESCO Representative List of Intangible Cultural Heritage of Project Area Vicinity 83
Table 6.4 Intangible Cultural Heritage Items Registered in the National Inventory of Project Area Vicinity 84
Table 6.5. Major Economic Activities in the Settlements Located in the Project AoI 86
Table 6.6. Vulnerable Groups in the Settlements Located in the Project AoI 88
Table 6.7. Infrastructure Information in the Settlements Located in the Project AoI 88
Table 7.1. Uncontrolled and Controlled Dust Emissions in Pre-Construction Phase 95
Table 7.2. Emissions for 1 L Diesel Consumption 95
Table 7.3. Air Quality Project Standard and Calculated Emission Values in Construction Phase 96
Table 7.4. Emissions for 1 L Diesel Consumption 96
Table 7.5. List of Possible Waste Types to be Generated during Pre-Construction Stage 104
Table 7.6. List of Possible Waste Types to be Generated during Construction Stage 107
Table 7.7. List of Possible Waste Types to be Generated during Operation Stage 108
Table 7.8. Sources of Impacts and Impact Types on Cultural Heritage Receptors during All Project Phases 113
Table 7.9. Anticipated OHS Risk and Hazards for Construction Stage 119
Table 7.10. Anticipated OHS Risk and Hazards for Operation Stage 121
Table 8.1. Mitigation Measures for the Pre-Construction Phase 122
Table 8.2. Mitigation Measures for the Construction Phase 125
Table 8.3. Mitigation Measures for the Operation Phase 136
Table 9.1. Monitoring Plan for the Pre-Construction Phase 143
Table 9.2. Monitoring Plan for the Construction Phase 145
Table 9.3. Monitoring Plan for the Operation Phase 149
Table 10.1. National and WB ESF requirements 155
Table 10.2. Process Requirements 159
Table 10.3. Training Program 160
Table 11.1: Project Affected Parties 162
Table 11.2. Other Interested Parties / Governmental Bodies 163
Table 11.3. Other Interested Parties / Non-governmental Bodies 165
Table 11.4. Steps of Grievance Mechanism 169
Table 12.1: Dust Emission Factor 184
Table 12.2: Emission Factors for 1 L Diesel Consumption (assuming density of diesel is 0.85 kg/L) 185
Table 12.3: Emissions for 1 L Diesel Consumption 185
Table 12.4: Emission Factors for 1 L Diesel Consumption (assuming density of diesel is 0.85 kg/L) 187
Table 12.5: Emissions for 1 L Diesel Consumption 187
Table 12.6. Noise Levels of Machinery/Equipment 188
Table 12.7. Noise Levels Based on Distance 189
Table 12.8. Noise Levels Based on Distance 189
Table 12.9. Noise Levels Based on Distance 189
Table 12.10. Key Applicable National Legislation 192

Figures

Figure 2.1. Distribution of Different Sectors in Mimarsinan OIZ 8
Figure 2.2. WWTP Area of Mimarsinan OIZ 9
Figure 2.3. Discharge Point of Mimarsinan OIZ WWTP 10
Figure 2.4. Location of Kayseri 11
Figure 2.5. Location of Mimarsinan OIZ 11
Figure 4.1. Stepwise Approach for E&S Study 26
Figure 5.1. Project Location and Closest Settlements and Surface Water 33
Figure 5.2. Closest Settlements and Receptors 34
Figure 5.3. Representation of the Project Area on the Environmental Plan 37
Figure 5.4. Corine 2018 LULC 38
Figure 5.5. ESRI Sentinel II LULC Map 39
Figure 5.6. OSM LULC Map 40
Figure 5.7. WWTP Area and Land Use AoI 41
Figure 5.8. Digital Elevation Model (DEM) data of the OIZ and Project area 42
Figure 5.9. Topographical Map of the OIZ and Project area 43
Figure 5.10. General Geology Map 44
Figure 5.11. Monthly Climatology of Kayseri, Türkiye, 1931-2023 45
Figure 5.12. Annual Mean for Monthly Average of Wind Speed in Kayseri and Directions of Wind, 1931-2022, MGM Kayseri Regional Station Meteorological Bulletin 45
Figure 5.13. Soil Map of FAO Soil Texture 47
Figure 5.14. Locations of air pollution measurement devices in Kayseri 52
Figure 5.15. Daily Air Quality Measurements for PM_{10} and O_3 between 2023-2024 (Talas Station) 53
Figure 5.16. Daily Air Quality Measurements for NO, NO_x and NO_2 between 2023-2024 (Talas station) 53
Figure 5.17. Area of Influence of Air Quality and Noise 54
Figure 5.18. Sectoral Distribution for Noise Complaints in Kayseri 55
Figure 5.19. Waterways and River Basins in Kayseri Province 56
Figure 5.20. Project Location and Discharge Point 56
Figure 5.21. General view of 2nd and 3rd Phase WWTP layout 59
Figure 5.22. Area of Influence of the Söğüt Stream (Discharge Point) 61
Figure 5.23. Flow Diagram of WWTP 62
Figure 5.24. Landslide Risk 64
Figure 5.25. Active Fault Map 65
Figure 5.26. Hazard Risk Map of the Project Area 66
Figure 5.27. Strahler Stream Ordering Method 67
Figure 5.28. Flow Direction and Strahler Analysis 68
Figure 5.29. Views of Flood Prone Areas (Photographs are taken on 26 December 2024) 69
Figure 5.30. Habitat Map 73
Figure 5.31. IUCN Distribution Map of *Salmo platycephalus* 77
Figure 5.32. IUCN Distribution Map of *Oxynoemacheilus seyhanensis* 77

Figure 5.33. Protected Areas Around the Project Area 79
Figure 6.1. Tangible Cultural Heritage Sites within and in the Vicinity of the Project Area 83
Figure 6.2. General Layout of the Project Area 85
Figure 6.3. Education and Health Facilities 87
Figure 6.4. Highways Traffic Volume Map in Kayseri 90
Figure 7.1. Distribution of Noise Depending on Distance for Pre-Construction Phase 98
Figure 7.2. Distribution of Noise Depending on Distance for Construction Phase 99
Figure 7.3. Area of Influence of Noise During the Pre-Construction and Construction Phases 100
Figure 7.4. Waste Hierarchy 103
Figure 7.5. Mimarsinan OIZ Excavation Waste Storage Area Location and Excavation Route 106
Figure 7.6. Kayseri Sanitary Landfill Location and Municipal Waste Route 106
Figure 7.7. The Project's Social AoI 112
Figure 10.1. Organizational Chart of Project Management Unit (PMU) 154
Figure 12.1. General Layout of Mimarsinan OIZ WWTP 183

Photos

Photo 5.1: View from the Entrance of the Existing WWTP 35
Photo 5.2: View from the Sedimentation Tank of the Existing WWTP 35
Photo 5.3: View from the Sludge Collection of the Existing WWTP 36
Photo 5.4: View from the Project Area 36
Photo 5.5: View from the Hazardous and Non-Hazardous Waste Storage Rooms 63
Photo 5.6: View from the Hazardous and Non-Hazardous Waste Storage Rooms 63
Photo 5.7: View from the Hazardous and Non-Hazardous Waste Storage Rooms 64
Photo 5.8: View from the Hazardous and Non-Hazardous Waste Storage Rooms 64
Photo 5.9. J1.4 Rural Industrial and Commercial Sites Still in Active Use Habitat 72
Photo 6.1 General View from Site 85
Photo 6.2. General View from Site 85

List of Acronyms

Term	Definition
AoI	Area of Influence
AQI	Air Quality Index
AZE	Alliance for Zero Extinction
BOD	Biological Oxygen Demand
CFP	Chance Find Procedure
CHS	Community Health and Safety
CIMER	Presidential Communication Center
CITES	Convention on International Trade in Endangered Species
CLO	Community Liaison Officer
COD	Chemical Oxygen Demand
CR	Critically Endangered
DAFZ	East Anatolian Fault Zone
DEM	Digital Elevation Model
DSI	State Hydraulic Works
E&S	Environmental and Social
EHS	Environmental, Health, and Safety
EIA	Environmental Impact Assessment
EN	Endangered
EPA	Environmental Protection Agency
ESA	Environmental and Social Assessment
ESF	Environmental and Social Framework
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESCP	Environmental and Social Commitment Plan
ESMR	Environmental and Social Monitoring Report
ESPR	Environmental and Social Progress Report
ESSs	Environmental and Social Standards
EU	European Union
EUNIS	European Nature Information System
FAO	Food and Agriculture Organization
GBV	Gender-Based Violence
GDoIZ	General Directorate of Industrial Zones
GHG	Green House Gas
GHGs	Greenhouse Gases
GIIP	Good International Industry Practice
GM	Grievance Mechanism
GMR	Grievance Mechanism Report
HSE	Health, Safety, and Environment
IBA	Important Bird Areas
IBRD	International Bank for Reconstruction and Development

Term	Definition
ICH	Intangible Cultural Heritage
ILO	International Labour Organization
ISO	International Standard Organization
IUCN	Union for Conservation of Nature
KAFZ	North Anatolian Fault Zone
KBA	Key Biodiversity Areas
KGM	General Directorate of Highways
LC	Least Concern
LGM	Labour Grievance Mechanism
LM	Labour Management
LMP	Labour Management Plan
MGM	General Directorate of Meteorology
MoAF	Ministry of Agriculture and Forestry
MoCT	Ministry of Culture and Tourism
MoEUCC	Ministry of Environment, Urbanization, and Climate Change
MoIT	The Ministry of Industry and Technology
MoLSS	Ministry of Labour and Social Security
MoTAT	Mobile Waste Tracking System
MoTF	Ministry of Treasury and Finance
MoTI	Ministry of Transport and Infrastructure
NE	Not Evaluated
NT	Near Threatened
OAKİFS	Central Anatolian Intra-Continental Fault System
OG	Official Gazette
OHS	Occupational Health and Safety
OIZs	Organized Industrial Zones
OSH	Occupational Safety and Health
PAP	Project Affected Parties
PGA	Peak Ground Acceleration
PIU	Project Implementation Unit
PM	Particulate Matter
PMU	Project Management Unit
PPE	Personal Protective Equipment
RAS	Return Activated Sludge
RCA	Root Cause Analysis
SAGA	System for Automated Geoscientific Analyses
SCM	Stakeholder Consultation Meeting
SEA	Sexual Exploitation and Abuse
SEP	Stakeholder Engagement Plan
SH	Sexual Harassment
SOGI	Sexual Orientation and Gender Identity
SRTM	Shuttle Radar Topography Mission
TDF	Fish Bioassay
TKN	Total Kjeldahl Nitrogen
TMP	Traffic Management Plan

Term	Definition
TOIZsP	Türkiye Organized Industrial Zones Project
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solid
UNESCO	United Nations Educational, Scientific and Cultural Organization
VU	Vulnerable
WB	World Bank
WBG	World Bank Group
WGM	Workers' Grievance Mechanism
WHO	World Health Organization
WPCR	Water Pollution Control Regulation
WSW	West-Southwest
WWTP	Wastewater Treatment Plant
YIMER	Foreigners Communication Center

Executive Summary

Türkiye is actively engaged in numerous initiatives across both public and private sectors to implement sustainable practices. These initiatives focus on renewable energy, clean production, green infrastructure, circular economy, and resource efficiency. Within this context, the Türkiye Organized Industrial Zones Project (TOIZsP) has been launched, supported by a 250.3 million Euro loan from the World Bank to be managed by The Ministry of Industry and Technology (MoIT), through its General Directorate of Industrial Zones (GDoIZ). The primary goal of this Project is to transform Türkiye's Organized Industrial Zones (OIZs) into areas of green and sustainable production, thereby enhancing efficiency, environmental sustainability, and competitiveness. The focus of the Main Project determined according to the various and comprehensive needs of Türkiye's existing OIZs. The Project included in this is summarized as follows:

Kayseri Mimarsinan OIZ Capacity Increase of Existing WWTP Project: This Project plans to increase the capacity of the existing wastewater treatment plant from 2,000 m³/day to 6,000 m³/day. This expansion is intended to meet daily treatment needs and support the growth of participating enterprises.

Mott MacDonald has been commissioned by the MoIT GDoIZ to conduct Environmental and Social (E&S) Assessment Studies. These studies will adhere to the World Bank's Environmental and Social Framework (ESF) and Turkish Government regulations. The objective of this Environmental and Social Management Plan is to evaluate the environmental and social impacts of the activities to be conducted within the scope of Kayseri Mimarsinan OIZ Capacity Increase of Existing WWTP Project, ensuring that potential impacts are thoroughly considered during the pre-construction, construction, and operational phases. To effectively manage these impacts, a structured mitigation, monitoring, and institutional arrangement framework has been developed within this ESMP Appropriate mitigation measures and monitoring activities will be established as part of this process.

TOIZsP Project Implementation Unit (PIU) will oversee the day-to-day operations of the Main Project, ensuring compliance with the World Bank's Environmental and Social Framework (ESF) and Environmental and Social Standards (ESSs), as well as the World Bank Group's Environmental, Health, and Safety (EHS) Guidelines, and the Environmental and Social Management Framework (ESMF) for the TOIZsP.

The implementation of the Project will involve multiple stakeholders, each with specific roles and responsibilities during the pre-construction, construction, and operation phases. The Consultant, Contractors, MoIT/Project Implementation Unit (PIU) will take responsibility for various works in the scope of the ESMP. The PIU will be responsible for overseeing the overall implementation, while contractors will execute site-specific environmental and social mitigation measures provided in this ESMP. If needed, contractors will incorporate additional mitigation measures within their additional management plans. The Consultant will provide technical guidance and monitoring, while the OIZ administration will coordinate compliance efforts among stakeholders.

The potential environmental and social risks of the Project include air quality degradation, noise pollution, water resource contamination, occupational health and safety hazards, and potential impacts on community well-being. The specific risks are detailed below:

Environmental and Social Risks

- **Land Use**: Changes in land use due to site preparation and excavation works, and minimal increase in impermeable surfaces. The overall impact of potential environmental risks resulting from land use is assessed as minor for the pre-construction, construction, and operation phases.
- **Geology**: No risks have been identified.
- **Hydrogeology**: The overall impact of potential environmental risks resulting from hydrogeology is assessed as negligible for the pre-construction phase and minor for the construction and operation phases.
- **Climate and Vegetation**: Potential loss of carbon sink due to minimal vegetation removal, greenhouse gas emissions from vehicles and equipment used during construction, and fossil fuel consumption during operation. The overall impact of potential environmental risks resulting from climate and vegetation is assessed as minor for the pre-construction, construction, and operation phases.
- **Soil Quality**: Disruption of natural soil and land structure due to site preparation and construction. Improper replacement of excavated soil, and risks from chemical spills and improper sludge management during operation. The overall impact of potential environmental risks resulting from soil quality is assessed as minor for the pre-construction, construction, and operation phases.
- **Air Quality and Odor**: Dust and exhaust emissions due to site preparation, excavation, and construction works, and potential air quality and odor issues during the operation phase. The overall impact of potential environmental risks resulting from air quality is assessed as minor for the pre-construction, construction, and operation phases. In addition, the overall impact of potential environmental risks resulting from odor is assessed as moderate for the pre-construction and operation phases.
- **Noise**: Noise generation from vehicles and machinery during pre-construction, construction, and operation phases. The overall impact of potential environmental risks resulting from noise is assessed as minor for the pre-construction, construction, and operation phases.
- **Water Resources and Use**: Increased water usage due to dust suppression, concrete mixing, equipment cleaning, and other construction activities. Potential runoff and contamination risks, and improper handling of chemicals and sludge during operation. The overall impact of potential environmental risks resulting from water resources and use is assessed as minor for the pre-construction phase and moderate for the construction and operation phases.
- **Wastewater Management**: Generation of domestic wastewater by construction and operational staff. The overall impact of potential environmental risks resulting from wastewater management is assessed as minor for the construction and operation phases. No impact is foreseen for the pre-construction phase.
- **Waste Management**: Improper waste management through pre-construction, construction, and operation phases. Improper storage and handling of the generated waste. The overall impact of potential environmental risks resulting from waste management is assessed as minor for the pre-construction, construction and operation phases.
- **Natural Disaster Potential**: Seismicity impacts from active faults like the Ecemiş and Erciyes Faults. Potential flood risks from poor drainage and maintenance, and failure to effectively engage with local authorities and communities. The overall impact of potential environmental risks resulting from earthquake and seismicity is assessed as minor for the pre-construction, construction and operation phases.
- **Biodiversity and Protected Areas**: Any activities that can degrade the current state of aquatic environments since the OIZ area is defined as Nitrate Sensitive Area or Region and Urban Sensitive Area by the Regulation. Any anthropogenic transformations due to various

human-induced alterations, resulting in the complete loss of its natural or semi-natural habitat characteristics. The overall impact of potential environmental risks resulting from biodiversity and protected areas is assessed as minor for the pre-construction, construction and operation phases.

- **Pesticide Use and Management**: No risks have been identified since vegetation control or site preparation will rely solely on non-chemical methods.

Social Risks

- **Population/Demography:** Construction is not expected to result in any influx of labour. No additional labour from outside the area will be required for construction activities. For the construction and operation phases, the overall impact of the resulting potential social risks is assessed as minor.
- **Cultural Heritage:** There are no identified cultural risks and impacts; therefore, the risk is assessed as minor.
- **Economy/Employment:** The project does not involve any access restrictions, economic or physical displacement of households. Loss of employment/business is not expected as a result of the project. The limited employment in the Project is expected during the construction and operation phases. Therefore, the social risk assessment is minor in the context of economy and employment.
- **Vulnerable/Disadvantaged Groups:** The project has no impact on people with physical/mental disabilities, different ethnic groups or social classes at any stage. Construction and operation activities do not involve forced labour and/or child labour. The current project-specific grievance mechanism will be improved to enhance its accessibility and inclusiveness, particularly for vulnerable groups.
- **Land Acquisition:** No land has been expropriated for the Project since it will be carried out on property already belonging to the Mimarsinan OIZ.
- **Community Health and Safety:** The project is expected to have minimal noise and dust impact on local communities during construction phase due to the distance, with no significant traffic congestion anticipated; however, impact of possible flood events may lead to odour and pollution issues. The overall impact of potential environmental risks resulting from community health and safety is assessed as minor for the construction and operation phases.
- **Traffic and Transportation:** Traffic management and transportation risks primarily arise from the increased movement of construction vehicles and heavy machinery and routine transport of working personnel. The overall impact of potential environmental risks resulting from traffic and transportation is assessed as negligible for the construction phase and minor for the operation phase.
- **Occupational Health and Safety:** The anticipated Occupational Health and Safety hazards such as Machinery and Equipment, Electrical Hazards, Excavation and Trenching, Chemical and Hazardous Substances, Noise and Vibration, Fire Hazards, Chemical Exposure, Biological Hazards, for the Project's construction and operation phases are given in Table 7.9 and Table 7.10. The overall impact of potential environmental risks resulting from occupational health and safety is assessed as moderate for the construction and operation phases.

The impacts of the Project, stemming from potential environmental and social risks, are detailed in *Chapter 7: Environmental and Social Risks and Impacts of the Project*. To minimize negative environmental and social impacts during the pre-construction, construction, and operation phases, various mitigation measures will be implemented, as described in *Chapter 8: Environmental and Social Aspects and Best Practice Mitigation Measures*. Following the

application of these mitigation measures, the overall significance of the Project-related risks and impacts is reported as low.

Furthermore, to mitigate these impacts, it is essential to create site-specific Environmental and Social management documents on various topics which will be prepared by the contractor. These sub-management plans for all phases of the Project are given in the Table 1.1 below.

Table 1.1. Sub-Management Plans for the Project

Management Plans/Procedure	Stage to be Prepared	Responsible Party	Approving Party
Pre-Construction and Construction Phase			
Soil Management Plan	Prior to Pre-Construction	• Mimarsinan OIZ PMU PMU (Supervision/Monitoring) • Contractor (Implementation)	MoIT (General Directorate of Industrial Zones (GDoIZ))
Air Quality and Emissions Management Plan			
Water Resources Management Plan			
Noise and Vibration Management Plan			
Emergency Preparedness and Response Plan			
Pollution Prevention Plan			
Labour Management Plan			
Operation Phase			
Odor Management Plan	Prior to Operation	• Mimarsinan OIZ PMU (Performance and Management)	MoIT
Water Resources and Effluent Management Plan			
Waste Management Plan			
Sludge Management Plan			
Occupational Health and Safety Management Plan			

The sub-management plans together with this ESMP will be included in the bidding documents to ensure that all contractors and subcontractors adhere to the environmental and social obligations outlined in this ESMP.

1 INTRODUCTION

The Ministry of Industry and Technology (MoIT), in collaboration with the Ministry of Treasury and Finance (MoTF), has secured financing from the International Bank for Reconstruction and Development (IBRD) to support the Türkiye Organized Industrial Zones Project (TOIZsP). This Project aims to enhance the efficiency, environmental sustainability, and competitiveness of selected Organized Industrial Zones (OIZs) in Türkiye. The Main Project, with a budget of 250.3 million Euros, will be managed by the MoIT's General Directorate of Industrial Zones (GDoIZ).

The TOIZsP has two main components. Component 1 focuses on infrastructure and the enabling environment. Sub-Component 1.1 supports investments in basic OIZ infrastructure, such as roads, power, water and gas supply, communication networks, and administrative buildings, especially in less developed regions. It aims to incorporate green solutions wherever possible. Sub-Component 1.2 emphasizes green infrastructure in OIZs, aiming to improve resource efficiency, promote renewable energy investments, and foster industrial symbiosis. This sub-component supports advanced infrastructure Projects to enhance competitiveness and sustainability. Sub-Component 1.3 aims to improve the capacity of innovation centers within OIZs by establishing competitiveness infrastructures and services. It also creates programs linking firms in OIZs with local universities and research institutes to help them introduce or commercialize innovative ideas and technologies. Component 2 is dedicated to technical assistance and capacity building. Sub-Component 2.1 provides technical assistance and capacity building for the Ministry of Industry and Technology (MoIT) and OIZs. It aims to strengthen institutional and regulatory frameworks for OIZs, including innovation centers, and sets key performance indicators for Green OIZ applications.

Sub-Component 2.2 supports the Project Implementation Unit (PIU) in managing Project activities. The PIU assists the MoIT with technical supervision, facilitates investment and business performance, supports infrastructure development, monitors progress, conducts audits, and develops evaluation and reporting systems with an integrated feedback loop to ensure continuous improvement.

The Main Project finances Projects to improve the environmental, social, and technological standards of Organized Industrial Zones (OIZs) and provides technical assistance and capacity-building activities. This approach aims to set an example for other OIZs in Türkiye, promoting sustainable practices and enhancing competitiveness. The primary goal of this Environmental and Social Management Plan (ESMP) is to conduct Environmental and Social Assessment Studies that comply with the World Bank's ESF and Turkish regulations, assessing impacts and establishing mitigation measures for.

The Kayseri Mimarsinan OIZ Capacity Increase of Existing WWTP Project aims to increase the capacity of the existing wastewater treatment plant from 2,000 m³/day to 6,000 m³/day to meet daily treatment needs.

MoIT Project Implementation Unit (PIU) is established for coordination of the TOIZsP and is responsible for managing the Main Project daily, ensuring compliance with the World Bank's Environmental and Social Framework (ESF) and other relevant guidelines such as Convention No. 155 on Occupational Safety and Health, 1981, Convention No. 187 on the Promotion of Occupational Safety and Health Framework. 2006, Convention No. 161 on Occupational Health Services, 1985, Convention No. 167 concerning Safety and Health in the Construction Industry, 1988, and International Labour Organization (ILO) Conventions on Labour and Working Conditions. The process involves assessing environmental and social risks before investments and includes supervision and monitoring during construction and operation. Detailed screening

studies are conducted to secure a no-objection from the World Bank. The followings were carried out for TOIZsP in coordination with PIU:

- Environmental and Social Management Framework (01.03.2021)
- Stakeholder Engagement Plan (01.03.2021)
- Resettlement Framework Türkiye Organized Industrial Zones Project (P171645) (26.02.2021)
- Labor Management Procedures (01.03.2021)
- Environmental and Social Commitment Plan (01.03.2021)

In this context, E&S Screening for Kayseri Mimarsinan OIZ Capacity Increase of Existing WWTP Project was carried out and approved in 2024 by the WB Team. According to the Screening Study of The Kayseri Mimarsinan OIZ, the environmental risks are considered "Moderate" due to manageable construction impacts which can be mitigated with proper measures and operational impacts that can be controlled with established management systems. In accordance with the Screening results, a requirement for Environmental and Social Management Plan (ESMP) has been formulated.

As a result, MoIT GDoIZ gave Mott MacDonald the assignment of conducting Environmental and Social (E&S) Assessment Studies while developing an ESMP that complies with Turkish law and the World Bank's Environmental and Social Framework (ESF). In this report, Mott MacDonald has made an assessment of the possible impacts during pre-construction, construction, and operation stages, and presented suitable mitigation measures and monitoring activities for Kayseri Mimar Sinan OIZ. In this report, TOIZsP is referred as “the Main Project” while the Kayseri Mimar Sinan OIZ Capacity Increase of Existing WWTP Project is referred as “the Project”.

2 PROJECT DESCRIPTION

2.1 Background of the Project

Mimarsinan Organized Industrial Zone was established in 1998 as the 3rd Organized Industrial Zone in Kayseri on an area of 450 hectares in order to realize economic and social development together and to ensure regular urbanization sensitive to the environment. In accordance with the OIZ Law No. 4562, it was registered with the registration number 101 of the Ministry of Science, Industry and Technology (formerly referred as Ministry of Industry and Trade) and became a legal entity[1].

With the infrastructure works that started in 2006, the region became a major investment center. In 2003 it expanded by 150 hectares, and since 2008 the OIZ covers a total area of 600 hectares. Kayseri - Mimarsinan Organized Industrial Zone consists of 368 industrial parcels ranging from 5.000 m^2 to 175.000 m^2 according to the Zoning Plan approved by the Ministry of Science, Industry and Technology (formerly referred as Ministry Industry and Trade). It should be noted that there are no further plans to expandthe OIZ area.

There are 437 establishments from various sectors in Kayseri Mimarsinan OIZ. The main sectors are metal works, food, construction building materials industry and furniture (Table 2.1). The distribution of different sectors in Kayseri Mimarsinan OIZ is given in the Figure 2.1.

Table 2.1. Sectors in Mimarsinan OIZ[2]

Sector	Number of Establishments
Wood, Woodworking, Forest Products,	7
Fuel Oil	2
Packaging Plastic	21
Elevator	12
White Goods, Home Appliances	3
Electricity Electronics	25
Food	94
Paper/Cardboard	1
Construction Building Materials	59
Chemistry / Cleaning Products	4
Mining, Marble, Granite	16
Machine	15
Metal Products	62
Furniture	49
Automotive and Sub-Industry	5
Pvc Window Door Systems	21
Advertising, Promotion	7
Textile	15
Mattress, Bed Base and Sleeping Furniture	5
Other	14

[1] Kayseri Sanayi Odasi: https://www.kayso.org.tr/tr/74/MIMARSINAN-OSB.html

[2] Mimarsinan OSB - Firma Listesi: http://www.mimarsinanosb.org.tr/firmalar

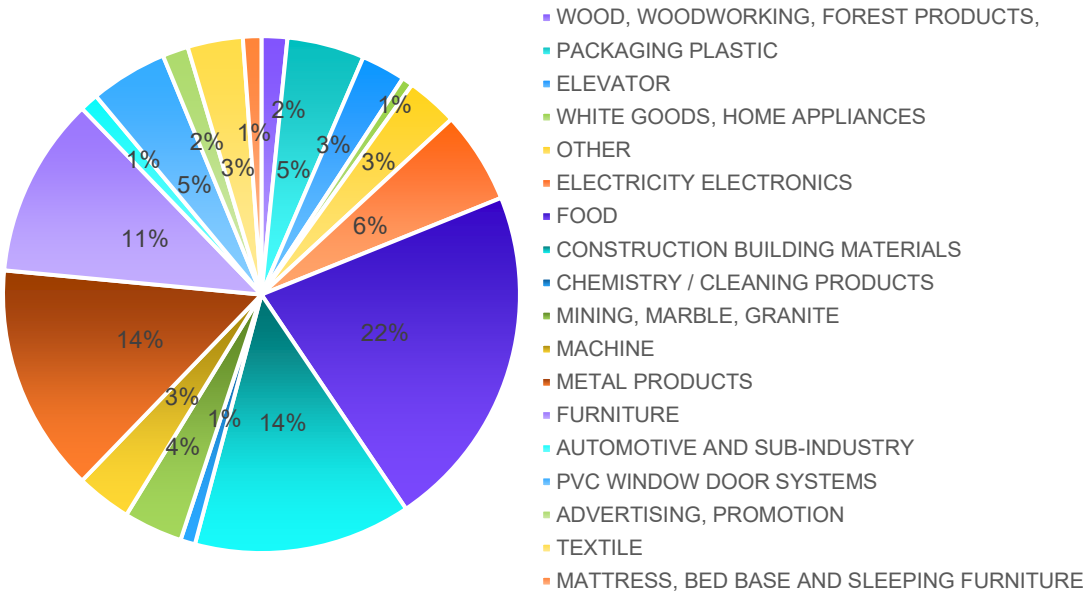


Figure 2.1. Distribution of Different Sectors in Mimarsinan OIZ

To provide uninterrupted and safe energy to the OIZ, 34 transformer stations were built and commissioned within the scope of the Electricity Distribution Network consisting of advanced technological services. Additionally, SCADA and Meter Automation systems were installed. Sewerage and stormwater infrastructure was completed together with 2,000 m³/day capacity domestic and industrial wastewater treatment plant.

Existing Wastewater Treatment Plant

The existing wastewater treatment plant process includes three stages: physical, chemical, and biological treatment units. Here are the components of the system (Please see pictures shared in *Section 5.1*):

- **Coarse Screen**: This system has two sections for mechanical screening, preventing substances larger than 2 cm from entering the plant. Accumulated particles are manually cleaned, pressed, and conveyed to garbage trucks.
- **Wastewater Lift Station**: Wastewater from the coarse screen is directed to the lift station, then pumped to the fine screen structure. The flow rate entering the facility is adjusted here.
- **Fine Screen**: Particles smaller than 1 mm are separated by fine screens, retaining solid materials and preventing clogs.
- **Additional Units**: Include dust and oil removal tank, parshall flume, and stabilization tanks.

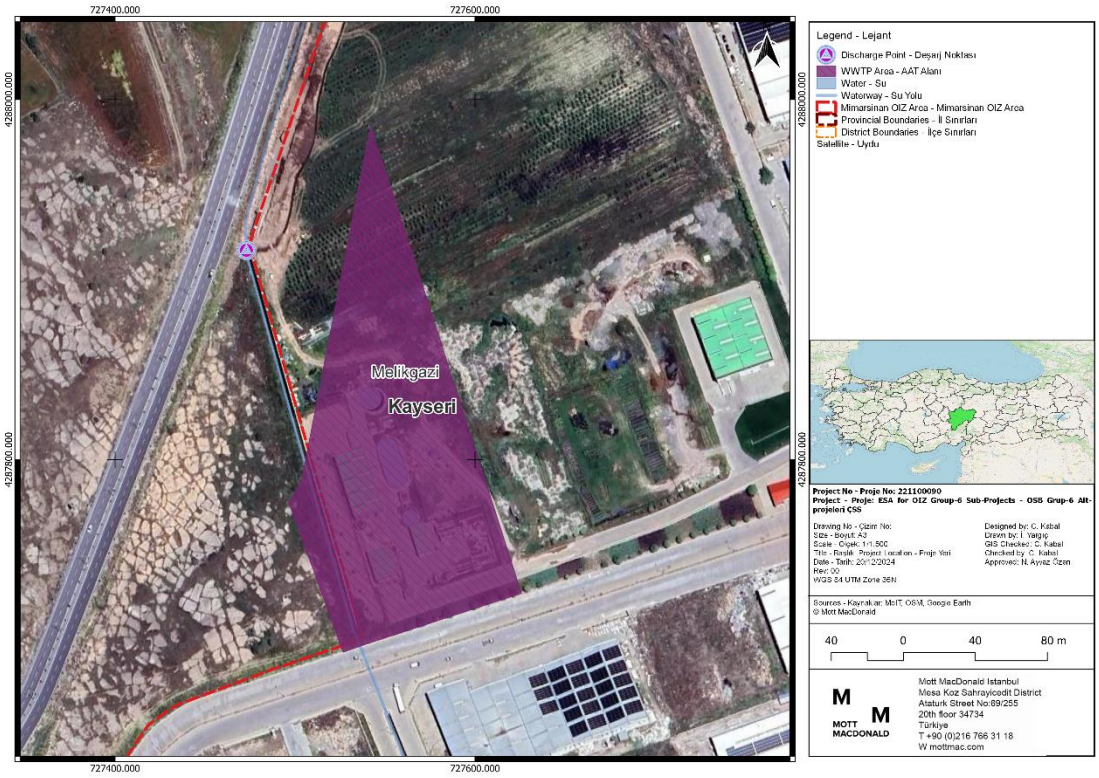


Figure 2.2. WWTP Area of Mimarsinan OIZ

The plant has a treatment capacity of 2,000 m³/day, discharging treated water to Söğüt Stream. Currently, the plant receives 3,000 m³/day, with a maximum flow rate of 4,028 m³/day due to seasonal variations, which is insufficient for daily needs and affects company growth scenarios. Hence, the Project is needed as it is required to discharge in compliance to Water Pollution Control Regulation (WPCR) Table 19 and the current capacity is not sufficient.

To address this, the Project aims to improve the infrastructure, increasing capacity to 6,000 m³/day. According to the information provided by the OIZ Management and E&S Screening Report[3], the project will be implemented within the existing plant area using current collector and discharge lines, and no new lines will be constructed within the Project scope as indicated in the E&S Screening Report.

[3] io Environmental Solutions Research & Development Company, AQWADEM, and PROJETAS (2023). Kayseri Mimarsinan Industrial Zone: Capacity Increase of Existing Wastewater Treatment Plant Environmental & Social Screening Report. Republic of Türkiye Ministry of Industry and Technology, 47.

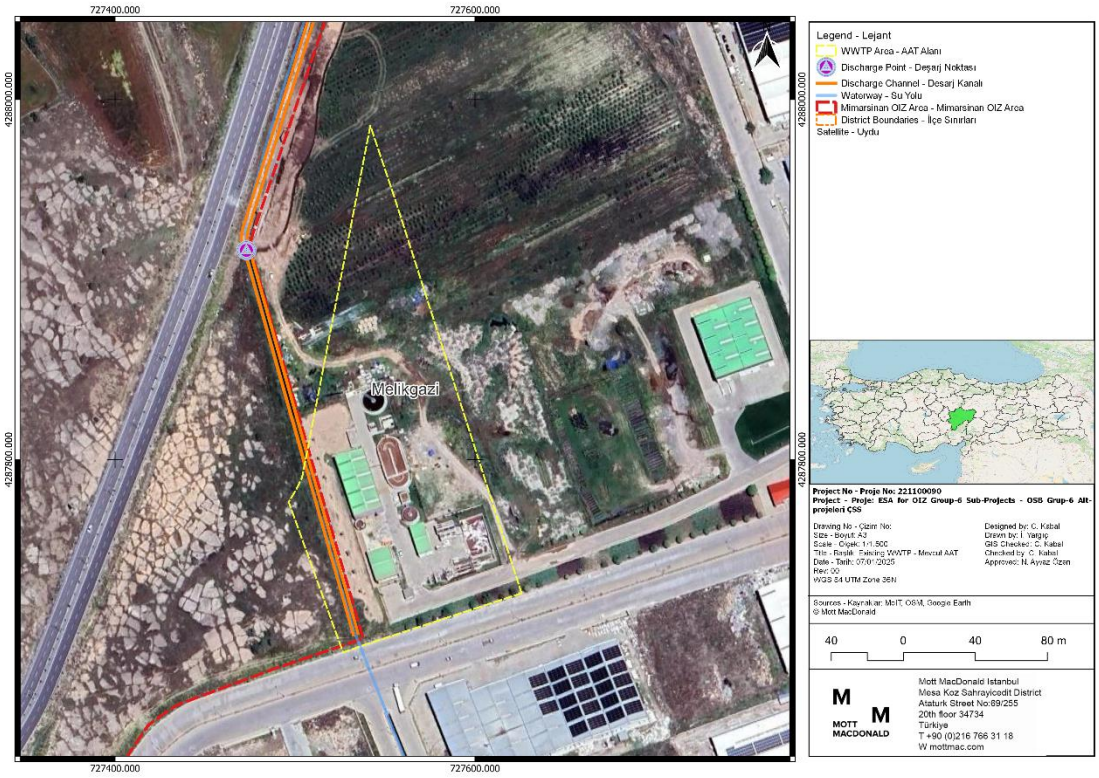


Figure 2.3. Discharge Point of Mimarsinan OIZ WWTP

2.2 Objectives of the Project

The Main Project aims to improve the efficiency and environmental sustainability of selected Organized Industrial Zones (OIZs) in Türkiye. TOIZsP screens Projects with potentially significant environmental or social issues early on. These Projects then undergo a detailed Environmental and Social Impact Assessment (ESIA), guided by the Environmental and Social Management Framework (ESMF) aligned with the World Bank's environmental and social standards for TOIZsP.

Mimarsinan OIZ has an environmental issue regarding the incompatibility between the increasing demand from expanding activities within the OIZ and the treatment capacity of the existing WWTP. Both significant fluctuations and increase in the flow created problems in OIZ existing WWTP and its discharge quality. Hence, OIZ plans to expand its wastewater treatment plant by adding a 2nd and 3rd stage. This expansion will enhance the plant's capacity to effectively treat the increased volume of wastewater, ensuring compliance with environmental standards and supporting the sustainable growth of the industrial zone. The additional stages will incorporate advanced treatment processes to improve the quality of the treated effluent, contributing to the overall environmental sustainability of the Kayseri OIZ.

2.3 Project Location

Kayseri is located in central Türkiye (Figure 2.4) surrounded by Nevşehir, Sivas, Aksaray, Niğde, Kırşehir, Kahramanmaraş, and Adana. The province is at an altitude of 1,071 meters and spans 16,975 km² in the Central Kızılırmak region, where Central Anatolia converges with the Taurus Mountains. The OIZ is located at the intersection of Kayseri Southern Highway and Gaffar Okan Boulevard, with Kayseri Highway to the north. It is approximately 11 km from Kayseri city center, in the Mimarsinan neighbourhoods of the Melikgazi district. Established in

1998, the region had a population of 594,344 as of 2022. The closest settlements to the OIZ are Mimarsinan (2 km), Tavlasun (3.3 km), and Başakpınar (4.6 km).

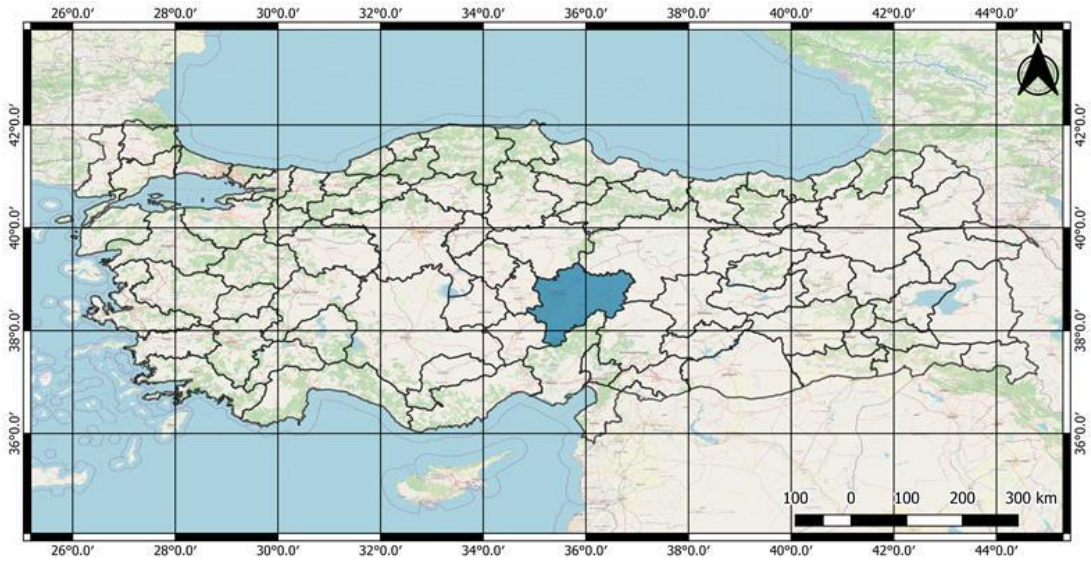


Figure 2.4. Location of Kayseri

The Kayseri Mimarsinan OIZ is positioned on the Kayseri Malatya Highway (Figure 2.5), connecting Central Anatolia to the East. Further details are given in *Section 5.1.*

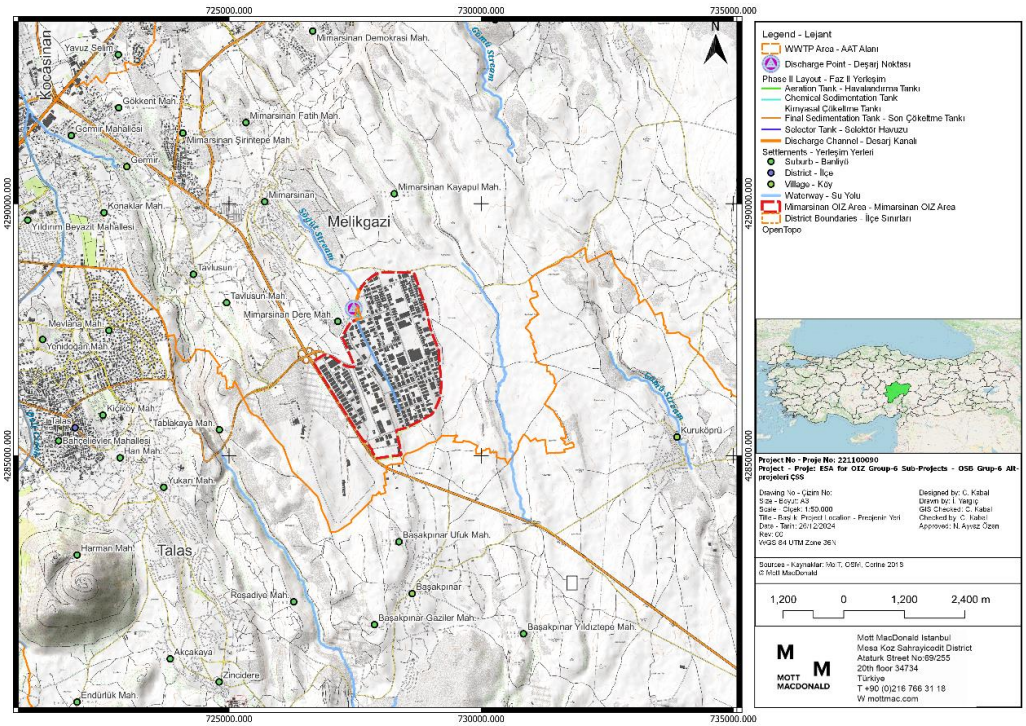


Figure 2.5. Location of Mimarsinan OIZ

2.4 Project Components and Timeline

Currently, the existing WWTP is insufficient to meet the daily treatment needs of the Mimarsinan OIZ. To address this, within the scope of the Project, the daily treatment capacity will be increased from 2,000 m³ to 6,000 m³ by constructing new units within the existing WWTP area. The components to be constructed as part of the Project are listed below:

- Chemical Sedimentation Tank (x2)
- Biological Treatment Units (x2)
  - Selector Tank
  - Aeration Tank
  - Final Sedimentation Tank
  - Return Sludge Pumping Station

In addition, no construction of a new collector line or discharge line is planned within the scope of the Project. The existing collector lines and discharge line will continue to be used. During the construction activities, local employment will be prioritized for surrounding settlements and a limited number of workers will be employed. Therefore, there will be no accommodation for workers onsite[4].

The Project will progress through four key stages (Table 2.2): pre-construction, construction, commissioning, and operation. Each stage is designed to ensure the efficient development and seamless integration of the additional WWTP components into the existing infrastructure, aligning with sustainability goals and operational efficiency.

- **Pre-Construction:** Site assessment, careful vegetation removal, community engagement, and compliance with regulations, along with a mitigation plan for noise, dust, and waste management during construction.
- **Construction:** Construction activities involve site preparation, excavation, and infrastructure installation using heavy machinery like excavators, bulldozers, and cranes.
- **Commissioning:** Detailed testing, calibration, and operational trials to ensure proper function, with operators receiving comprehensive training.
- **Operation:** After commissioning, the existing WWTP will enter Phase-II with enhanced capacity, providing efficient and sustainable wastewater treatment for the industrial zone.

Table 2.2. Timeline for Project Stages

Stages	Month										Number of Employment
	1	2	3	4	5	6	7	8	9	10	
Pre-Construction											50
Construction											
Commissioning											-
Start of the Operation											5

[4] io Environmental Solutions Research & Development Company, AQWADEM, and PROJETAS (2023). Kayseri Mimarsinan Industrial Zone: Capacity Increase of Existing Wastewater Treatment Plant Environmental & Social Screening Report. Republic of Türkiye Ministry of Industry and Technology, 47.

2.5 Associated Facilities

The WB defines Associated Facilities as non-Project facilities or activities that are: (a) directly and significantly related to the Project, (b) carried out concurrently with the Project, and (c) necessary for the Project's viability and would not have been constructed, expanded, or conducted without the Project. For facilities or activities to be considered Associated Facilities, they must align all three criteria[5]. In the scope of TOIZsP, Mimarsinan OIZ does not have any facility that is related to and viable for the Project. Hence, this Project does not have any Associated Facility.

2.6 Permits and Management System of the OIZ

2.6.1 Management Systems of the OIZ

Under Article 20 of the OIZ Law no. 4562, OIZs have the right to establish and operate infrastructure and general service facilities, such as electricity, water, sewerage, natural gas, treatment facilities, roads, communication, and sports facilities within their approved borders. Therefore, the Kayseri Mimarsinan OIZ is authorized to establish and operate the Project within its boundaries. Kayseri Mimarsinan OIZ has five board members. The main industries within the OIZ include food, furniture, metal products, and construction materials. Additionally, Kayseri Mimarsinan OIZ holds several certifications (*Section 12.1*):

- **Zero Waste Certificate:** Valid until December 15, 2025 (Document No. TS/38/C/8/2)
- **Environmental Management System Certificate (TS EN ISO 14001:2015)**: Valid until December 10, 2027 (Document No. ÇY-1123/21)
- **Energy Management System Certificate (TS EN ISO 500001:2018)**: Valid until December 8, 2027 (Document No. EYB-177/21)
- **Quality Management System Certificate (TS EN ISO 9001:2015):** Valid until December 9, 2027 (Document No. KY-5733-09/10-R15)

2.6.2 Permits

An Environmental Impact Assessment (EIA) opinion dated February 15, 2018, and numbered 27332451-220.03-E.1505, supports the capacity increase for the Wastewater Treatment Plant (WWTP) in the Kayseri Mimarsinan Organized Industrial Zone (OIZ). This increase falls under Article 10.1 of the Annex-II List of the Environmental Permit and License Regulation, which pertains to common wastewater treatment plants in industrial regions.

The Environmental Impact Assessment Regulation (EIA) (Article 24 Paragraph c) mandates an EIA for specialized OIZs during the establishment phase, with the Ministry of Environment, Urbanization, and Climate Change (MoEUCC) determining the process. WWTPs with a capacity over 50,000 m³/day are listed in Annex-I, requiring an EIA procedure, and those over 30,000 m³/day in Annex-II, requiring pre-examination and environmental impact assessment. (*Section 12.2*). Although the facility's capacity will be increased, since remains below the 30,000 m³/day threshold in Article 51 of the EIA Regulation Annex-II, it is exempt from the requirements of pre-examination (i.e. Project Introductory File) and the EIA as indicated in EIA Exempt Letter (*Section 12.2*).

The facility holds an environmental permit for wastewater discharge (document number 62159566-150/E.8423 (*Section 12.3*), valid until 04.11.2026) and is exempt from environmental

[5] ESFramework.pdf

permits on air emission and noise control, according to a letter of conformity dated May 5, 2021, and numbered 62159566-150/E.8423, (*Section 12.4*)).

The WWTP has a Temporary Waste Storage Area. Under the Regulation on Waste Management, a permit is not required for hazardous waste storage if less than 1 ton of waste is produced per month.

The Project-related permits to be obtained, but not limited to, are as follows:

- Construction Licence from the Kayseri Metropolitan Municipality (in pre-construction stage of the Project)
- Building Licence from the Kayseri Metropolitan Municipality (in pre-construction stage of the Project)
- Operation Licence from the Provincial Directorate of Environment, Urbanization, and Climate Change (before operation stage of the Project)
- Temporary Certificate of Operation from Provincial Directorate of Environment, Urbanization and Climate Change (after construction stage of the Project)
- Environmental Permit and License from Provincial Directorate of Environment, Urbanization and Climate Change (in commissioning stage of the Project)
- Wastewater Treatment Plant Identity Card from the Ministry of Environment, Urbanization, and Climate Change
- Hazardous Waste Liability Insurance by insurance companies
- Three-year Industrial Waste Management Plan from Provincial Directorate of Environment, Urbanization and Climate Change

3 LEGAL FRAMEWORK

This chapter presents the legal and administrative framework that governs the design and implementation of this ESMP. It offers an overview of the national legal framework and international standards for the Project and establishes the applicable Project standards. In addition, it details compliance with international industry best practices, along with the Environmental, Health, and Safety (EHS) regulations, policies, and standards set by Turkish Legislation and the World Bank's Environmental and Social Framework (ESF), including compliance with the Main Project's Environmental and Social Management Framework (ESMF). Furthermore, it highlights any gaps between the national legal framework and the WB ESF and describes the measures adopted within the Project to bridge these gaps.

3.1 National Legal Framework

The national legal framework is governed by various laws and regulations to mitigate potential environmental and social impacts that may arise from the pre-construction, construction, commissioning, and start of the operation stages. The key national laws and regulations applicable to the environmental and social performance of the Project is given in *Section 12.12*

3.2 International Standards

The works within the scope of this ESMP are designated to be implemented primarily in accordance with the World Bank's (WB) Environmental and Social Standards (ESSs), the WB Group's Environmental and Social Framework (ESF) and General Environment, Health, and Safety (EHS) Guidelines. In addition, the Good International Industry Practice (GIIP) and relevant international standards are considered. The relevant Environmental and Social (E&S) standards, requirements, and guidelines applicable to this ESMP are summarized below.

3.2.1 World Bank Group (WBG) Environmental and Social Standards

ESS1: Assessment and Management of Environmental and Social Risks and Impacts:

This standard outlines the Borrower's duties to evaluate, manage, and monitor environmental and social risks throughout a Project funded by the Bank via Investment Project Financing. As per requirements of the ESS1, Mott MacDonald conducted Project specific E&S Assessment Studies evaluating potential impacts of the Project's construction and operation stages on the physical biological, and social environments.

ESS1, paragraph 28 specifies that the assessment should cover all relevant environmental and social risks and impacts resulting from the Main Project, including:

- Environmental Risks and Impacts covering the following issues:
  - The ones defined by Environmental Health and Safety Guidelines (EHS)
- Community safety
  - Climate change and other transboundary or global risks and impacts
  - Materials threat to the protection, conservation, maintenance and restoration of natural habitats and biodiversity
  - Ecosystem services and the use of living natural resources (fisheries, forests etc.)
- Social Risks and Impacts covering the following issues:
  - Threats to human security

- Risks that Project impacts fall disproportionately on individuals or groups who, because of their particular circumstances, may be disadvantaged or vulnerable
- Any prejudice or discrimination toward individuals or groups in providing access to development resources and Project benefits, particularly in the case of those who may be disadvantaged or vulnerable
- Negative economic and social impacts relating to the involuntary taking of land or restrictions on land use.
- Risks or impacts associated with land
- Impacts on the health, safety and well-being of workers and Project-affected communities
- Risks to cultural heritage

Turkish EIA Regulation primarily addresses environmental impacts but does not fully align with the scope and depth required under ESS1. Key gaps include the limited assessment of social risks, lack of detailed evaluation of cumulative and transboundary impacts, and absence of adaptive management and monitoring systems. To close these gaps. To close these gaps, in this context, this ESMP has actively engaged stakeholders and disclosed relevant information in accordance with ESS10. It outlines the development of the ESMP, and the implementation of all actions required by the legal framework, including the monitoring and reporting of the Main Project's environmental and social performance in relation to the ESSs. The ESMP encompasses the Project's objectives and specifications, legislative requirements and standards, responsible parties, consideration of alternatives, environmental and social baseline conditions, potential environmental and social impacts and risks, mitigation measures, implementation plans, budget, and an environmental and social monitoring plan.

ESS2: Labour and Working Conditions:

This standard highlights the role of job creation and income generation in reducing poverty and fostering inclusive economic growth. Borrowers can boost Project benefits by ensuring fair treatment of workers and maintaining safe, healthy working conditions.

While Turkish Labor Law regulates employment conditions, health and safety, and prohibits child and forced labour, it does not fully align with ESS2 in several areas. Gaps include the lack of a formal grievance mechanism for workers, limited requirements for managing third-party and supply chain labour, and no obligation to prepare a Labour Management Procedure. To address these gaps, the Project includes different types of employment in both construction and operation stages. Therefore, in accordance with the requirements of ESS2, Mott MacDonald has developed the requirements for Labour Management that outline how Project workers will be managed. These requirements align with national laws and ESS2. They cover various aspects, including working conditions and the management of worker relationships. Key topics addressed include:

- Terms and conditions of employment
- Non-discrimination and equal opportunity
- Rights related to workers' organizations
- Protection of the workforce, including defining a minimum age for workers
- Prohibition of child labour and forced labour
- Grievance mechanisms
- Occupational health and safety
- Management of contracted workers, community workers, and primary supply workers

These procedures aim to ensure a fair and safe working environment for all involved in the Main Project.

ESS3: Resource Efficiency and Pollution Prevention and Management:

This standard acknowledges that economic activity and urbanization can cause pollution and deplete resources, posing risks to people and the environment. It outlines requirements for resource efficiency and pollution management throughout a Project's life cycle.

Construction activities may result in the consumption of energy and water, emissions from machinery, and waste generation, which need to be managed to prevent environmental pollution. During operation, the plant will produce effluent wastewater, odor, and sludge, requiring resource-efficient technologies and pollution control measures.

Turkish legislation includes general provisions on pollution control and waste management; however, it does not fully address resource efficiency or require a life cycle approach to managing energy, water, or material use. It also lacks specific requirements for greenhouse gas (GHG) assessments and long-term pollution prevention planning. To close these gaps, this ESMP identifies environmental risks and impacts of the Main Projects on pre-construction, construction, and operation stages promoting the efficient use of natural resources within the Project scope. It also establishes plans and procedures to minimize unnecessary resource use during the Project's lifecycle.

ESS4: Community Health and Safety:

This standard addresses potential health, safety, and security risks and impacts on Project-affected communities and corresponding responsibility of Borrowers to avoid or minimize these, with particular attention to vulnerable people. To ensure the local community is not adversely affected during the construction and operation stages of the Project, taking necessary precautions and informing the community about the Project is essential.

The Project activities during construction may increase risks to nearby communities through traffic, noise, dust, and construction-related hazards. In the operation phase, untreated wastewater leaks, odor emissions, or improper wastewater and sludge management could negatively affect the health and safety of local residents.

Turkish legislation provides basic requirements for public health, construction safety, and emergency response; however, it does not fully cover the broader scope of ESS4. Specific gaps include the absence of mandatory traffic safety planning, limited consideration of vulnerable groups, insufficient provisions on managing hazardous materials near communities, and lack of guidance on the role of private security or emergency risk communication. To address these issues, this ESMP covers community health and safety including equipment design and safety, traffic and road safety, ecosystem services, community exposure to health issues, the management and safety of hazardous materials, emergency preparedness and response, and the role of security personnel.

ESS5: Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement:

This standard is currently not relevant to this Project.

ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources:

Turkish EIA legislation requires assessment of impacts on flora and fauna but does not fully align with ESS6 in terms of identifying critical habitats, applying the mitigation hierarchy, or considering ecosystem services and long-term biodiversity management. It also lacks detailed requirements for assessing impacts on natural resources used by local communities or managing risks to sensitive species from indirect operational impacts. To close these gaps, this ESMP has been developed in accordance with ESS6. Furthermore, a detailed EUNIS Habitat Map has been included to support habitat classification and assessment efforts.

This standard emphasizes the importance of protecting biodiversity and sustainably managing natural resources for sustainable development. It highlights the need to maintain ecological functions of habitats, including forests, and addresses the sustainable management of primary production and harvesting. ESS6 also considers the livelihoods of Project-affected parties, including Indigenous Peoples, whose access to biodiversity or natural resources may be impacted.

Additionally, during the operational phase, improper discharge of effluents or inadequate disposal of sludge may have adverse effects on local aquatic ecosystems, as well as on surrounding flora and fauna. Such actions could lead to contamination of water bodies, disruption of natural habitats, and potential harm to sensitive species, including both aquatic life and terrestrial organisms dependent on these ecosystems

ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities:

This standard is not applicable to this Project.

ESS8: Cultural Heritage:

This standard acknowledges the importance of cultural heritage as a link between the past, present, and future. It outlines measures to protect cultural heritage throughout a Project's life cycle.

The Turkish EIA Regulation does not mention the mitigation hierarchy (such as avoidance, minimization, compensation) monitoring, training and the chance find procedure for tangible and intangible cultural assets. To address these gaps, a chance find procedure has been prepared (Please refer Annex 12.13). Cultural heritage training and monitoring activities should be included in the monitoring and training plan according to the construction schedule.

ESS9: Financial Intermediaries (FIs):

This standard is not applicable to this Project.

ESS10: Stakeholder Engagement and Information Disclosure:

This standard emphasizes the importance of open and transparent engagement between the Borrower and Project stakeholders. Effective stakeholder engagement can enhance the environmental and social sustainability of Projects, improve Project acceptance, and contribute significantly to successful Project design and implementation.

The Project activities may affect communities and other stakeholders, requiring regular consultation and disclosure of Project-related risks and mitigation measures. During construction stage, issues like noise, traffic, and land use changes should be communicated, while operational impacts such as odor or effluent management need continuous engagement with stakeholders.

Turkish EIA legislation requires stakeholder input mainly during the initial EIA phase but does not ensure ongoing engagement, nor does it require a formal Stakeholder Engagement Plan or grievance mechanism. It also lacks specific provisions for identifying and engaging vulnerable groups or disclosing project updates throughout implementation. To address these gaps, a Stakeholder Management Plan (SEP) was prepared to meet the requirements of ESS10. The SEP[6] was established by MoIT as a common document to be implemented for Projects. This plan includes stakeholder identification and analysis, an engagement strategy, information disclosure, meaningful consultations, engagement during Project implementation, external

[6] https://yesilosb.sanayi.gov.tr/projedokumanlari

reporting, a grievance mechanism, and an assessment of organizational capacity and commitment.

3.2.2 Other International Standards

In addition to the WB ESSs, WBG's ESF, WGB's EHS Guidelines, GIIP, and relevant international standards considered in the preparation of this ESMP. The overarching reference standards applied are given below:

- World Bank Group (WBG) General EHS Guidelines (2007)
- World Health Organization (WHO) Global Air Quality Standards (2021)
- Convention No. 155 on Occupational Safety and Health, 1981
- Convention No. 187 on the Promotion of Occupational Safety and Health Framework. 2006
- Convention No. 161 on Occupational Health Services, 1985,
- Convention No. 167 concerning Safety and Health in the Construction Industry, 1988

International Labour Organization (ILO) Conventions on Labour and Working Conditions[7], concerning the abolition of child labour, the elimination of discrimination at the workplace and forced/compulsory labour. In addition to this, following ILO conventions which Turkiye is signatory to will be applicable during the lifetime of the Project:

- Freedom of Association and Protection of the Right to Organise Convention
- Right to Organise and Collective Bargaining Convention
- Equal Remuneration Convention
- Occupational Safety and Health Convention
- Promotional Framework for Occupational Safety and Health Convention
- WB Good Practices Notes[8]
- Assessing and Managing the Risks and Impacts of the Use of Security Personnel
- Assessing and Managing the Risks of Adverse Impacts on Communities from Project-Related Labour Influx
- Gender (Prevention of Gender-based violence (GBV), Sexual exploitation and abuse / sexual harassment (SEA/SH))
- Non-Discrimination and Disability
- Non-Discrimination: Sexual Orientation and Gender Identity (SOGI)
- Road Safety
- Water Use
- ESF Guidance Notes[9]
  - ESF Guidance Note for Borrowers 1: Assessment and Management of Environmental and Social Risks and Impacts
  - ESF Guidance Note for Borrowers 2: Labour and Working Conditions
  - ESF Guidance Note for Borrowers 3: Resource Efficiency and Pollution Prevention and Management
  - ESF Guidance Note for Borrowers 4: Community Health and Safety

[7] Up-to-date conventions and recommendations (ilo.org)

[8] Environmental and Social Framework Resources

[9] https://Projects.worldbank.org/en/Projects-operations/environmental-and-social-framework/brief/environmental-and-social-standards

- ESF Guidance Note for Borrowers 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement
- ESF Guidance Note for Borrowers 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- ESF Guidance Note for Borrowers 8: Cultural Heritage
- ESF Guidance Note for Borrowers 10: Stakeholder Engagement and Information Disclosure

3.3 Project Standards

Project Standards aims to establish the applicable standards through all stages of the Project. The most stringent among national legislations and international standards will be defined as the Project Standard (Table 3.1) that the Project will comply with.

Table 3.1. Project Standards for the Project

Topic	National Standards/Requirements	Limit Values in National Legislation	International Standards/Requirements	Limit Values in International Legislation	Project Standards
Noise	Regulation on Environmental Noise Control (OG 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.	Receptor: Residential; institutional, educational: Day time (07:00-22:00): One Hour LA_{eq} dB(A) < 55 dB(A) Night time (22:00-07:00): One Hour LA_{eq} dB(A) < 45 dB(A) Receptor: Industrial, commercial.: Day time (07:00-22:00): One Hour LAeq dB(A) < 70 dB(A) Night time (22:00-07:00): One Hour LA_{eq} dB(A) < 70 dB(A)	Receptor: Residential, industrial, commercial: Day time (07:00-22:00): One Hour LA_{eq} dB(A) < 55 dB(A) Night time (22:00-07:00): One Hour LA_{eq} dB(A) < 45 dB(A)
Air Quality	Regulation on Assessment and Management of Air Quality (OG Date/Number: 06.06.2008/26898) Annex-1B Limit Values, Assessment and Warning Thresholds	PM_{10} 24 Hours: 50 µg/m^3 (not exceeded more than 35 times in one year) Annual: 40 µg/m^3	World Health Organization (WHO) Ambient Air Quality Guidelines	PM_{10} 24-Hour: 45 µg/m^3 (99th percentile (i.e. 3-4 exceedance days per year) 1-Year: 15 µg/m^3 $PM_{2.5}$ 24-Hour: 15 µg/m^3 (99th percentile (i.e.3-4 exceedance days per year) 1-Year: 5 µg/m^3	PM_{10} 24-Hour: 45 µg/m^3 (99th percentile (i.e. 3-4 exceedance days per year) 1-Year: 15 µg/m^3 $PM_{2.5}$ 24-Hour: 15 µg/m^3 (99th percentile (i.e.3-4 exceedance days per year) 1-Year: 5 µg/m^3 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 WHO Ambient Air Quality Guidelines value for 24-hour limit is used, which is 15 µg/m^3.
	Regulation on Control of Industrial Air Pollution (OG Date/Number: 03.07.2009/27277 revised in the OG Date/Number:06.11.2020/31296) Annex-2 Table 2.1 Mass Flows	Non-Stack Mass Flow Dust: 1 kg/hour CO: 50 kg/hour Hydrocarbons: 3 kg/hour NO_x: 4 kg/hour SO_x: 6 kg/hour These limits are for exhaust gas emissions from the working of construction machinery during the construction phase.	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.	Non-Stack Mass Flow Dust: 1 kg/hour CO: 50 kg/hour Hydrocarbons: 3 kg/hour NO_x: 4 kg/hour SO_x: 6 kg/hour The limit values for exhaust gas defined in Industrial Air Pollution Control Regulation will be complied in Project.
Effluent Water Quality	Regulation on Water Pollution Control (OG Date/Number: 31.12.2004/25687 revised in the OG Date/Number: 12.05.2023/32188) Wastewater Discharge Standards Defined in Table 19-	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 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	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.	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

Topic	National Standards/Requirements	Limit Values in National Legislation	International Standards/Requirements	Limit Values in International Legislation	Project Standards
	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)	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			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 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.

		Parameter	Water Quality Classes I (Very High Quality)	II (High Quality)	III (Moderate Quality)
Surface Water Quality	Regulation on Surface Water Quality-Water Quality Classes (OG Date/Number: 30.11.2012/ 28483) Annex-5 Table 2 Quality Criteria in terms of General Chemical and Physicochemical Parameters by Classes of Inland Surface Water Resources	pH	6-9	6-9	6-9
		Colour (m-1)	RES 436 nm: ≤ 1.5 RES 525 nm: ≤ 1.2 RES 620 nm: ≤ 0.8	RES 436 nm: 3.0 RES 525 nm: 2.4 RES 620 nm: 1.7	RES 436 nm: > 4.3 RES 525 nm: > 3.7 RES 620 nm: 2.5
		Conductivity (µS/cm)	< 400	1000	> 1000
		Oil and Grease (mg/L)	< 0.2	0.3	> 0.3
		Dissolved Oxygen (mg/L)	> 8	6	< 6
		Chemical Oxygen Demand (COD) (mg/L)	< 25	50	> 50
		Biological Oxygen Demand (BOD) (mg/L)	< 4	4-8	>8
		Ammonium (mg/L)	< 0.2	1	>1
		Nitrate (mg/L)	< 3	10	> 10
		TKN (mg/L)	< 0.5	1.5	> 1.5
		Total Nitrogen (mg/L)	< 3.5	11.5	> 11.5
		Orto Phosphate (mg/L)	< 0.05	0.16	> 0.16
		Total Phosphorus (mg/L)	< 0.08	0.2	> 0.2
		Fluoride (µg/L)	≤ 1000	1500	> 1500
		Manganese (µg/L)	≤ 100	500	> 500
		Selenium (µg/L)	≤ 10	15	> 15
		Sulphur (µg/L)	≤ 2	5	> 5

		Parameter	International Value	Parameters	Water Quality Classes I (Very High Quality)	II (High Quality)	III (Moderate Quality)
Surface Water Quality	World Health Organization (WHO) Guidelines for Drinking Water Quality Fourth Edition	pH	⩾ 6.5 & ⩽ 9.5	pH	6.5-9	6.5-9	6.5-9
		Colour (m-1)	-	Colour (m-1)	RES 436 nm: ≤ 1.5 RES 525 nm: ≤ 1.2 RES 620 nm: ≤ 0.8	RES 436 nm: 3.0 RES 525 nm: 2.4 RES 620 nm: 1.7	RES 436 nm: > 4.3 RES 525 nm: > 3.7 RES 620 nm: 2.5
		Conductivity (µS/cm)	-	Conductivity (µS/cm)	< 400	1000	> 1000
		Oil and Grease (mg/L)	-	Oil and Grease (mg/L)	< 0.2	0.3	> 0.3
		Dissolved Oxygen (mg/L)	-	Dissolved Oxygen (mg/L)	> 8	6	< 6
		Chemical Oxygen Demand (COD) (mg/L)	-	Chemical Oxygen Demand (COD) (mg/L)	< 25	50	> 50
		Biological Oxygen Demand (BOD) (mg/L)	-	Biological Oxygen Demand (BOD) (mg/L)	< 4	4-8	>8
		Ammonium (mg/L)	-	Ammonium (mg/L)	< 0.2	1	>1
		Nitrate (mg/L)	50 mg/L	Nitrate (mg/L)	< 3	10	> 10 & < 50
		TKN (mg/L)	-	TKN (mg/L)	< 0.5	1.5	> 1.5
		Total Nitrogen (mg/L)	-	Total Nitrogen (mg/L)	< 3.5	11.5	> 11.5
		Orto Phosphate (mg/L)	-	Orto Phosphate (mg/L)	< 0.05	0.16	> 0.16
		Total Phosphorus (mg/L)	-	Total Phosphorus (mg/L)	< 0.08	0.2	> 0.2
		Fluoride (µg/L)	1500	Fluoride (µg/L)	≤ 1000	1500	> 1500
		Manganese (µg/L)	80	Manganese (µg/L)	⩾ 80 & ≤ 100	500	> 500
		Selenium (µg/L)	40	Selenium (µg/L)	≤ 10	15	> 15 & < 40
		Sulphur (µg/L)	-	Sulphur (µg/L)	≤ 2	5	> 5

Topic	National Standards/Requirements	Limit Values in National Legislation	International Standards/Requirements	Limit Values in International Legislation	Project Standards
Groundwater Quality	Regulation on the Protection of Groundwater	Nitrate: 50 mg/L Total Pesticide: 0.5 µg/L	WHO Guidelines for Drinking Water	Nitrate: 50 mg/L Total Pesticide: -	Nitrate: 50 mg/L Total Pesticide: 0.5 µg/L

Topic	National Standards/Requirements	Limit Values in National Legislation	International Standards/Requirements	Limit Values in International Legislation	Project Standards
	against Pollution and Deterioration (OG Date/Number: 07.04.2012/ 28257) Annex-2 Groundwater Quality Standards Annex-3 Guide to Threshold Values for Groundwater Pollutants and Pollution Symptoms Regulation on Waters Intended for Human Consumption (OG Date/Number: 17.02.2005/ 25730) Annex-1 Parameters and Threshold Values	For the other parameters given below, chemical and indicator parameters of the Annex-1 of the Regulation on Waters Intended for Human Consumption are considered. Ammonium: 0.50 mg/L Arsenic: 10 µg/L Mercury: 1 µg/L Conductivity: 2500 μS/cm^{-1} Cadmium: 5 µg/L Chloride: 250 mg/L Lead: 10 µg/L Sulfate: 250 mg/L Tetrachloroethylene: Trichloroethylene Salinity: -	Quality Fourth Edition	Ammonium: - Arsenic: 10 µg/L Mercury: 6 µg/L Conductivity: - Cadmium: 3.0 µg/L Chloride: 0.7 mg/L Lead: 10 µg/L Sulfate: - Tetrachloroethylene: - Trichloroethylene: - Salinity: -	Ammonium: - Arsenic: 10 µg/L Mercury: 1 µg/L Conductivity: 2500 μS/cm^{-1} Cadmium: 3.0 µg/L Chloride: 0.7 mg/L Lead: 10 µg/L Sulfate: 250 mg/L Tetrachloroethylene: Baseline Level Trichloroethylene: Baseline Level Salinity: Baseline Level
Soil Quality	Regulation on Soil Pollution Control and Point-Source Contaminated Sites (OG Date/Number: 08.06.2010/27605, revised in the OG Date/Number 11.07.2013/28704) Annex-1 List of Generic Pollutant Limit Values Annex-2 Potential Soil Polluting Activities and Activity-Specific Pollution Indicator Parameters	Arsenic: 0.3 mg/kg Boron: - Cadmium: 3 mg/kg Chromium (VI): 1 mg/kg Copper: 51 mg/kg Lead: 14 mg/kg Mercury: 0.6 mg/kg Nickel: 1 mg/kg Selenium: 0.05 mg/kg Silver: 2 mg/kg Zinc: 681 mg/kg Tin: 5479 mg/kg Total Petroleum Hydrocarbons (TPH): - Total Organic Halogens (TOX): - According to MoIT's 2020 Kayseri Industrial Status Report, the main sector group in Mimar Sinan OIZ is the food, furniture, metal products, and construction materials manufacturing industry. Based on these industrial activities, the parameters above are selected by considering the classification in the Regulation on Soil Pollution Control and Point-Source Contaminated Sites.	Dutch Standards - Soil Remediation Circular 2013 Table-1 Groundwater Target Values and Soil and Groundwater Intervention Values	Arsenic: 76 mg/kg Boron: - Cadmium: 13 mg/kg Chromium (VI): 78 mg/kg Copper: 190 mg/kg Lead: 530 mg/kg Mercury: 4 mg/kg Nickel: 100 mg/kg Selenium: 100 mg/kg Silver: 15 mg/kg Zinc: 720 mg/kg Tin: 900 mg/kg Total Petroleum Hydrocarbons (TPH): - Total Organic Halogens (TOX): - Concentrations in soil are shown for standard soil (10% organic matter and 25% lutite.)	Arsenic: 0.3 mg/kg Boron: Baseline Level Cadmium: 3 mg/kg Chromium (VI): 1 mg/kg Copper: 51 mg/kg Lead: 14 mg/kg Mercury: 0.6 mg/kg Nickel: 1 mg/kg Selenium: 0.05 mg/kg Silver: 2 mg/kg Zinc: 681 mg/kg Tin: 900 mg/kg Total Petroleum Hydrocarbons (TPH): Baseline Level Total Organic Halogens (TOX): Baseline Level The Regulation on Soil Pollution Control and Point-Source Contaminated Sites sets generic limit concentrations for soil contaminants to assess soil pollution. Facilities listed in Annex-2 Table 2 must submit a "Preliminary Operation Information Sheet" to the Provincial Directorate of Environment Urbanization and Climate Change. The Directorate evaluates the sites based on criteria in Annex-4. If any criteria are met, the site is deemed a "Suspicious Site" requiring further assessment. Therefore, exceeding the limit values mentioned above does not imply direct soil pollution in the Project area.
Labour and Working Conditions	Labour Law (No. 4857) (OG Date/Number: 10.06.2003/25134)	ESS2 Labour and Working Conditions	ESS2 Labour and Working Conditions ESF Guidance Note for Borrowers 2: Labour and	Turkish national labour laws and regulations largely meet the ESS2 standards for labour and working conditions. However, the primary discrepancy lies in the worker grievance mechanism, which does not fully align with ESS2 requirements.	Full compliance with national legslation, WB ESS2, the LMP of the TOIZsPand international commitments listed below: National legislation ● National Labor Code Turkish Labor Law 4857 ● Forced and Child Labour (Article 71, Chapter 4 and Article 73)

Topic	National Standards/Requirements	Limit Values in National Legislation	International Standards/Requirements	Limit Values in International Legislation	Project Standards
			Working Conditions Labour Management Procedures of the TOIZ Project	The requirements for Labour Management have determined as a part of the primary Project's E&S documentation (TOIZsP). Requirement of written contracts	● Wages and Deductions (Article 32-62) ● Working Hours (Article-63, Article-71) ● Rest Breaks (Article 67, Article 68, Article 46) ● Leaves (Article 53, Article 55, Article 74) ● Overtime Work (Article 41) ● Labor Disputes (Law on Mediation in Civil Disputes, numbered 6325, and ● Turkish Labor Law, Article 20) ● Freedom of association (Law No. 6356) ● Non-discrimination (Article 5, Article 10of the Turkish Constitution) ● Collective Dismissal (Labor Law 14857 Article 29) International Standards ● WBG ESS2 and its Guidance Note for Borrowers:: Labour and Working Conditions ● WBG General EHS Guidelines ● ILO Conventions which Turkey is a signatory To ensure comprehensive compliance, the measures encompass both national and international standards. Nationally, the Turkish Labor Law 4857 and related regulations cover key areas such as labor rights and working conditions. Internationally, adherence to the World Bank Group's standards on labor and working conditions, general environmental, health, and safety guidelines, and the International Labour Organization conventions ensures alignment with good practices. Together, these measures Protect workers' rights and promote fair labor practices.
	Occupational Health and Safety Law (6331) (OG Date/Number: 30.06.2012/28339)		ESS2 Labour and Working Conditions ESF Guidance Note 2 Labour and Working Conditions WBG General EHS Guidelines	The requirements for Occupational Health and Safety have determined as a part of the primary Project's E&S documentation (TOIZsP).	
	Regulation on Contractors and Subcontractors (OG Date/Number: 27.09.2008/27010)		ESS2 Labour and Working Conditions ESF Guidance Note for Borrowers 2: Labour and Working Conditions Labour Management Procedures of the TOIZs Project	Labor Management Procedures (LMP) prepared by MoIT are determined as a part of the primary Project's E&S documentation (TOIZP) .	
Community Health and Safety	Occupational Health and Safety Law (6331) (OG Date/Number: 30.06.2012/28339)	ESS4: Community Health and Safety	ESS4: Community Health and Safety ESF Guidance Note for Borrowers 4: Community Health and Safety WBG General EHS Guidelines	The requirements for Community Health and Safety have determined as part of the primary Project's E&S documentation (TOIZsP).	Full compliance with national laws / regulations, international standards to mitigate anticipate and avoid adverse impacts on the health and safety of project-affected communities during the Project life cycle depends on the environmental and social assessment described in ESS1 and ESS4. The Project will promote quality and safety in infrastructure design and construction, including climate considerations. Measures will be taken to avoid or minimize community exposure to project-related risks such as traffic, road safety, communicable diseases, and hazardous materials. Specific risks including labour influx, SEA/SH, and emergency events will be managed through appropriate mitigation measures. The Project will ensure that infrastructure, services, and equipment meet safety standards and that security personnel are properly screened and trained to respect the rights of project-affected communities. A functional external GM will be implemented to handle complaints related to these issues. ●
Stakeholder Engagement	Law on Right to Information (4982) (OG Date/Number: 24.10.2003/25269)	ESS10 Stakeholder Engagement and Information Disclosure	ESS2 Labour and Working Conditions ESS4: Community Health and Safety ESS10: Stakeholder Engagement and Information Disclosure ESF Guidance Note for Borrowers 10: Stakeholder Engagement and	The primary gap in meeting ESS10 requirements is the need for effective and transparent stakeholder engagement..	Full compliance with the national legislation and international standards To ensure compliance with the WB ESF, the Project will disclose and consult the draft ESMP and GM, and disclose both draft and final versions of all relevant E&S documents. A SEP has been prepared to guide stakeholder engagement throughout the project cycle, with a focus on vulnerable groups. Stakeholder identification, information disclosure, consultations, and grievance management will be carried out in line with the SEP. The MoIT PIU, OIZs, and the contractor will be responsible for SEP implementation and for addressing feedback and grievances. Stakeholder engagement will be continuous, and E&S information will be provided in a timely, understandable, and accessible manner.

Topic	National Standards/Requirements	Limit Values in National Legislation	International Standards/Requirements	Limit Values in International Legislation	Project Standards
			Information Disclosure		
Environmental and Social Risks and Impacts	Regulation on Environmental Impact Assessment (OG Date/Number: 29.07.2022/31907)	ESS1: Assessment and Management of Environmental and Social Risks and Impacts	ESS1: Assessment and Management of Environmental and Social Risks and Impacts	The main gaps between Turkish regulations and ESS1 are the need for robust social risk assessments and the development of plans to address relevant mitigations.	Full complaince with national legislation and international standards. A comprehensive E&S assessment will be carried out to identify and evaluate potential direct, indirect, cumulative, and transboundary impacts. Risk management measures will be integrated into project design and implementation to avoid, minimize, mitigate, or compensate for adverse impacts. Stakeholder engagement will be maintained throughout the project lifecycle, with particular focus on meaningful consultation with affected communities. Monitoring systems will be established to assess the effectiveness of mitigation measures, and performance will be regularly reported. An accessible and transparent GM will be implemented. The Project will also ensure biodiversity conservation, protection of cultural heritage, and compliance with fair labor and working conditions, including health and safety standards..

4 METHODOLOGY

This section provides a framework for the preparation and implementation of the ESMP for Kayseri Mimarsinan OIZ Project. This systematic approach ensures the identification, assessment, and management of potential environmental and social risks throughout the pre-construction, construction, and operation stages of the Project. The methodology integrates international standards with national regulatory requirements to establish suitable mitigation measures and monitoring activities. It also ensures that the ESMP serves as a practical tool for achieving environmental protection, social well-being, and Project success.

The methodology followed in conducting E&S Assessment Study and preparing the ESMP are summarized in the Figure 4.1 below:

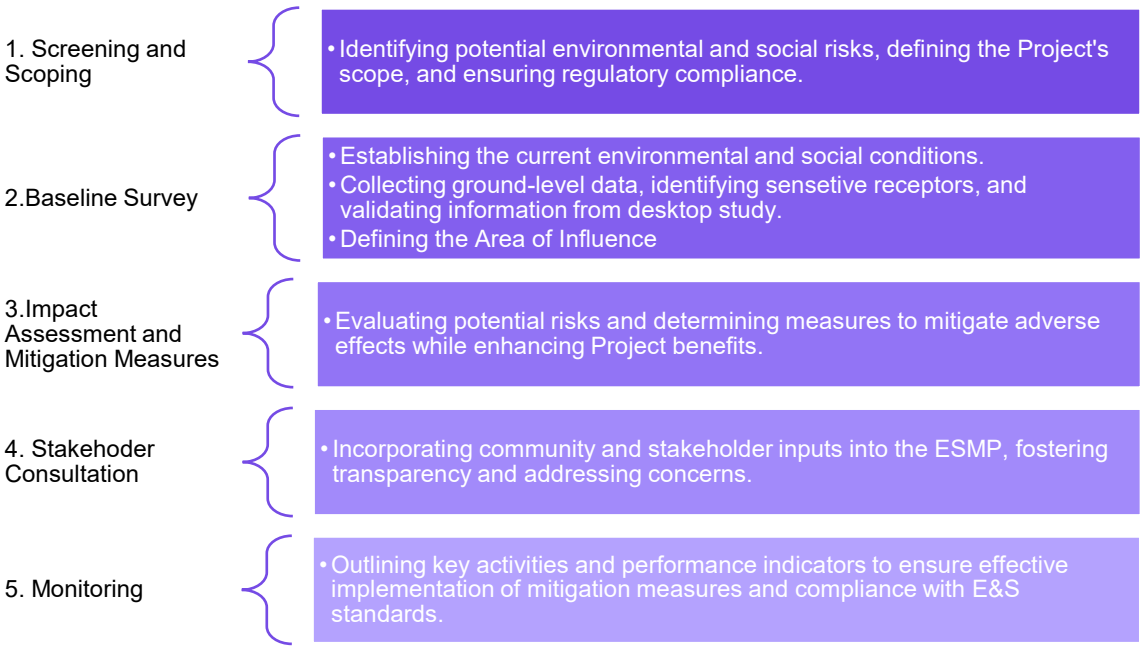


Figure 4.1. Stepwise Approach for E&S Study

4.1 Screening and Scoping

Lenders have been evaluating the categorization of the Project in line with their respective Environmental and Social Policies. Since the Project's main finance source is the WB, compliance with the WB's ESSs and WBG's ESF and General EHS Guidelines alongside the GIIP and national legislation, is essential. In this context, an E&S Screening was performed, and the Project has been categorized as "Moderate"[10]. Based on the overall environmental and social risk of the Project, a site-specific ESMP was reported to be required. Therefore, this ESMP is prepared by Mott MacDonald under the E&S Assessment Studies.

The initial step in this ESMP involves scoping the planned Project activities and their interactions with environmental and social aspects to pinpoint the issues that need to be addressed in the E&S Assessment studies. Considering the potential interactions between

[10] io Environmental Solutions Research & Development Company, AQWADEM, and PROJETAS (2023). Kayseri Mimarsinan Industrial Zone: Capacity Increase of Existing Wastewater Treatment Plant Environmental & Social Screening Report. Republic of Türkiye Ministry of Industry and Technology, 47.

Project activities and environmental receptors, Project impacts need to be evaluated on the following issues:

- Environmental Risks and Impact of the Project
  - Land Use
  - Geology & Hydrogeology
  - Climate and Vegetation
  - Soil Quality
  - Air Quality and Odor
  - Noise
  - Water Resources and Use
  - Wastewater Management
  - Waste Management
  - Natural Disaster Potential
  - Biodiversity and Protected Areas
  - Pesticide Use and Management
- **Social Impacts of the Project**
  - Population/Demography
  - Cultural Heritage
  - Economy/Employment
  - Vulnerable/Disadvantaged Groups
  - Working Conditions and Labour Management
  - Community Health and Safety
  - Occupational Health and Safety
  - Traffic and Transportation

This thorough assessment will cover direct, indirect, and cumulative factors, including those specifically identified in all ESSs.

4.2 Baseline Survey

4.2.1 Desktop Study – Initial Document Review

Mott MacDonald reviewed the "E&S Screening Report for Kayseri OIZ Capacity Increase of Existing Wastewater Treatment Plant Project" and "Pre-feasibility Report for Kayseri OIZ Capacity Increase of Existing Wastewater Treatment Plant Project " provided by the GDoIZ. Additionally, Mott MacDonald contacted Kayseri Mimarsinan OIZ Management and requested additional information such as Project design, Project documentation that contains a Project description, environmental monitoring reports, feasibility studies, etc regarding the Project to be reviewed. These reviews include gap analysis to ensure that all necessary baseline information is available for a comprehensive evaluation.

As part of the desktop study, documents and databases reviewed, including but not limited to those specified in the Table 4.1. , are given below.

Table 4.1. Documents and databases that are reviewed

Documentation	Obtained Information
Google Earth Satellite Images	• Evaluation of the Project area via satellite imagery. • Locations of Project components. • Distance to nearby receptors and stressors including mining license areas.
Open Street Map Geodatabase (https://www.openstreetmap.org/)	• Infrastructure around the Project area (roads etc.) • General description of the physical environment (surface water etc.)
CORINE 2018 Land Cover Database (https://land.copernicus.eu/en/products/corine-land-cover)	• Land Use and Land Classification of the Project area
FAO Harmonized World Soil Database – The Digital Soil Map of the World Version 3.6	• Soil texture properties of the Project area and its close vicinity
Environment Status Reports of Kayseri, Provincial Directorates of Environment, Urbanization and Climate Change	• General description of environmental status for each province • Environmental infrastructure status (WWTP, Sanitary Landfill etc.) • General description of waste management and disposal activities.
National Waste Management and Action Plan 2023, 2017, Ministry of Environment, Urbanization and Climate Change	• National scale planning regarding the waste management practices of Kayseri
National Air Quality Monitoring Centre Database (https://www.havaizleme.gov.tr/)	• Air quality status of the air quality monitoring station closest to Project area
General Directorate of Highways, Regional Division Traffic Volume Maps	• Current traffic volumes of the roads near the Project area

4.2.2 Site Survey

In parallel to the data-gathering study and following the review of available documents and information, Mott MacDonald organised one-day site visit for the Project site with the participation of a Project team from Mott MacDonald Türkiye on December 26, 2024. During the meetings, the latest status of the Project reviewed with the Kayseri Mimarsinan OIZ Management, and any updates or changes agreed upon incorporated into the relevant plans. This process also included identifying any critical gaps in the available documentation and determining the need for additional studies or data collection:

- The Project area was visited and visually observed.
- The adequacy and up-to-datedness of the Screening Report provided by GDoIZ were verified.
- The baseline conditions were analyzed and if any environmental sampling and analysis is needed was determined.
- The up-to-date status of the environmental and social stressors and receptors were monitored.
- The current habitat status, general habitat characteristics and potential species of conservation concern were evaluated where needed.

- Interview with local people and mukhtars of Mimarsinan, Tavlusun and Başakpınar neighbourhood were carried out during site visit.
- The conditions of the access roads were evaluated to the extent possible.

4.2.3 E&S Screening Report Review

A gap analysis is conducted to analyse the gaps between the E&S Screening Report and the Project's relevance. There are no deviations in the Project components or the Project locations. Due to the different AoI selection between this research and the earlier investigations, there are changes in the key parameters and sensitivity receptors. Furthermore, no evaluation of the risk of flooding has been conducted in the earlier research. Based on the review of the Screening reports, it was found that:

- The Area of Influence determined for the Project is not in compliance with the WBG ESF.
- Receptor selection was not thoroughly conducted considering the environmental and social impacts of the Project.
- No flood risk assessment has been carried out.

4.2.4 Definition of the Area of Influence for the Project

The Area of Influence (AoI) refers to the geographical extent where the Project is expected to cause environmental and social impacts directly or indirectly. Defining the AoI is a critical step in the baseline survey, as it ensures that all potential impacts, including those on surrounding ecosystems, communities, and infrastructure, are identified and addressed. To define the AoI, several factors are considered, including the physical footprint of the Project, the pathways through which impacts may propagate (e.g., air, water, and noise), and the socio-economic linkages between the Project and neighbouring communities. The definition also includes areas affected by associated facilities, such as access roads, supply chains, or temporary construction sites. An AoI is defined for different components within each section of *Chapter 5. Environmental Baseline of the Project* by considering each baseline E&S concern (e.g. Air Quality and Odor, Noise, etc.).

Justification for the defined AoI is based on scientific analysis, Project-specific characteristics, and regulatory requirements. The process ensures that:

- Direct impacts on-site and nearby areas are captured, such as emissions, waste disposal, and land use changes.
- Indirect impacts, such as downstream water quality changes or socio-economic effects, are considered.

4.3 Impact Assessment and Mitigation Measures

This ESMP defines impacts that likely cause significant environmental and social effects originated from the implementation of the Project. For each environmental and social impact, magnitude and the sensitivity are defined. Criteria of the magnitude, sensitivity of a receptor and evaluation matrix are given below.

4.3.1 Magnitude Criteria

The assessment of the magnitude of a change, or impact, resulting from the construction and operation activities is undertaken in two steps. Firstly, the identified impacts are categorised as beneficial or adverse. Secondly, impacts are categorised as major, moderate, minor or negligible based on consideration of parameters such as:

- Scale of the impact – how intense or severe the extent of the impact is likely to be.

- Duration of the impact – ranging from 'beyond decommissioning' to 'temporary with no detectable impact'.
- Spatial extent of the impact – for instance, within the site boundary, within district, regional, national and international.
- Reversibility – ranging from 'permanent requiring significant intervention to return to baseline' to 'no change'.
- Likelihood – ranging from 'occurring regularly under typical conditions' to 'unlikely to occur.
- Compliance with legal standards and established professional criteria - ranging from substantially exceeds national standards and limits / international guidance to meets or exceeds minimum standards or international guidance.

Criteria for determining impact magnitude are given below:

Table 4.2. Criteria for Determining Impact Magnitude

Category	Description (adverse impacts)
Major	Fundamental change to the specific conditions assessed resulting in long term or permanent change, typically widespread in nature and requiring significant intervention to return to baseline; would violate national standards or GIIP without mitigation.
Moderate	Detectable change to the specific conditions assessed resulting in non-fundamental temporary or permanent change.
minor	Detectable but minor change to the specific conditions assessed.
Negligible	No perceptible change to the specific conditions assessed.

4.3.2 Sensitivity Criteria

Sensitivity is specific to each topic and the environmental resource or population affected, with criteria generally defined on basis of baseline information. The sensitivity of a receptor is determined based on review of the population (including proximity / numbers / vulnerability) and presence of features on the site or the surrounding area. Generic criteria for determining sensitivity of receptors are outlined in Table 4.3. Each detailed assessment defined sensitivity in relation to its topic.

Table 4.3. Criteria for determining sensitivity of a receptor

Category	Description
High	Receptor (human, physical or biological) with little or no capacity to absorb proposed changes or minimal opportunities for mitigation.
Medium	Receptor with limited capacity to absorb proposed changes or limited opportunities for mitigation.
Low	Receptor with some capacity to absorb proposed changes or moderate opportunities for mitigation.
Negligible	Receptor with good capacity to absorb proposed changes or and good opportunities for mitigation.

4.3.3 Evaluation of Impacts

Likely impacts are assessed through considering the interaction between the magnitude of an impact and the sensitivity of a receptor, as presented in the effect evaluation matrix in Table 4.4.

Table 4.4. Effect evaluation matrix

Sensitivity	Magnitude						
	Adverse			Neutral	Beneficial		
	Major	Moderate	Minor	Negligible	Minor	Moderate	Major
High	Major	Major	Moderate	Negligible	Moderate	Major	Major
Medium	Major	Moderate	Minor	Negligible	Minor	Moderate	Major
Low	Moderate	Minor	Negligible	Negligible	Negligible	Minor	Moderate
Negligible	Minor	Negligible	Negligible	Negligible	Negligible	Negligible	Minor

4.3.4 Types of Impact

The following types of effect are considered within this ESMP:

- **Direct effects** – effects which could arise from activities which form an integral part of the Project;
- **Indirect effects** – effects which could arise from activities not explicitly forming part of the Project;
- **Permanent effects** – effects which could result from an irreversible change to the baseline environment or which persist for the near future, and occur during construction or operation stages;
- **Temporary effects** – effects which could persist for a limited period only and occur mainly during construction;
- **Positive effects** – effects which could have a beneficial influence on receptors and resources; and
- **Negative effects** – effects which could have an adverse influence on receptors and resources.

4.3.5 Determining Significance

The objective of this ESMP is to identify the likely significant effects of the Project on the environment and people. Likely significant effects are those most pertinent to decision-making in the context of Project financing, which takes account of the WB's ESF and national legislation.

Impacts that have been evaluated as being 'Moderate' or 'Major' are considered to be significant effects and identified as such in the specialist chapters. Consequently, effects that are 'minor' or 'Negligible' are not significant.

4.3.6 Mitigation and Enhancement Measures

Where feasible, the following hierarchy of mitigation measures are applied:

- Avoid and reduce impacts and effects through design (embedded mitigation),
- Minimise impacts and effects at source or at receptor,
- Repair, restore or reinstate to address temporary construction effects, and
- Compensate for loss or damage.

In addition to the above, community engagement and disclosure activities will play a key role in managing the extent of effects and consideration has also been given to the identification of enhancement measures. Enhancement measures are actions and processes that:

- Create new positive impacts and effects, or benefits,

- Increase the reach or number of positive impacts and effects, or benefits, and
- Distribute positive impacts and effects, or benefits, more equitably.

Each technical chapter identifies relevant mitigation and enhancement measures. All the mitigation, management and monitoring measures to address likely Project effects reported in the ESMP.

4.3.7 Residual Impacts

Residual impacts are those that remain after the application of mitigation and enhancement measures. Impacts considered 'Major' or 'Moderate' after application of mitigation and enhancement measures are presented as 'significant' residual impacts.

4.4 Stakeholder Consultation

On December 26, 2024, a field study was conducted that included several interviews with mukhtars from nearby neighbourhoods and participants from the OIZ Management. The purpose of these interviews was to assess the social impacts of the Project, the social baseline, and identify potential risks in the scope of ESMP.

Apart from abovementioned consultation activities, social consultants of Mott MacDonald Türkiye will organize at Stakeholder Consultation Meetings as part of the finalisation of the ESMP. Outcomes of these meetings and results of desk studies will be disclosed and discussed with all interested and affected parties after the submission of the Draft ESMP Report, ESMP will include direct/indirect stakeholders and Project Affected Persons (PAPs), particularly those from disadvantaged and vulnerable groups. The consultation process will focus on addressing the potential environmental and social impacts and risks associated with the Projects, as well as identifying any specific challenges and constraints to the participation of vulnerable groups.

4.5 Monitoring

This ESMP requires a consistent documentation and reporting system to track the Project's environmental and social performance and demonstrate compliance with the ESMP, national legislation, and international requirements. Accordingly, the Project activities will be monitored and evaluated to identify non-conformities, deficiencies, deviations, or improvement opportunities. The performance monitoring system will review the following:

- effectiveness of the ESMP within the scope of the Project operations,
- compliance with the provisions and commitments described in the ESMP,
- compliance with applicable national regulatory requirements and international standards,
- areas for improvement in environmental and social performance of the Project operations.

If there are any non-conformities to the standards and guidelines, the activity that was occurring on site will be reviewed and actions will be taken to eliminate non-conformities and prevent re-occurrence. Adjustments to the ESMP and related management plans will be made based on performance experience and regulatory changes.

Performance monitoring for the implementation of the Project to ensure compliance with the legal requirements and Project standards are described in *Chapter 9. Environmental And Social Monitoring Plan*.

5 ENVIRONMENTAL BASELINE OF THE PROJECT

5.1 Project Location

The Project is planned to be constructed on an area of 2,715 m^2 located in 7553 block and 31 parcels within the Kayseri Mimarsinan OIZ in Melikgazi District of Kayseri Province.

The Söğüt Stream is located adjacent to the OIZ and WWTP Area, which is also used for treated effluent discharge as well. The natural vegetation in the area consists mainly of grass formations, indicating a relatively open landscape. Nearby settlements include Tavlasun, Başakpınar, and Mimarsinan neighbourhoods, with distances ranging from 1.5 to 4.1 km.. Nevertheless, it shall be noted that Mimarsinan Neighborhood is located on the Söğüt Stream which is treated effluent wastewater is being discharged. Access to the OIZ is done via Kayseri-Malatya Road (Figure 5.1).

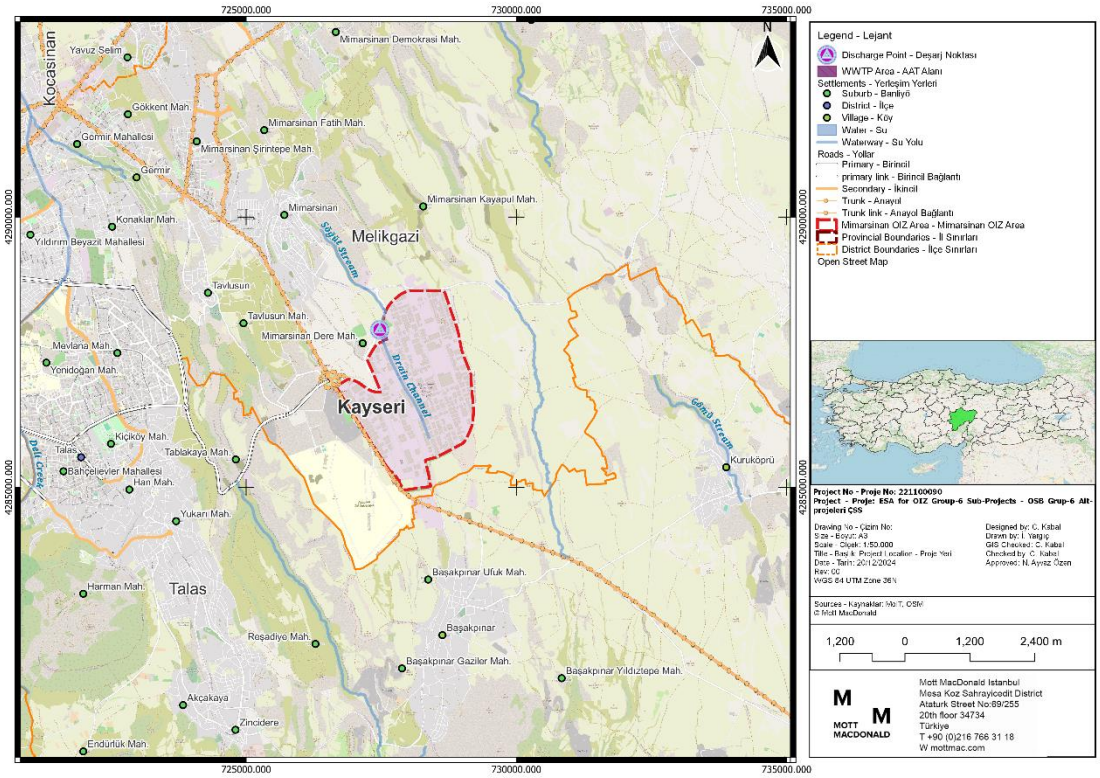


Figure 5.1. Project Location and Closest Settlements and Surface Water

The receptors around the Project area include settlements of Mimarsinan, Tavlusun, and Başakpınar Neighborhoods, with distances ranging from 1.5 km to 4.1 km. educational facilities are also located, including Abdullah Gül University (adjacent to the OIZ area – 2 km away from the Project area), several primary and secondary schools, and a vocational high school, all situated within a 5.58 km radius.

Furthermore, there are also mosques, graveyards, and health facilities . Notable mosques such as Hamidiye Mosque, Mimarsinan Central Mosque, and Mustafa Reyhan Yalinoğlu Mosque are within a 7.04 km radius. The graveyards mentioned include

Kırkbeşevler and Mimarsinan, while health facilities such as Mimarsinan, Başakpınar, Anayurt Family Health Center and Erciyes University Hospital are within an 8.08 km distance (Figure 5.2).

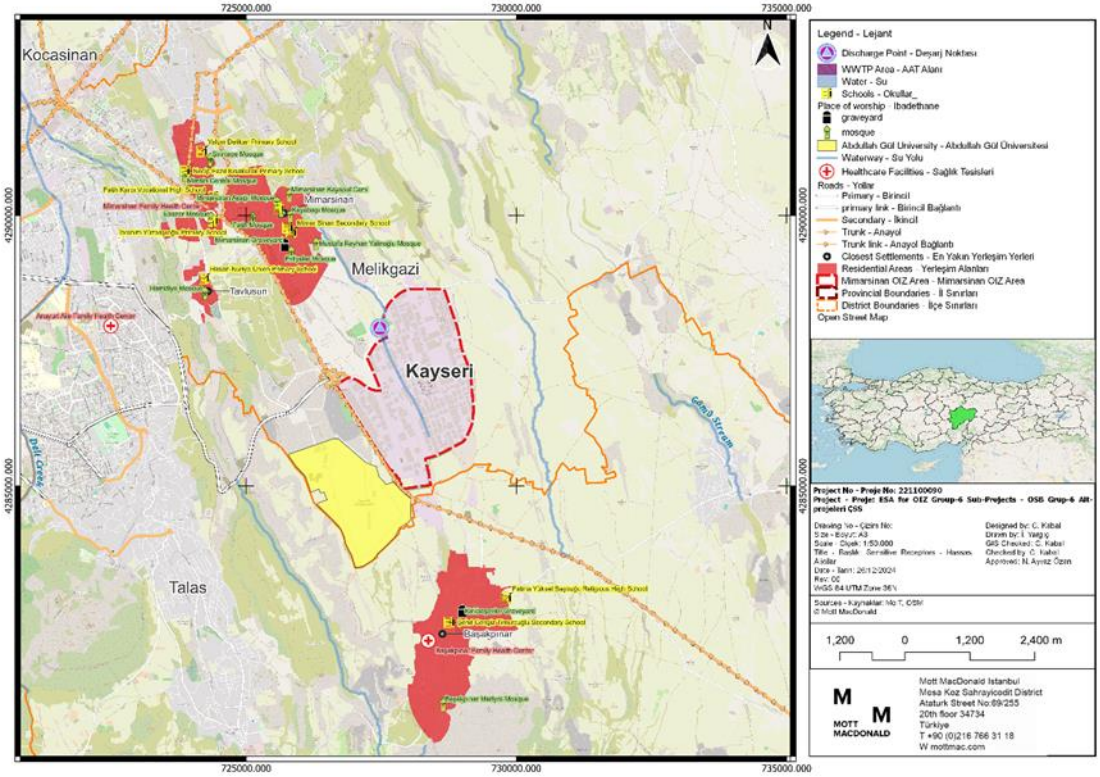


Figure 5.2. Closest Settlements and Receptors

Moreover, the closest settlements and receptors with their distances to the Project area are given in Table 5.1.

Table 5.1. Closest Settlements and Receptors

Type	Receptor	Distance (km)
Settlements	Mimarsinan	1.5
	Tavlusun	3
	Başakpınar	4.1
Educational Facilities	Abdullah Gül University	2 km (adjacent to OIZ)
	Hasan-Nuriye Ünlen Primary School	3.36
	İbrahim Yüzbaşıoğlu Primary School	3.66
	Mimarsinan Town Sinan Primary School	2.89
	Mimar Sinan Secondary School	2.4
	Mimar Sinan Primary School	2.51
	Necip Fazıl Kısakürek Primary School	4.62
	Yalçın Delikan Primary School	4.63

	Fatih Karcı Vocational High School	3.91
	Fatma Yüksel Başbuğu Religious Hıgh School	5.51
	Şehıt Cengiz Timurcuğlu Secondary School	5.58
Mosques	Hamidiye Mosque	3.29
	Ebazer Mosque	3.7
	Mimarsinan Kayapul Cami	2.96
	Mimarsinan Central Mosque	2.83
	Kayabaşı Camıı	2.65
	Evliyalar Mosque	2.15
	Başakpınar Martyrs Mosque	7.04
	Mustafa Reyhan Yalinoğlu Mosque	1.95
	Mimarsinan Aşağı Mosque	2.99
	Fatıh Mosque	3.09
	Mimsin Central Mosque	4.57
	Şirintepe Mosque	4.41
Graveyards	Kırkbeşevler Graveyard	5.44
	Mımarsinan Graveyard	2.33
Health Facilities	Anayurt Aile Family Health Center	4.98
	Erciyes Unv. Hospital	8.08
	Mimarsinan Family Health Center	3.76
	Başakpınar Family Health Center	5.84

View from the entrance, sedimentation tank, sludge collection, and the Project area are given in Photo 5.1, Photo 5.2, Photo 5.3, and Photo 5.4 respectively.

Photo 5.1: View from the Entrance of the Existing WWTP

N 38°42'32.31", E 35°37'2.03"

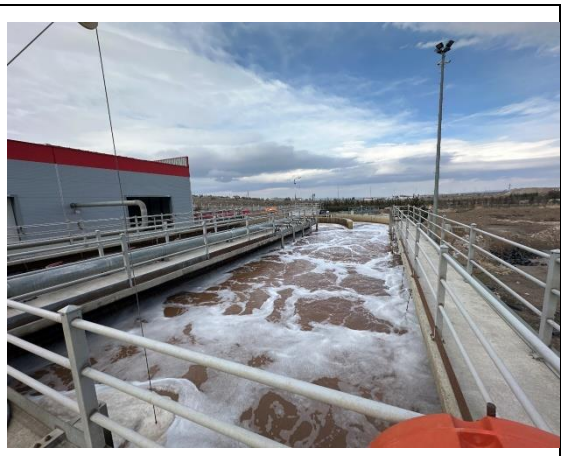


Photo 5.2: View from the Sedimentation Tank of the Existing WWTP

N 38°42'34.23", E 35°37'1.59"

Source: Mott Macdonald Date: 26.12.2024	Source: Mott Macdonald Date: 26.12.2024
	
Photo 5.3: View from the Sludge Collection of the Existing WWTP	**Photo 5.4: View from the Project Area**
N 38°42'33.38", E 35°37'0.86"	N 38°42'33.06", E 35°37'2.45"
Source: Mott Macdonald Date: 26.12.2024	Source: Mott Macdonald Date: 26.12.2024

5.2 Land Use

Established in 1998, the Kayseri Mimarsinan OIZ is the third Organized Industrial Zone in Kayseri, spanning 450 hectares. Its primary goals are to foster economic and social development while promoting environmentally conscious urban planning. The Project area is highlighted in red on the map. The OIZ Area is bordered by agricultural lands to the east, a non-residential urban workspace to the south, the Abdullah Gül University Campus to the west, and an urban development area to the north. There are creeks passing through and around the region. The map showing the Project location on the Environmental Plan is presented in Figure 5.3. For the land use considerations, the Project footprint constitutes the AoI.

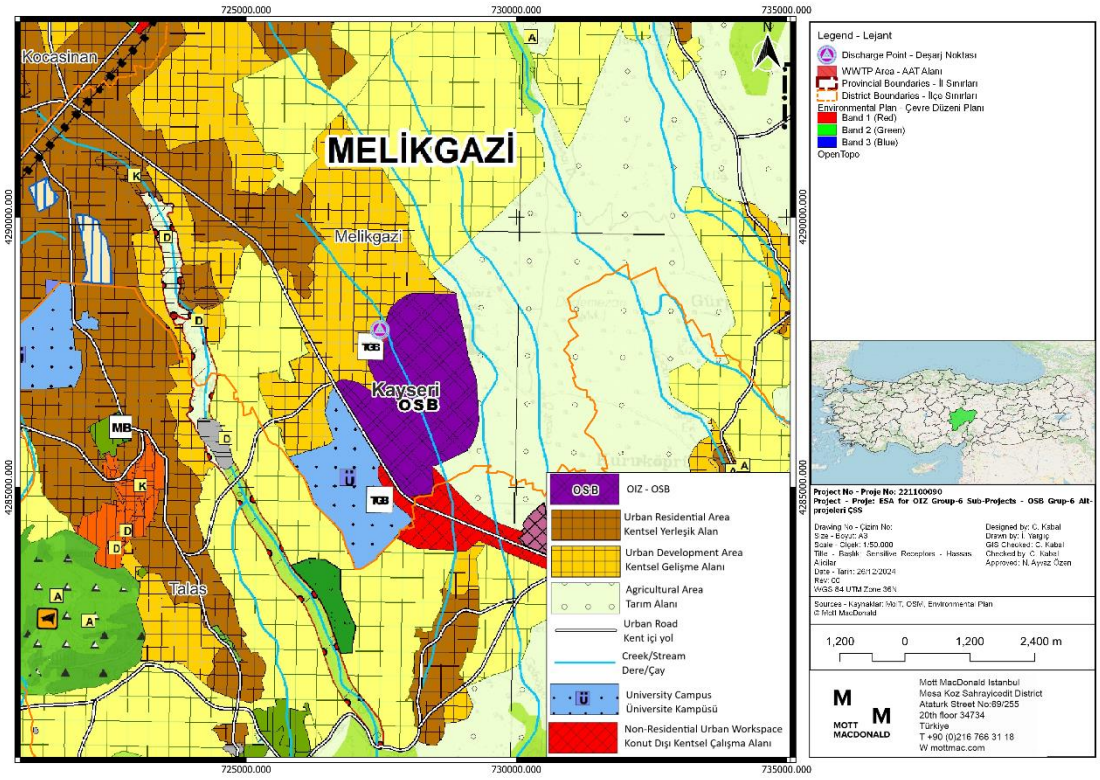


Figure 5.3. Representation of the Project Area on the Environmental Plan

According to the information provided by the OIZ Management on February 24, 2025, the region contains a total of 384 parcels. Of these, 345 parcels are currently in production, 22 are in the project phase, 14 are under construction, and 3 are vacant. The rate of occupancy of the OIZ is reported as 99% as of March 2025, Under the firms operated in the Kayseri Mimarsinan OIZ employs 7,755 individuals across various sectors, thereby making a significant contribution to the local economy and job market. The distribution of NACE codes indicates that the majority of companies within the OIZ are engaged in the leather industry. Detailed plot statistics can be found in Table 5.2.

Table 5.2. Plot Statistics

Activity Status of the Industrial Plot	Number of Plot	Ratio (%)
Production	345	89.84
Vacant	3	0.78
Construction	14	3.65
Project	22	5.73
Total	384	100

Source: OIZ Management

According to the CORINE Land Cover 2018 data, the Organized Industrial Zone (OIZ) is classified under two categories: **243 - Land principally occupied by agriculture with significant areas of natural vegetation** and **121 - Industrial or commercial units**. The Project area is classified under **Land principally occupied by agriculture with significant areas of natural vegetation**.

However, given that the CORINE data is from 2018, it may not accurately reflect the current land use. The CORINE Land Cover 2018 dataset was published in June 2019 and primarily reflects land cover data from the years 2017 and 2018[11]. Based on the most recent satellite images and observations from a site visit conducted on December 26, 2024, it can be confirmed that the entire Project area is now classified as **Industrial and commercial units**. This indicates that all areas within the Project site have been modified and are currently used for industrial and commercial purposes.

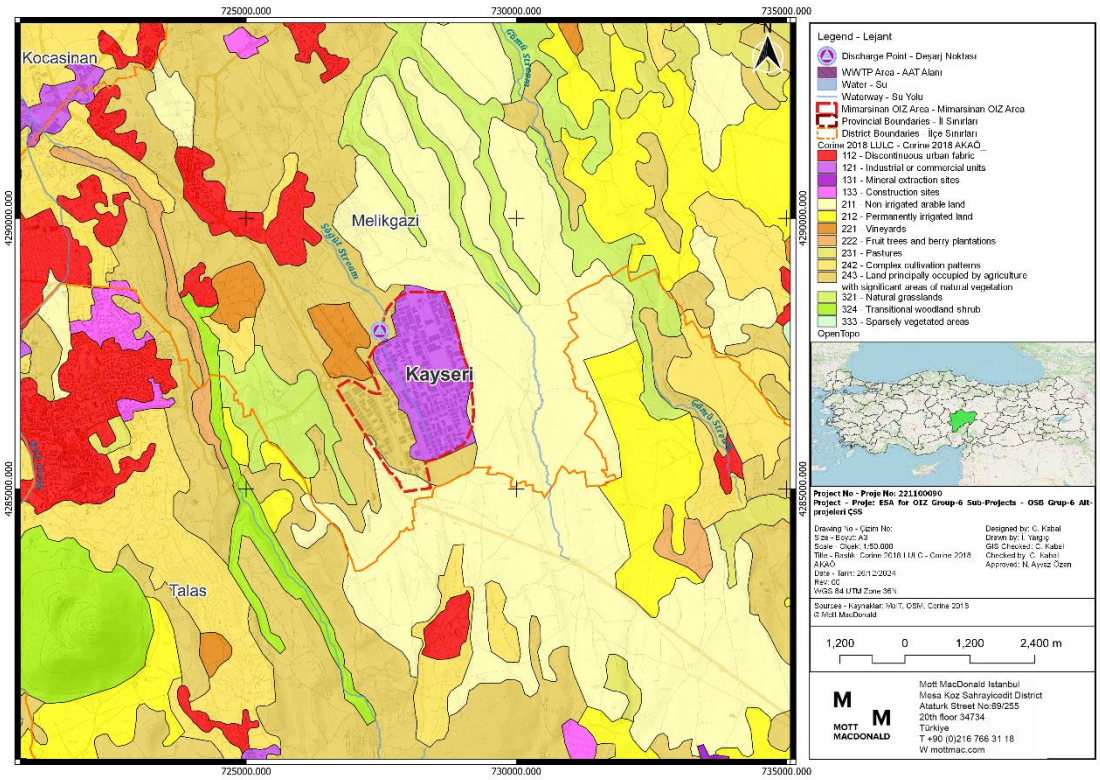


Figure 5.4. Corine 2018 LULC

To provide a more up-to-date insight, **ESRI Sentinel-2 Land Use Land Cover data** was utilized. The integration of Sentinel-2 satellite imagery within ESRI's platform facilitates a comprehensive analysis of the Earth's surface, enabling insights into the evolving landscape. This data clearly shows that the OIZ and Project area are located on **built areas** and are surrounded by **crops (agricultural lands) and other built areas** (Figure 5.5).

[11] https://land.copernicus.eu/en/products/corine-land-cover/clc2018

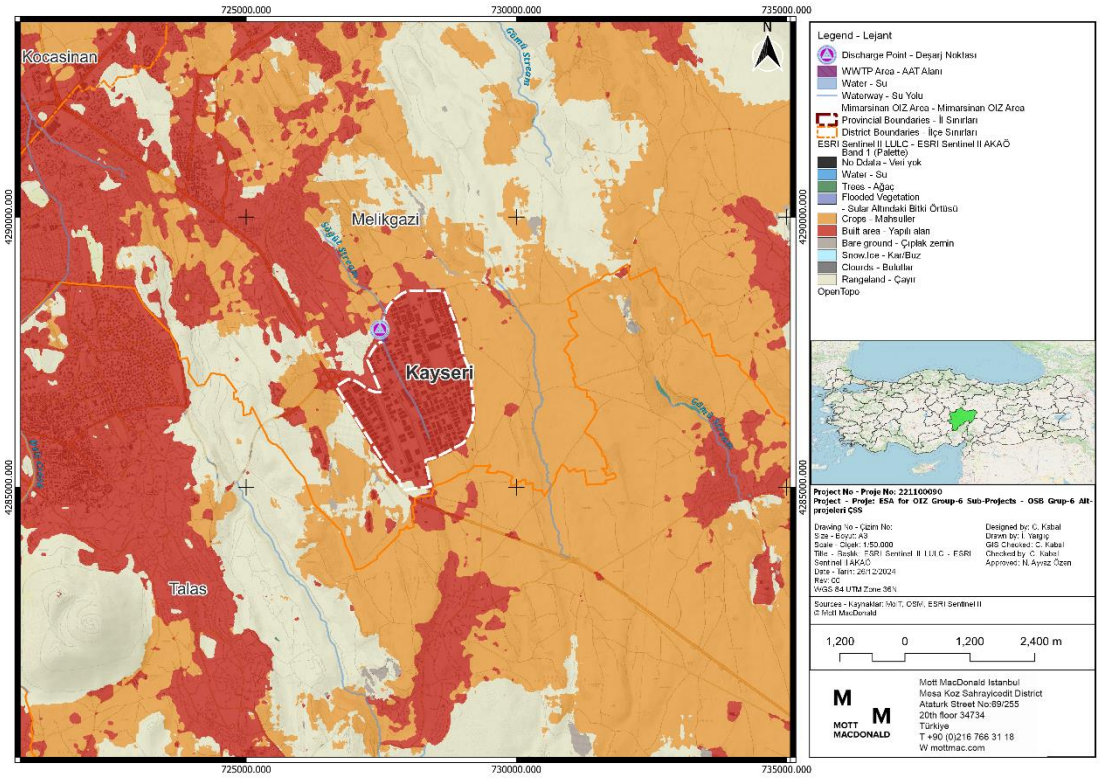


Figure 5.5. ESRI Sentinel II LULC Map

Additionally, to provide a better understanding of land use and land cover, the OpenStreetMap database on land use and nature (land cover) was reviewed. According to this data, the OIZ and Project area is situated within industrial zones and are surrounded by residential and agricultural lands (Figure 5.6).

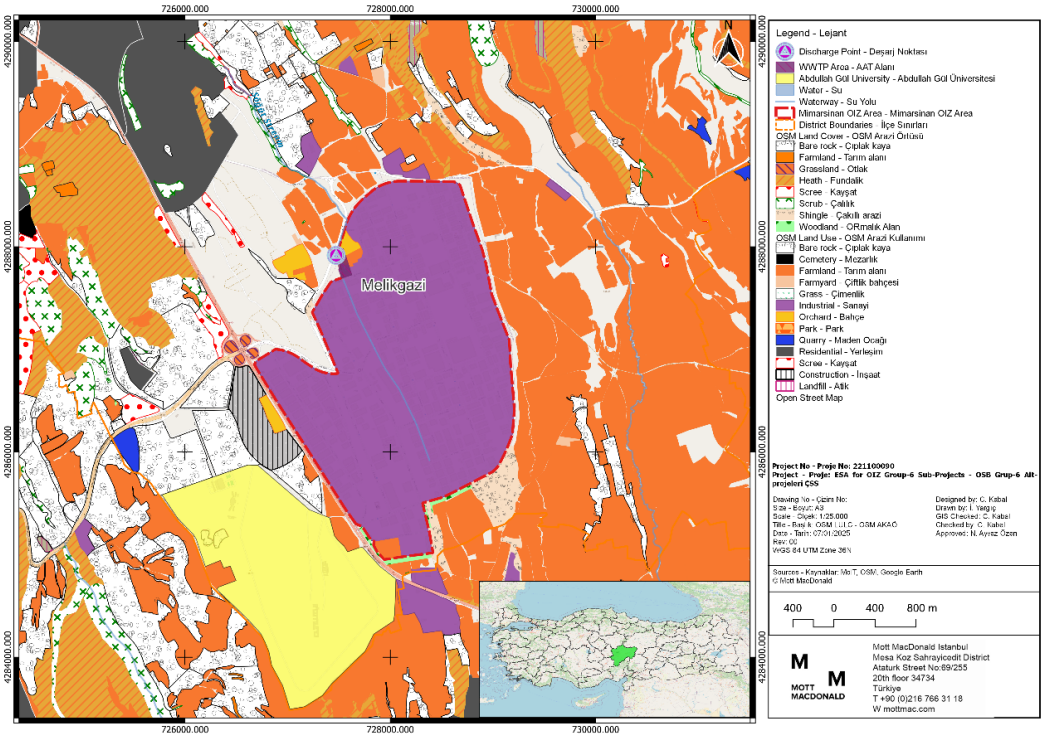


Figure 5.6. OSM LULC Map

Accordingly, as it can be seen on Figure 5.7, Area of Influence for the Land Use has been determined as WWTP area which consists of industrial area and grasslands. There are no trees or potentially sensitive vegetation to be cut or relocated.

Figure 5.7. WWTP Area and Land Use AoI

5.3 Topography

The topography of the Project area was analyzed using SRTM (Shuttle Radar Topography Mission) data, which has a resolution of 100x100 meters. According to this data, the elevation of the Project area is approximately 1370 meters. The elevation profile shows a decreasing trend from south to north (Figure 5.8).

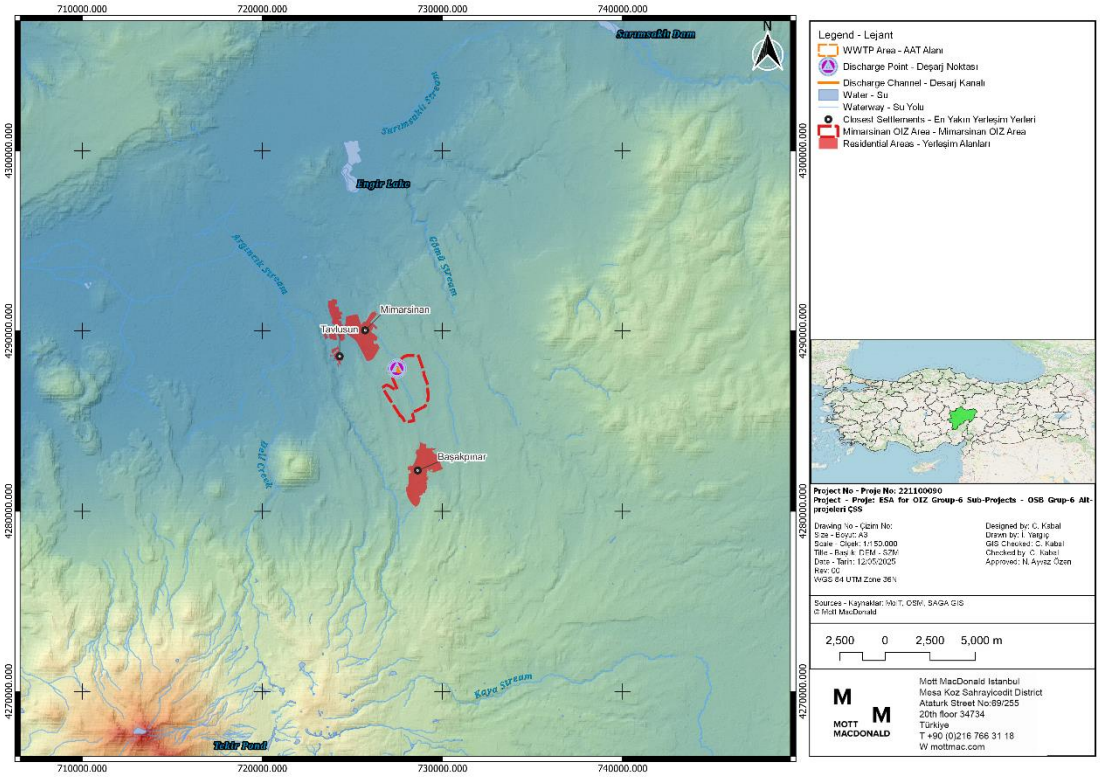


Figure 5.8. Digital Elevation Model (DEM) data of the OIZ and Project area

Topographical Map showing the OIZ and the Project area is given in Figure 5.9.

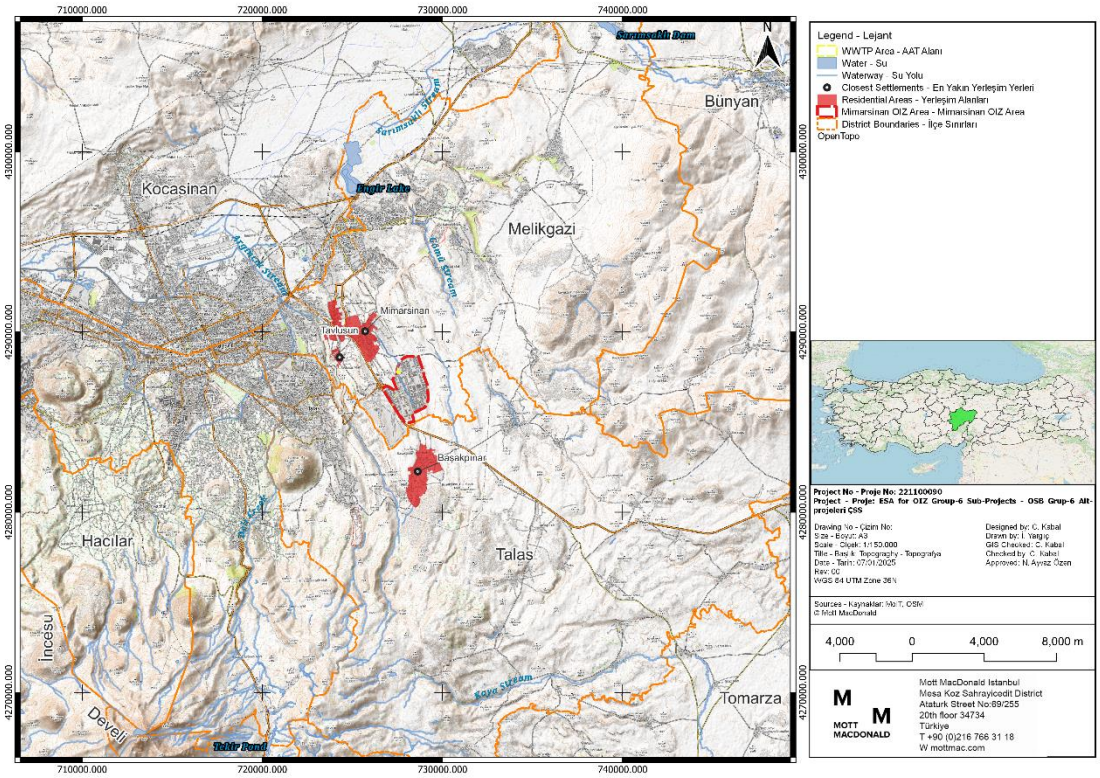


Figure 5.9. Topographical Map of the OIZ and Project area

5.4 Geology

Geologically, Kayseri is characterized by a diverse range of volcanic rocks, both ancient and recent, which are extensively distributed throughout the region. The city center is situated on a plain filled with alluvial deposits. These deposits have accumulated in the broad depressions formed by tectonic collapses around Mount Erciyes, contributing to the formation of today's plains.

In these tectonic depressions, thick layers of Quaternary alluvium have been deposited, with the thickness of these alluvial deposits reaching 20-30 meters in many areas, and in some locations, even exceeding this depth. Additionally, one of the notable Quaternary formations in the region includes travertine and limestone tuff deposits found around the mountainous areas. The region also features Quaternary sedimentary rocks, adding to its geological diversity. The General geology map is provided in Figure 5.10.

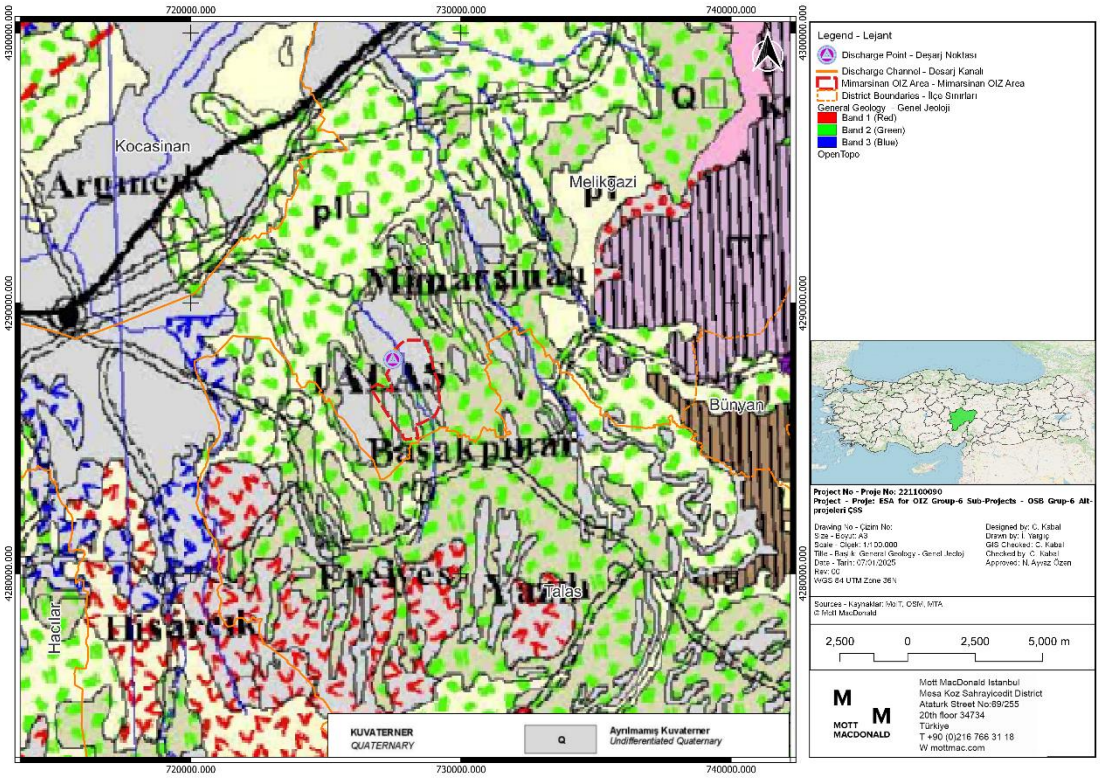


Figure 5.10. General Geology Map

5.5 Climate

Kayseri is one of the coldest provinces of Central Anatolia. The winter months are bitterly cold, while the summer months are hot and dry. The temperature variation between day and night, summer and winter, is quite large. Kayseri's average annual temperature is 10.7°C, with an average annual low temperature of 3.1°C and an average annual maximum temperature of 18.1°C, which were recorded between 1931 and 2023. As it is seen in the Figure 5.11, average temperatures show an increasing trend during summer and decreasing trend during winter. Moreover, Average Monthly Total Precipitation trend in the Figure 5.11 demonstrates that the province receives the highest amount of precipitation between March to May and in total 390.5 mm rainfall in a year.

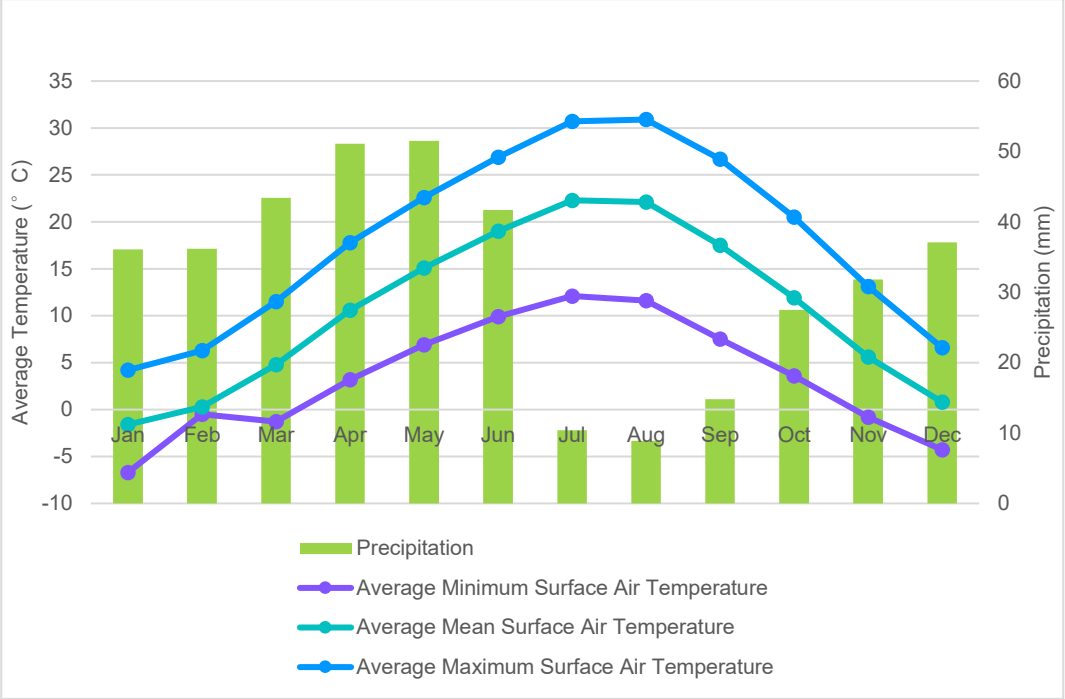


Figure 5.11. Monthly Climatology of Kayseri, Türkiye, 1931-2023

The graph shows that Kayseri Province experiences increasing precipitation from March to June. This trend supports the frequent flood events occurring during the same period which local stakeholders often report. The area's natural tendency to be a flood zone, particularly from the Başakpınar neighbourhood to the Mimarsinan neighbourhood, including the Mimarsinan Organized Industrial Zone (OIZ), results in floods that sometimes have catastrophic effects[12]. The impact of the often-realised flood events and the evaluation of topographical competency is given in *Section 0 Natural Disaster Potential.*

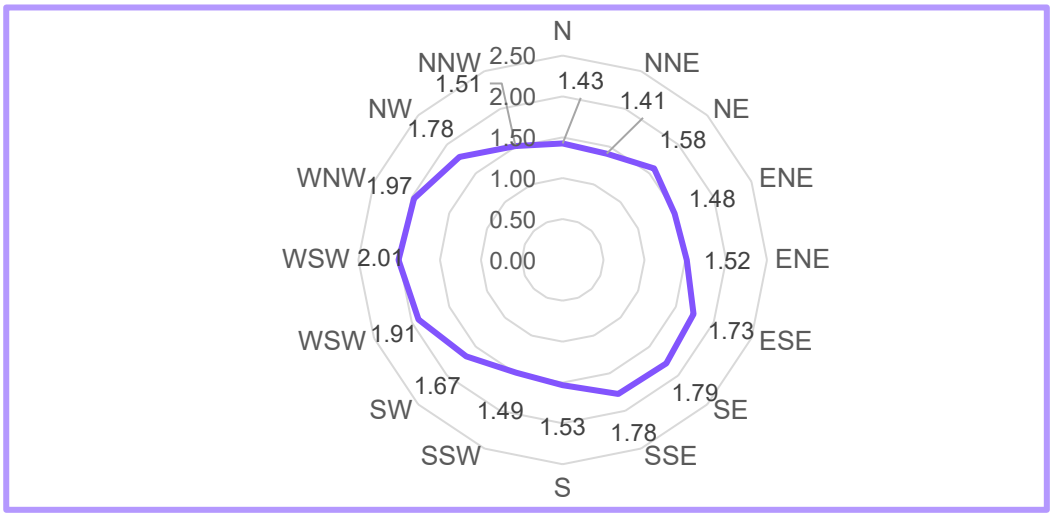


Figure 5.12. Annual Mean for Monthly Average of Wind Speed in Kayseri and Directions of Wind, 1931-2022, MGM Kayseri Regional Station Meteorological Bulletin

[12] Kayseri'de sağanak sel ve heyelana neden oldu; 1 kişi kayıp - Son Dakika Gündem Haberleri

The average wind speed of Kayseri is around 1.7 m/s according to the data shown in Figure 5.12. The dominant wind speed is WSW (West-Southwest). The Maximum and Minimum Recorded Temperatures of Kayseri is 40.7 °C on 30.07.1957 and -32.5 °C on 06.01.1947 according to the General Directorate of Meteorology. Together with, the values for Total Maximum Daily Rainfall, Maximum Daily Wind Speed, Maximum Thickness of Snow is given in the table below.

Table 5.3. Total Maximum Daily Rainfall, Maximum Daily Wind Speed, Maximum Thickness of Snow Recorded in the Measurement History of 1931-2023

Total Max. Daily Rainfall (mm)		Max.Daily Wind Speed (m/sec)		Max. Thickness of Snow (cm)		Max. Recorded Temp. (°C)		Min. Recorded Temp. (°C)	
21.08.1938	68.5	12.02.1969	45.0	19.02.2008	51	30.07.1957	40.7	06.01.1947	-32.5

Source: General Directorate of Meteorology

5.6 Soil Quality

The Project area is within the boundaries of "Sandy and Stony Soils on Mountainous and Volcanic Land," according to Türkiye's General Soil Types Map. No soil contamination has been detected in the operating areas or surrounding areas in the past. In addition, no visual observations of soil contamination were detected during the site visit. This diverse soil profile has made the region suitable for various agricultural activities, contributing to its agricultural productivity.

Soil texture properties of the OIZ, WWTP Area (also determined as AoI for soil quality), Project area and its close vicinity have been assessed via FAO Harmonized World Soil Database – The Digital Soil Map of the World Version 3.6[13]. As it can be seen from Figure 5.13, dominant soil type at the Project area is *Haplic Xerosols*.

[13] The Digital Soil Map of the World Version 3.6 and Water Development Division, FAO, Rome

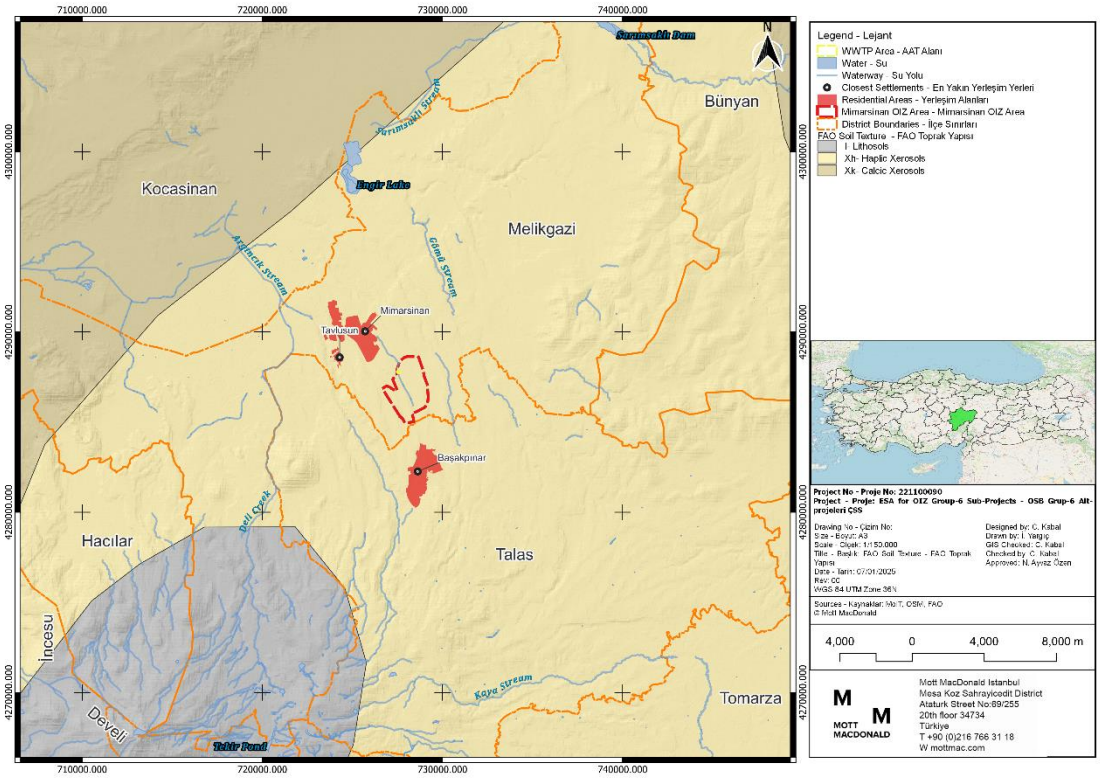


Figure 5.13. Soil Map of FAO Soil Texture

Xerosols are soils of semi arid climatic conditions. Xerosols may be very fertile soils. Due to the lack of rainfall these soils are of little or no value for agriculture. Xerosols usually occur in areas with a growing period of less than 75 days. With irrigation these soils may be classified among the best soils[14]. According to FAO features of *Xerosols* type soil can be described as other soils having a weak ochric A horizon and an aridic moisture regime; lacking permafrost within 200 cm of the surface. Haplic Xerosol can be defined as other Xerosols than Luvic, Gypsic and Calcic[15].

Additionally, FAO Harmonized World Soil Database also provide the Mapping Unit for each location as well. The soil mapping unit symbol of the Project Area is **Xh47-2ab, which** provides detailed information about the soil composition, texture, and slope classes for a specific mapping unit. Here's the breakdown[16]:

- **Xh:** The dominant soil is a Haplic Xerosols, covering 40% of the mapping unit.
- **Xh47:** Indicates the soil associated and included components:
  - **Associations**: Rc (Calcaric Regosols) and Xl (Luvic Xerosols), each covering 20% of the mapping unit.
  - **Inclusions:** I (Lithosols) and Hh (Haplic Phaeozems), each covering 10% of the mapping unit.

[14] Bouwman, A. F. (n.d.). *Land Evaluation for rainfed farming*. Official Website of ISRIC. https://www.isric.org/sites/default/files/isric_report_1989_01.pdf

[15] Food and Agriculture Organization (FAO). (n.d.). Key to the FAO Soil Units (1974). Key to the FAO Soil Units | FAO SOILS PORTAL | Food and Agriculture Organization of the United Nations. https://www.fao.org/soils-portal/data-hub/soil-classification/fao-legend/key-to-the-fao-soil-units/en/#:~:text=XEROSOLS%20(X),200%20cm%20of%20the%20surface.

[16] Tipolitografia F. Failli, FAO – UNESCO Soil map of the world 1:5,000,000 – Volume II, South Asia, Food and Agriculture Organization of the United Nations (FAO), 1977 Paris

- **2**: Refers to the texture classes of the dominant soil:
  - **Texture class**: 2 (medium texture).
- **ab:** Represents the slope class of the dominant soil:
  - Slope class ab, flat to undulating (0-30% slope).

Thus, the dominant soil type is Haplic Xerosols, covering 40% of the mapping unit. Associated soils include Calcaric Regosols (Rc) and Luvic Xerosols (Xl), each covering 20%, while inclusions such as Lithosols (I) and Haplic Phaeozems (Hh) cover 10% each. The dominant soil has a medium texture and falls within the flat to undulating slope class (0-30% slope). This soil is suitable for open pastures field crops and it includes fluvial and marine alluvia[17].

Properties of the Haplic Xerosols, Calcaric Regosols, Luvic Xerosols, Lithosols and Haplic Phaeozems are provided below

[17] https://openknowledge.fao.org/server/api/core/bitstreams/097dea3b-7506-48a8-9471-3d03c5f704d9/content

Table 5.4.Soil Texture Properties

Soil unit symbol	XH- Haplic Xerosols (40%)	RC - Calcaric Regosols (20%)	XL - Luvic Xerosols (20%)	I – Lithosols (10%)	HH - Haplic Phaeozems (10%)
sand % topsoil	54.8	63.5	76	58.9	37.2
sand % subsoil	52.4	62.8	70.8	56	46
silt % topsoil	20.6	19.2	8	16.2	31.2
silt% subsoil	21.5	18.4	8.4	17	26.7
clay % topsoil	24.9	17.3	16.1	24.9	31.6
clay % subsoil	26.3	18.7	20.9	27	27.4
pH water topsoil	7.7	7.6	7.1	7.1	6.7
pH water subsoil	8.2	7.6	7.3	7.2	6.9
OC % topsoil	0.53	0.76	0.32	0.97	1.09
OC % subsoil	0.24	0.41	0.24	0.4	0.5
N % topsoil	0.09	0.28	0.03	0.13	0.15
N % subsoil	0.06	0.04	0.03	0.02	0.07
BS % topsoil	99	89	86	69	81
BS % subsoil	100	89	86	90	78
CEC topsoil	17.5	10.7	12.7	10.4	21.9

CEC subsoil	15.2	11.2	14	8	17.7
CEC clay topsoil	66	52	50	55	65
CEC Clay subsoil	71	50	46	28	65
CaCO3 % topsoil	0.8	15.1	1.1	0.1	0.3
CaCO3 % subsoil	1.7	1.9	2.2	0.5	0.4
BD topsoil	1.5	1.5	1.5	1.2	1.4
BD subsoil	1.5	1.5	1.5	1.5	1.4
C/N topsoil	8	11	10	11	9
C/N subsoil	5	9	8	8	10

Given that the dominant soil type is XH - Haplic Xerosols (40%), the landscape is characterized by a sandy loam texture with moderate fertility but low organic matter and nitrogen content. This soil is prone to erosion due to its high sand content and bulk density. The other significant soil types, RC - Calcaric Regosols (20%) and XL - Luvic Xerosols (20%), also have sandy loam textures and share similar erosion risks. RC - Calcaric Regosols have moderate fertility, while XL - Luvic Xerosols have low fertility with very low organic carbon and nitrogen content, making them highly susceptible to erosion.

The remaining soils, I - Lithosols (10%) and HH - Haplic Phaeozems (10%), add some diversity to the soil profile. I - Lithosols have moderate fertility but are still prone to erosion due to their sandy texture. In contrast, HH - Haplic Phaeozems are highly fertile with a balanced loam texture, high organic carbon, and moderate nitrogen content, making them less prone to erosion. Overall, the landscape requires management practices focused on increasing organic matter and reducing erosion risks, especially in areas dominated by XH - Haplic Xerosols and XL - Luvic Xerosols.

Hence, it can be said that the soil texture profile of the OIZ and its close vicinity is prone to erosions which result in medium-level receptor sensitivity regarding erosion and low-level sensitivity for soil quality.

5.7 Air Quality and Odor

Air pollution is a significant global issue, causing health and quality of life issues. Factors like dense urbanization, poor planning, increased motor vehicles, irregular industrialization, low-quality fuel, and specific topographical conditions worsen air pollution, especially during winter. Measuring air quality is crucial to understand residents' breathing and prevent global problems like global warming and acid rain. The Air Quality Index (AQI) is an index used to make air quality standards more understandable. It characterizes pollution levels in a region based on national limit values, expressed in specific categories using different definitions and colours for each pollutant. The AQI is calculated based on national legislation and limit values for five main pollutants: particulate matter, carbon monoxide, sulphur dioxide, and nitrogen dioxide[18].

Table 5.5. Gradual reduction in limit values and warning thresholds in air quality assessment and management*

Parameter	Average Time	Limit Value (µg/m³)	Explanation
SO_2	Hourly-for human health	350	A colourless gas that oxidizes into sulphate and sulfuric acid in the atmosphere, forming particles that travel long distances and contribute to acid rain. The air quality standard is 500 µg/m³, measured hourly over three consecutive hours, representing a region or sub-region of at least 100 km².
	24 Hourly-for human health	125	
	Annually-for human health and ecosystem	20	
NO_2	Hourly-for human health	220	400 µg/m3 (representative of air quality in the regions of a whole in a “region” or “sub-region” or at least 100 km2 in - whichever is smaller- three consecutive measured per hour)
	Annually-for human health and ecosystem	40	
NO_X	Annually-for human health and ecosystem	30	NO_X, including NO and NO_2, are significant urban air pollutants. NO_2, mainly from vehicles and industrial boilers, poses serious health risks, leading to severe lung damage and respiratory issues, particularly with prolonged exposure.
PM_{10}	24 Hourly-for human health	50	PM10, a type of solid particles from human activities and natural sources, can worsen respiratory conditions like asthma and cause severe health issues, including premature death, as they can also carry toxic substances. The largest natural source of PM10 is road dust. Other important sources are traffic, coal and mineral mines, construction sites and quarries.
	Annually-for human health and ecosystem	40	

[18] kayseri-ilcdr-2022-20240115151252.pdf

Parameter	Average Time	Limit Value (µg/m^3)	Explanation
CO	maximum daily 8-hour average (µg/m^3)-human for the protection of health	10000	CO, a colourless gas from incomplete fuel combustion, is most prevalent during cold seasons due to inversion, trapping pollution near the ground. It binds with haemoglobin in the blood, reducing oxygen delivery and affecting perception and vision.
O_3	maximum daily 8-hour average (µg/m^3)-human for the protection of health	120	Ozone pollution, especially in summer occurs in sunny weather and high temperature during the season. Ozone production is accelerated by volatile organic compounds (VOCs) and carbon monoxide or is strengthened. The most important precursor compounds for the formation of ozone are NO_X (nitrogen oxides) and VOCs.

*** Based on Air Quality Assessment and Management Regulation**

According to the measurements realised in Talas Station, the closest station to the Mimarsinan OIZ, (Please See Figure 5.14), annual average for PM_{10} is 29.87 µg/m^{3}and, while for O_3 is 40.77 µg/m^3. According to the Project Standard determined (Please see Section 3.3) Quality Assessment and Management Regulation, the PM_{10} values are below the limits (40 µg/m^3) for annual average, showing an increasing trend during winter season. Similarly, SO_2 levels are also increasing towards September lasting till February. As shown in Figure 5.15, the O_3 levels are increasing during spring and summer season possibly caused by the increasing sun exposure caused oxidation.

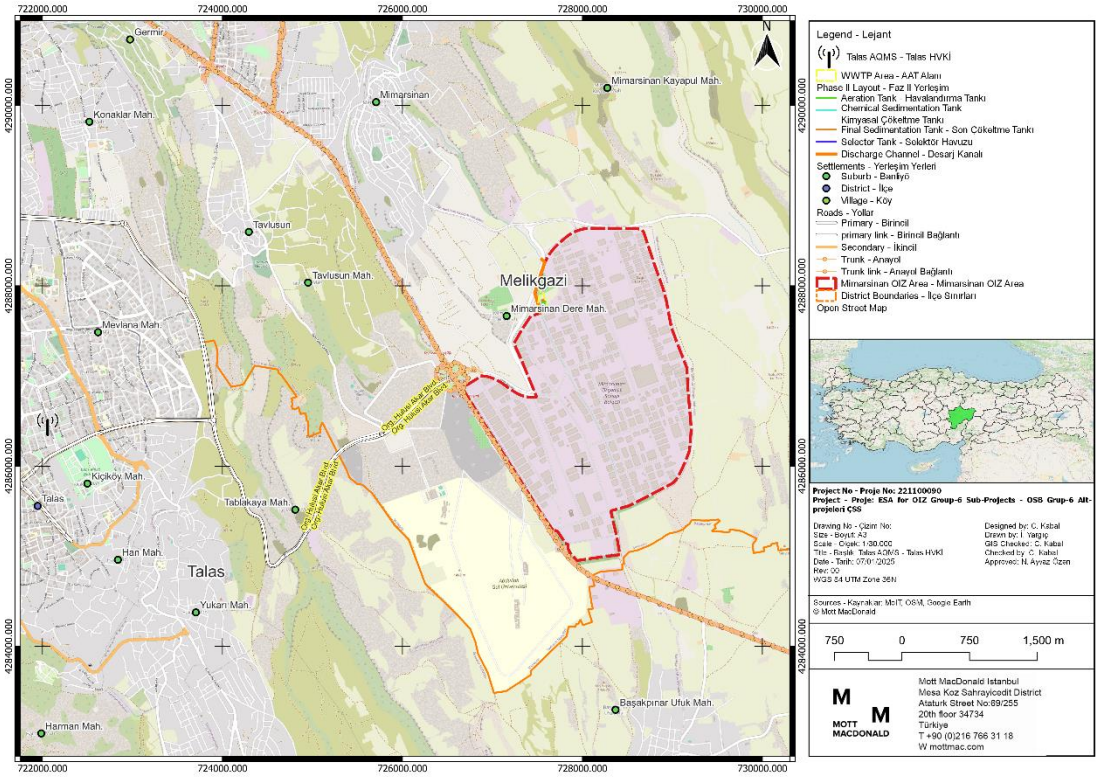


Figure 5.14. Locations of air pollution measurement devices in Kayseri

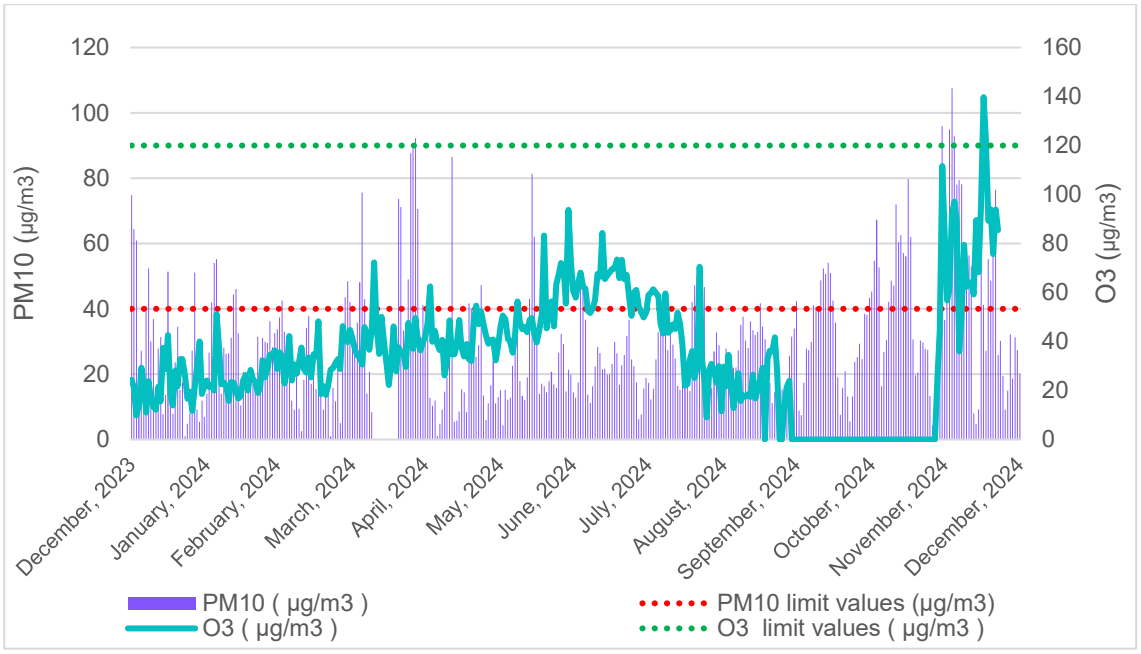


Figure 5.15. Daily Air Quality Measurements for PM_{10} and O_3 between 2023-2024 (Talas Station)[19]

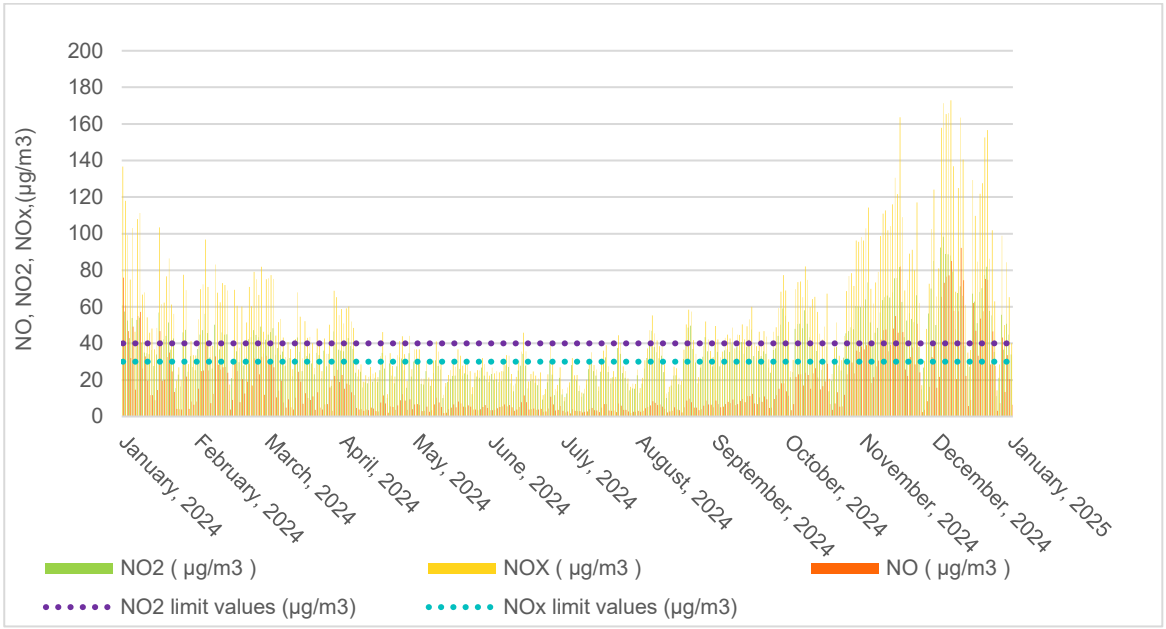


Figure 5.16. Daily Air Quality Measurements for NO, NO_x and NO_2 between 2023-2024 (Talas station)[20]

The Figure 5.16 demonstrates daily measurements of NO_2, NO_x and NO from Talas Station. The annual average values for NO_2, NO_X and NO are 35.39 µg/m3, 51.62 µg/m3, 16.21 µg/m^3, respectively. This is stemmed from simply increasing combustion and fuel oil consumption during winter months.

[19] Hava Kalitesi - İstasyon Veri İndirme | T.C. Çevre, Şehircilik ve İklim Değişikliği Bakanlığı
[20] Hava Kalitesi - İstasyon Veri İndirme | T.C. Çevre, Şehircilik ve İklim Değişikliği Bakanlığı

Although the management of Kayseri Mimarsinan Organized Industrial Zone OIZ has not received any odor-related complaints, during an interview with the mukhtars in Mimarsinan and Tavlusun, complaints were raised about unpleasant odours in the settlements near OIZ's WWTP discharge point and the stream bed that is particularly during overflowing in rainy season. Başakpınar neighbourhood, the farthest from the OIZ's WWTP, has no complaints about odour. Moreover, odor emissions remain a concern in wastewater treatment facilities, categorized into primary odors from treated wastewater and secondary odors from treatment units. If future odors are detected, staff will adjust operational conditions. Modern methods often include odor management to minimize environmental impact.

The area of influence for air quality impacts includes the OIZ area and a 500-meter buffer zone around it, where construction activities such as excavation works, construction works for the Project and water transmission system, temporary material storage and handling, and vehicle movement may generate temporary dust and emissions (Figure 5.17). Since the Area of Influence consists of industrial participants and the nearest settlements to the OIZ are between 1.50 and 4.10 km away, the impact on air quality to baseline conditions is expected to remain limited and localized

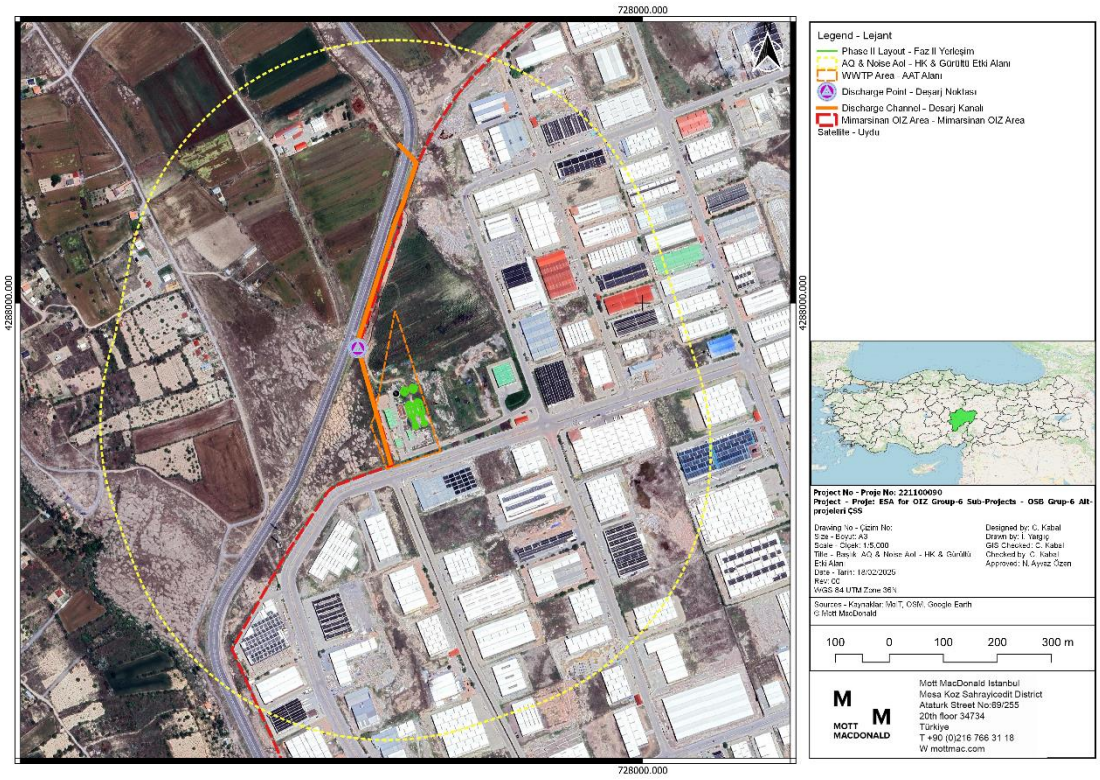


Figure 5.17. Area of Influence of Air Quality and Noise

5.8 Noise

Noise, defined as "unpleasant, unwanted, disturbing sound," significantly impacts environmental quality and human health. While sound is measurable, noise perception varies among individuals. In rapidly growing cities, unplanned development, increased traffic, and widespread use of electronic devices heighten noise disturbances. The intertwined development of residential and industrial areas, along with increased traffic and electronic devices, exacerbates this issue.

According to the results given in Figure 5.18, the complaints regarding to noise in Kayseri Province is mostly stemmed from Entertainment activities compared to industry and construction activities.

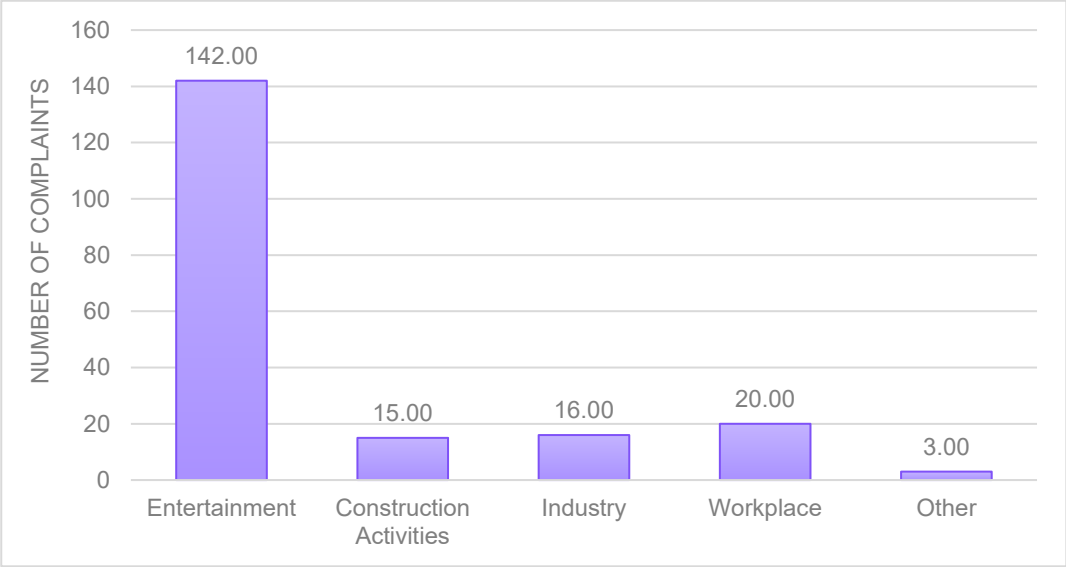


Figure 5.18. Sectoral Distribution for Noise Complaints in Kayseri[21]

The Mimarsinan, Tavlasun, and Başakpınar Neighborhoods are located approximately 1.5 km, 3 km, and 4.1 km from the Project area, respectively. Due to these distances, significant noise impact from Project activities on these neighbourhoods is not expected. According to the National Environmental Permit and License Regulation, if no settlements are closer than 500 m to the Project area, it is exempt from the Environmental Permit on Noise.

The area of influence for noise impacts includes the OIZ area and a 500-meter buffer zone around it, where construction activities such as excavation works, and heavy machinery operation may generate temporary noise (Figure 5.17). Since the Area of Influence consists of industrial participants and the nearest settlements to the OIZ are located between 1.50 and 4.10 km away, the noise impacts are expected to be limited. Additionally, as construction works are temporary and mitigation measures—such as restricted working hours and regular maintenance of equipment—will be implemented, any noise disturbances should remain minimal.

5.9 Water Resources and Use

The Project area is situated in the southeast of the Anatolian peninsula, in the Kızılırmak Basin. The basin's name comes from the Kızılırmak river, which flows into the Black Sea from Cape Bafra. With a total drainage area of 82 221 km^2, the Kızılırmak Basin receives 435.60 mm/m^2 of precipitation on average each year. The treated wastewater is discharged into Söğüt Stream, which is the closest stream to the Project area.

Even though the groundwater level in the Project area is not very high, the Kayseri Mimarsinan OIZ meets the water needs of its firms through a permit to use the groundwater aquifer, documented as 12-K-KAY-01-15855. This permit, which authorizes the OIZ to utilize groundwater in the region, is detailed in *Section 12.11 Groundwater Use Permit.* In addition, the location of the Mimarsinan OIZ relative to the Kızılırmak Basin and the Project location with discharge point is given in Figure 5.19 and Figure 5.20, respectively.

[21] kayseri-ilcdr-2022-20240115151252.pdf

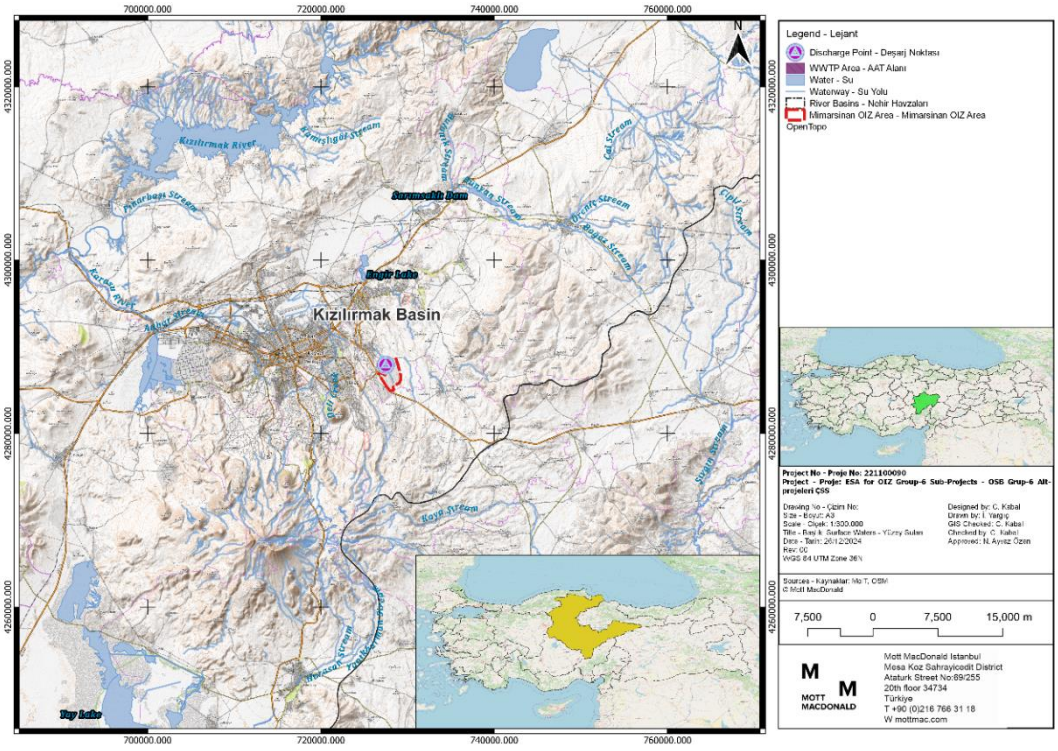


Figure 5.19. Waterways and River Basins in Kayseri Province

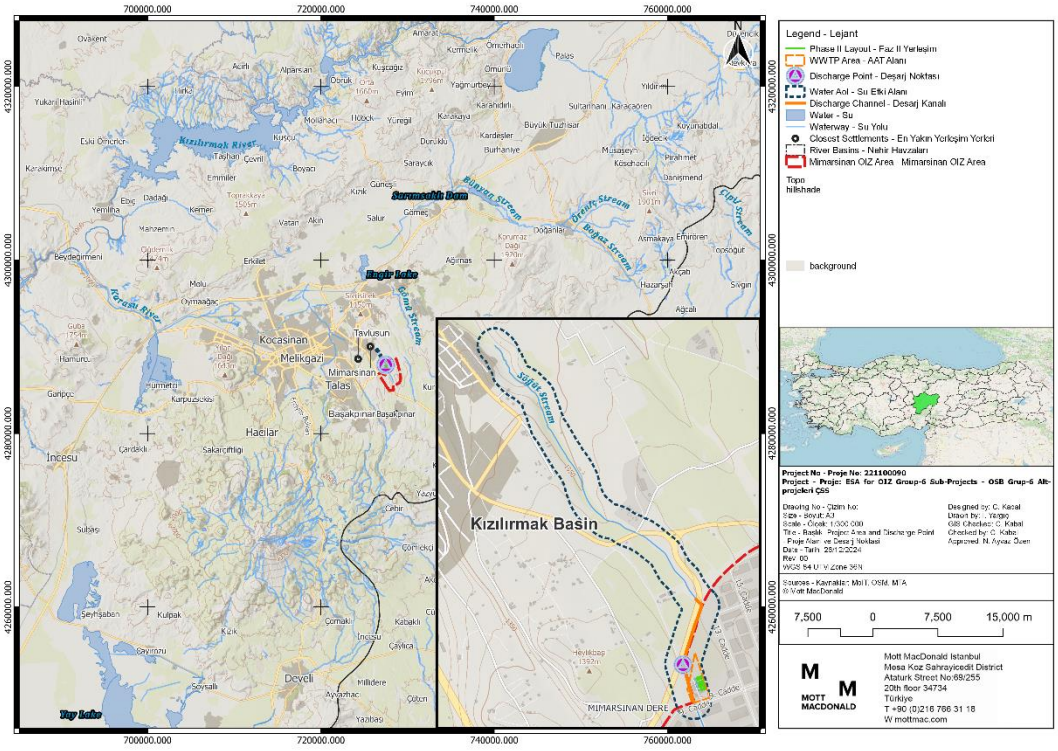


Figure 5.20. Project Location and Discharge Point

According to the 6 months records of The OIZ for 2023, the average water consumption of municipal water is 2,109 m³/day for all establishments within the OIZ area. The records are given in the table below:

Table 5.6: Water Consumption of Municipal Water within the OIZ

Total Water Consumption for All Establishments							6 months daily average (m³/day)
Jan	**Feb**	**March**	**April**	**May**	**June**	**Total**	
65962	**59594**	**61834**	**51658**	**66766**	**73825**	**379639**	**2109**

5.10 Wastewater Management

The Mimarsinan OIZ's wastewater treatment plant (WWTP) is facing challenges due to increasing production and thus increasing generation of wastewater. The plant, with a capacity of 2,000 m³/day, sometimes receives up to 2,500 m³/day, with peak flows reaching 3,469 m³/day. This and fluctuation in inflow rates brought a need for capacity extension of existed WWTP of Mimarsinan OIZ (Table 5.7).

Table 5.7. WWTP Effluent Flowmeter Results

WWTP Effluent Flowmeter Results (m³/day) (between 08:00-17:00)						
Years	**2022**			**2023**		
	Minimum	**Average**	**Maximum**	**Minimum**	**Average**	**Maximum**
Average	842	1,763	2,440	1,009	1,833	2,279

The Environmental Law and the Organized Industrial Zone Implementation Regulation outline the responsibility of OIZ management for wastewater infrastructure systems in organized industrial zones. In 2015, Mimarsinan OIZ decided that factories established in the zone must comply with discharge standards for wastewater generated from enterprises. If necessary, enterprises are required to construct and operate pre-treatment systems. According to this decision, the wastewater collection discharge standards of the companies producing in OIZ are given Table 5.8 (Discharge Limit to Infrastructure and Canal (WPCR Table 22)). However, Mimarsinan OIZ management is obligated to treat wastewater generated in the OIZ, with the discharge point being the Söğüt Stream. Hence, according to the current legislation, the treated wastewater will comply with the WPCR limit for Small and medium Sized OIZs. Table 19 of the Regulation outlines discharge standards as given in Table 5.8 (Discharge Limit to Receiving Environment (WPCR Table 19)) for mixed industrial wastewaters in small and large organized industrial zones and other industries that cannot be determined by sector.

The 2024 effluent results are the average of data from July to December 2024. These results show that even though the existing WWTP is currently operating with the capacity of 3,000 m³/day, with a maximum flow rate of 4,028 m³/day due to seasonal variations, the effluent parameters did not exceed the limit values set in WPCR Table 19 and Table 22.

Table 5.8. Analysis Results and Discharged Limits Determined by WPCR

Parameter	Influent (Typical)	Effluent (2024)	Discharge Limit to Infrastructure and Canal (WPCR Table 22)	Discharge Limit to Receiving Environment (WPCR Table 19)
Temperature (˚C)	24.7°C		40	
pH	6.08± 0.11	7.60±0.33	6 -10	6-9
Suspended solids (TSS) (mg/L)	102.00 ± 24.48	< 10.0±0.57	500	200
Oil and grease (mg/L)	11.10 ± 2.44	10.20±0.00	150	20
Chemical oxygen demand (COD) (mg/L)	1182.72 ± 307.51	70.69±35.72	1000	250
Sulphate ($SO4^{-2}$) (mg/L)	21.29 ± 2.34	38.40	1700	1500
Total lead (Pb) (mg/L)	< 0.30	< 0.050	3	2**
Total mercury (Hg) (mg/L)	< 0.0001	0.01±0.01	0.2	0.05**
Total cadmium (Cd) (mg/L)	<0.05	0.07±0.00	2	0.1**
Total cyanide (CN-) (mg/L)	0.358	0.01±0.01	10	1
Total chromium (Cr) (mg/L)	0.12 ± 0.01	0.09±0.06	5	2**
Total copper (Cu) (mg/L)	< 0.12	< 0.050	2	3**
Total zinc (Zn) (mg/L)	3.45 ± 0,31	0.07±0.03	10	5**
Iron (Fe) (mg/L)	6.31 ± 0.88	0.31±0.36	-	10
Floride (F) (mg/L)	21.29 ± 2.77	0.21±0.21	-	15
Colour	88.25 ± 10.59	44.72±21.58	-	280
Total kjeldahl nitrogen (TKN) (mg/L)***	61.37	< 10.0	-	20
Toxicity Dilution Factor/ Fish Bioassay	<10	<10	-	10

These parameters are only checked if the wastewater treatment plant of the relevant municipality is subject to Annex IV Table 2 of the Regulation on Urban Wastewater Treatment.

****These parameters are not for "total" in Table 19 Criteria**

***** TKN limits in Table 12 are applied for mixed industries originating from the leather sector with 20% or more of the wastewater.**

The Phase-II WWTP was designed with 3 parallel lines, each with a capacity of 2,000 m³/day, to reach a final flow rate of 6,000 m³/day. Only one line was constructed in the first phase, with some civil structures built for full capacity. Currently, the OIZ WWTP treats 2,000 m³ of wastewater per day using physical, chemical, and biological units, performing both primary and secondary treatment. The grit removal tank and equalisation tank (primary treatment) were built and operated at a second stage flowrate of 6,000 m³/day. Transformers with a capacity of 2,000 m³/day were erected after primary and secondary treatment, which included chemical, aeration, and biological settling tanks, as well as sludge treatment units (sludge, intermediate, and supernatant pumping stations and sludge building). To meet the growing demand, it is planned to treat wastewater entering the current facility in main and secondary treatment units while preserving the process. The Project will include the construction of chemical treatment units, aeration, and final settling basins to serve the additional capacity of 4,000 m³/day, which is the capacity of the second and third stages. The additional units are shown in the Figure 5.21.

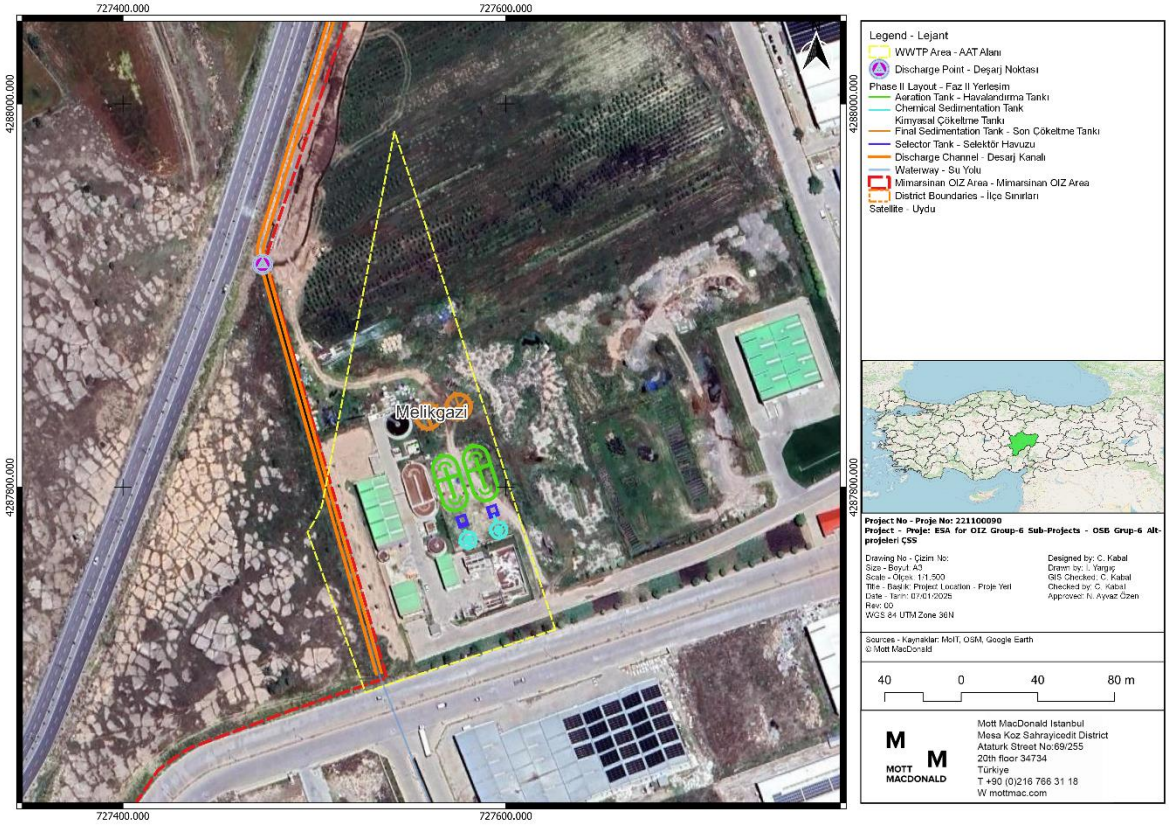


Figure 5.21. General view of 2nd and 3rd Phase WWTP layout

5.10.1 Existing Physical Preliminary Treatment

- **Screenings:** The existing screening system removes coarse materials (e.g., plastic bottles) from wastewater to protect WWTP mechanical components. It is located with the aerated grit removal unit for construction ease and economy. A fine screen with 10 mm bar spacing is being used, cleaned automatically. Collected materials are transported to a waste container via a belt conveyor and disposed of according to the OIZ waste management plan.
- **Aerated Grit Removal Tank:** Post-screening, wastewater enters the aerated grit removal tank to protect mechanical equipment and prevent sludge pipe clogs. Grease and grit will be removed with walls and scrapers. Collected grit will be pressed, separating water which returns to the tank. Air will be supplied through coarse bubble diffusers.

- **Equalization Tank:** The equalization tank ensures stable parameters with a homogeneous mix of flow rate and pollution loads before chemical and biological treatment. It is designed for a 12-hour retention time and uses rapid mixers for full mixing.

5.10.2 Chemical Treatment Units

The chemical treatment process involves coagulation, flocculation, and precipitation to remove substances from wastewater. Chemicals are mixed in rapid and slow mixing tanks to form flocs, which then settle in the chemical settling tank. The current units handle 2,000 m³/day, and additional units will be built to handle an extra 4,000 m³/day.

Stages of Chemical Treatment:

- **Rapid Mixing (Coagulation) Tanks:** In the first stage, coagulant chemicals like lime and alum are quickly mixed with wastewater to start the coagulation process. This helps to gather small particles into larger clusters.
- **Slow Mixing (Flocculation) Tanks:** In the second stage, flocculant chemicals (anionic and cationic polymers) are added. These chemicals help the coagulated particles to form larger flocs. The mixture is gently stirred to ensure the flocs grow big enough to settle out of the water.
- **Chemical Settling Tank:** In the third stage, the flocculated particles settle to the bottom of the tank. Bottom scrapers are used to remove the settled sludge.
- **Chemical Sludge Pumping Station:** The sludge collected at the bottom of the settling tank is then pumped to a thickener unit for further processing.

5.10.3 Biological Treatment Units

The current biological treatment units handle a flow rate of 2,000 m³/day. Additional units will be constructed to manage an extra 4,000 m³/day, using the same principles as the existing units.

Stages of Biological Treatment:

- **Aeration Tank:** An activated sludge system is used for biological treatment. This classical process type removes carbon from the wastewater. The aeration tank, designed as a tank carousel type, transfers air to the wastewater, allowing microorganisms to break down organic pollutants. The design and dimensions of the biological treatment unit adhere to ATV-DVWK standards. Two additional aeration tanks will be installed for the 2nd and 3rd stage.
- **Final Settling Tank:** The final settling tanks collect and dispose of sludge by gravity, separating water from the colloidal activated sludge produced in the aeration tank. The separated water is directed to the treatment plant's outlet, while the sludge that settles at the bottom is collected by scrapers mounted on centrally driven traveling bridges. This sludge is then conveyed to the return sludge pumping station by gravity. Each tank is equipped with surface scrapers, collection hoppers, and transmission lines to collect floating sludge, which is then pumped to the RAS pumping station. Two additional final settling tanks will be installed for the 2nd and 3rd stage
- **Return and Excess Sludge Pumping Station:** To maintain the microorganism population in the process units, a return and excess sludge pumping station has been designed. This station pumps the sludge settled in the final settling tanks back to the process unit inlet. Excess sludge pumps in this unit ensure that overgrown microorganisms are removed from the system, maintaining the balance necessary for effective wastewater treatment. Two additional sludge pumping station will be installed for the 2nd and 3rd stage.

This comprehensive approach ensures that both chemical and biological treatment processes are effectively managed, enhancing the overall efficiency and reliability of the wastewater treatment plant.

5.10.4 Sewage Sludge Treatment Units

Sludge Dewatering Unit: Excess sludge will be collected at the excess sludge pumping station and transferred to the decanter unit in the sludge dewatering system using monopumps.

The area affected by the discharged wastewater into Söğüt Stream includes the downstream sections where the treated effluent may impact water quality and flow characteristics. Although, this area encompasses nearby settlements, the Söğüt Stream is not being used for irrigation, drinking or utilities (Figure 5.22). However, according to the E&S Screening Report, the State of Hydraulic Works has implemented reclamation project on the Söğüt Stream. Taking these factors into account, the area of influence extends along the WWTP's discharge line and includes a 100-meter buffer zone on both sides. It is seen that discharge values meet national standards and further treatment performance will be obtained after the implementation of the Project. Hence, the area of influence is expected to remain limited, minimizing any potential significant adverse effects.

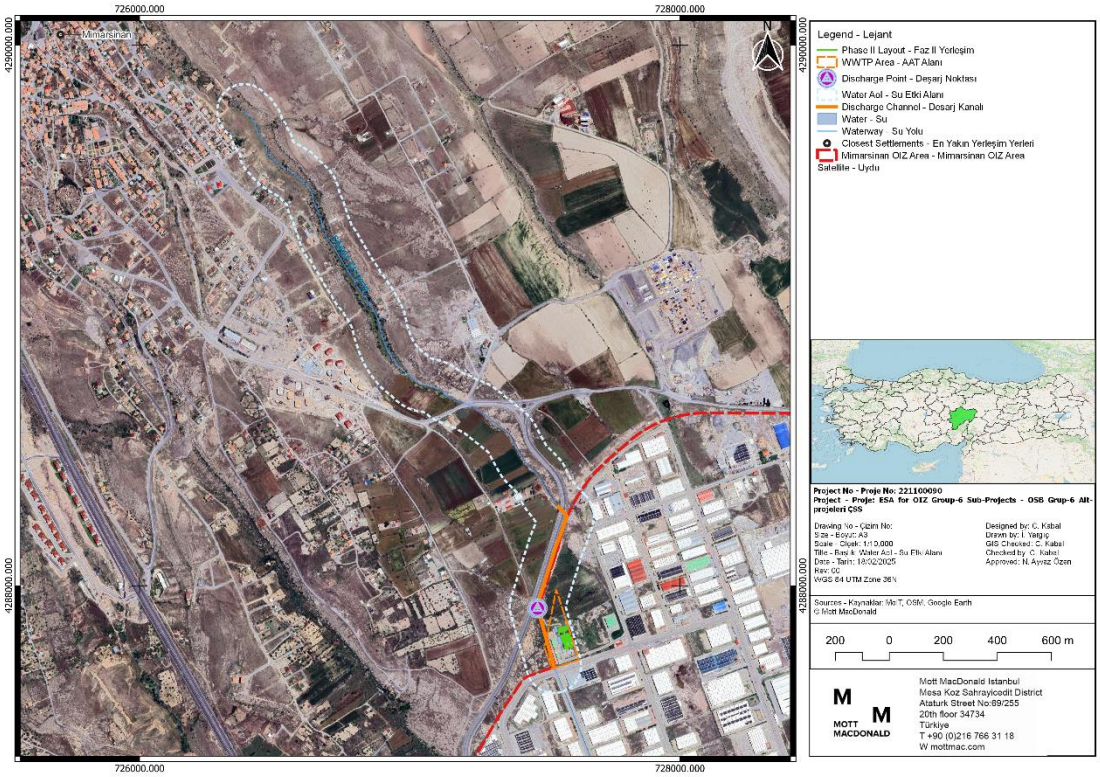


Figure 5.22. Area of Influence of the Söğüt Stream (Discharge Point)

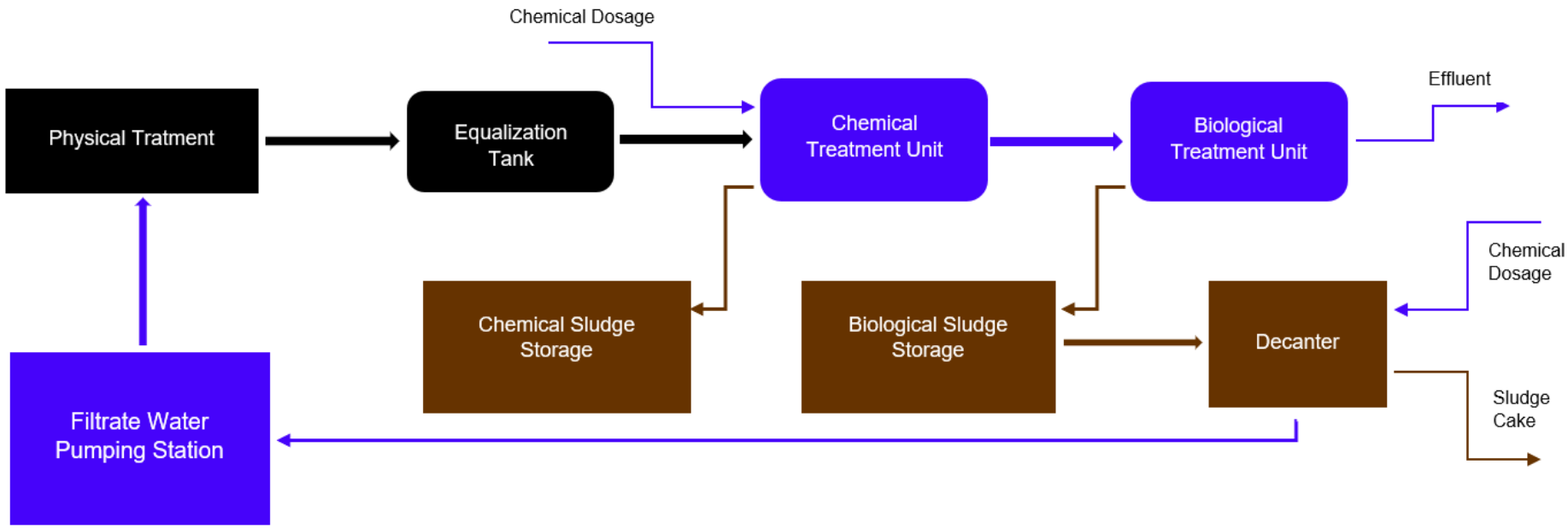


Figure 5.23. Flow Diagram of WWTP

Source: Detailed Design Studies (Pre-Feasibility Report)

5.11 Waste Management

Both hazardous and non-hazardous wastes generated in the OIZ are managed according to the Waste Management Instruction, which complies with the Waste Management Regulation. These wastes are collected and stored in a temporary storage area before being sent to licensed facilities for disposal. The Industrial Waste Management Plan, prepared by the OIZ, has been approved by the Provincial Directorate of Environment, Urbanization, and Climate Change.

All waste generated within the facility is collected in the temporary waste storage area and then transferred to licensed recovery or disposal facilities managed by the Municipality. The WWTP has a Temporary Waste Storage Area. According to the Waste Management Regulation, a hazardous waste temporary storage area does not require a permit if less than 1 ton of waste is produced per month.

Operational chemicals such as cationic and anionic polyelectrolytes, FeCl3, and lime, used during the operational phase of the WWTP, are stored in closed tanks with a leak-proof base within the WWTP site, as is currently practiced. This ensures that the storage of these chemicals is safe and compliant with regulations, preventing any potential leaks or environmental contamination. Some views of the hazardous and non-hazardous storage rooms are given below.

Photo 5.5: View from the Hazardous and Non-Hazardous Waste Storage Rooms

Photo 5.6: View from the Hazardous and Non-Hazardous Waste Storage Rooms

Photo 5.7: View from the Hazardous and Non-Hazardous Waste Storage Rooms	**Photo 5.8: View from the Hazardous and Non-Hazardous Waste Storage Rooms**
Source: Mott Macdonald	Source: Mott Macdonald

5.12 Natural Disaster Potential

5.12.1 Landslide Risk

According to the Landslide Inventory Map from the General Directorate of Mineral Research and Exploration, there is no landslide risk in the area surrounding the Project Area (Figure 5.24).

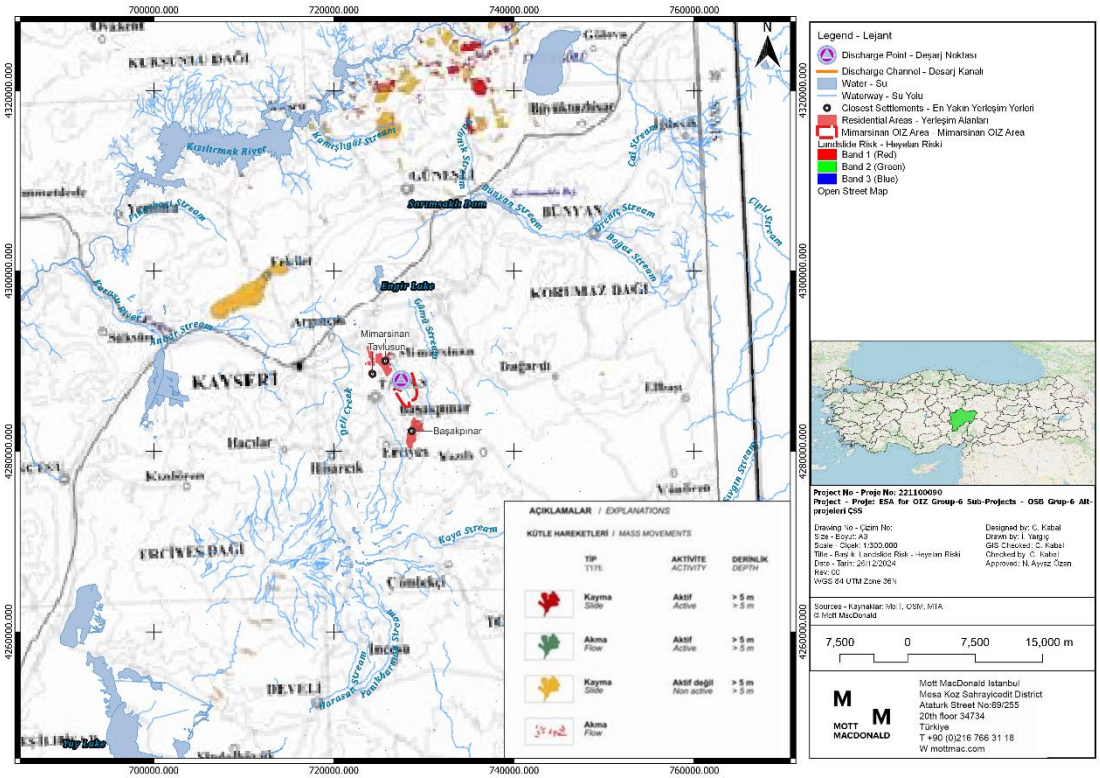


Figure 5.24. Landslide Risk

5.12.2 Earthquake and Seismicity

The information about the earthquake risk in Melikgazi, a district in Kayseri, is derived from the 2021 Provincial Disaster Risk Reduction Plan by the Kayseri AFAD Provincial Directorate. This plan highlights the Central Anatolian Intra-Continental Fault System (OAKİFS), which includes significant fault systems such as the North Anatolian Fault Zone (KAFZ) and the East Anatolian Fault Zone (DAFZ). Within this region, several independent strike-slip faults, including the Ecemiş Fault and the Erciyes Fault, contribute to the seismic activity.

Melikgazi is particularly influenced by these active faults, which pose a potential risk to the area. The Ecemiş Fault extends approximately 107 km from Yahyalı to near Gülek, while the Erciyes Fault runs about 63 km from Sarımsaklı village to Kızık village. These faults have both vertical and strike-slip components, increasing the likelihood of seismic events. The presence of these

faults necessitates a risk analyses. Accordingly, active fault map of Türkiye was evaluated, and it was determined that there is 3 km distance from the Project area to the Erciyes Fault (Figure 5.25).

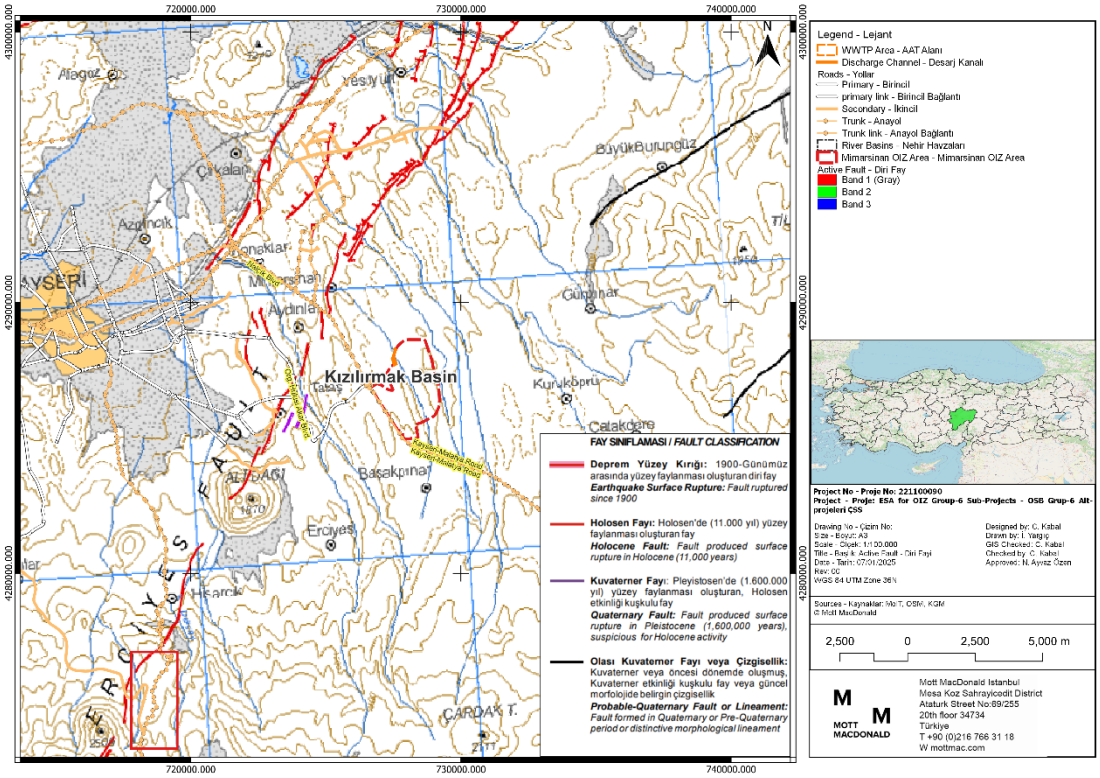


Figure 5.25. Active Fault Map

The 2021 Provincial Disaster Risk Reduction Plan emphasizes the importance of preparing for potential earthquakes by ensuring that buildings and infrastructure in Melikgazi are designed to withstand seismic activity. This includes taking local ground conditions into account and implementing strategies to mitigate the impact of earthquakes on the community. The plan serves as a crucial guide for local authorities and residents in enhancing their preparedness and resilience against earthquake risks.

The Project PGA values of the Project location were identified via Türkiye Earthquake Hazard Maps Interactive Web Application[22] (Figure 5.26). Accordingly, the PGA value of the Project area was as 0.185. According to the Türkiye Earthquake Hazard Map, PGA values between 0.1 and 0.2 is classified as 4th Degree Earthquake Zone where the Project will be located. (1st degree being the highest risk and 5th degree being the lowest risk).

[22] URL: https://tdth.afad.gov.tr/TDTH/main.xhtml (Last accessed on 17 November 2023)

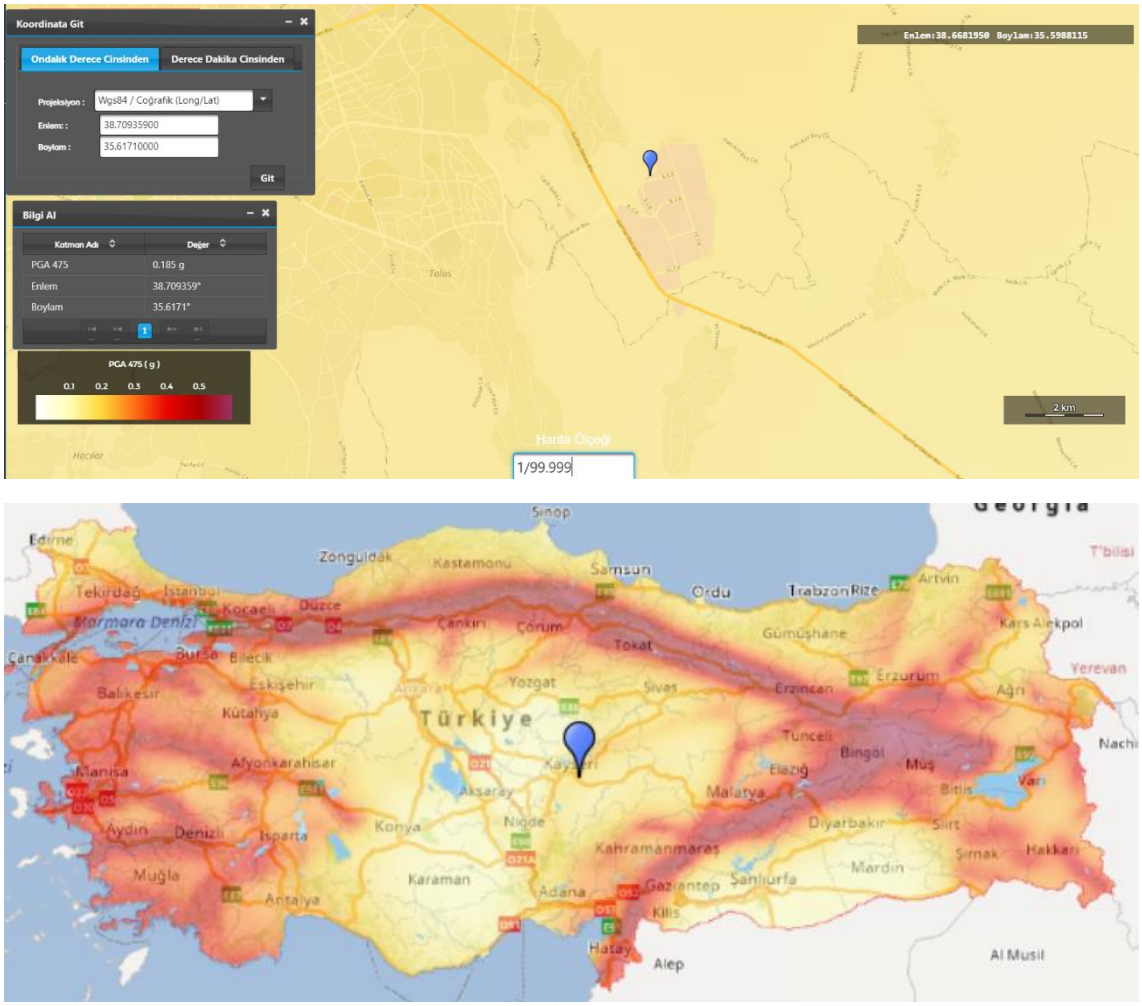


Figure 5.26. Hazard Risk Map of the Project Area

5.12.3 Flood Risk

This section outlines the methodology, sources of information, and expected outputs for analysing flood risks using flow direction maps and Strahler analysis in the context of an Environmental and Social Assessment (ESA) for the Project area. Given the area's history and its susceptibility to flooding, understanding water flow patterns and stream order is crucial for effective planning and mitigation.

Data Collection: The primary source of elevation data for this analysis was the Shuttle Radar Topography Mission (SRTM) Digital Elevation Model (DEM). This high-resolution DEM provides detailed information about the terrain, which is essential for accurately modelling water flow directions and stream orders.

Software and Tools: To perform the spatial data analysis, QGIS, an open-source Geographic Information System, was utilized. Within QGIS, the SAGA (System for Automated Geoscientific Analyses) plugin was employed to conduct hydrological modelling and generate flow direction maps. Additionally, Strahler analysis was performed to classify stream orders.

Flow Direction Map Creation: The first step in creating the flow direction map involved preprocessing the SRTM DEM to ensure it was free of sinks and anomalies. This was achieved using the "Fill Sinks" tool in QGIS, which corrects depressions in the DEM that could disrupt the flow direction analysis. Once the DEM was pre-processed, the "Flow Direction" tool from the

SAGA plugin was applied. This tool calculates the direction of water flow from each cell to its steepest downslope neighbour, resulting in a flow direction map. Additionally, a flow accumulation map was generated to identify areas where water is likely to converge and accumulate, providing further insights into potential flood zones.

Strahler Analysis: Strahler analysis was conducted to classify the stream orders within the Project area. This method assigns a numerical order to streams based on their hierarchy and branching complexity. The process involves:

- Assigning a Strahler number of 1 to all initial stream segments (headwaters).
- When two streams of the same order join, the resulting stream is assigned an order one higher.
- When streams of different orders join, the resulting stream retains the higher order.

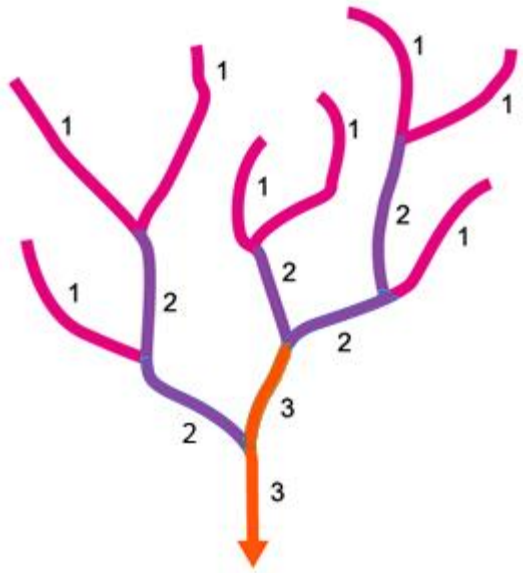


Figure 5.27. Strahler Stream Ordering Method[23]

This classification helps in understanding the drainage network's structure and identifying major waterways that could significantly impact flood dynamics.

The DEM data was acquired from the Shuttle Radar Topography Mission (SRTM), a reliable source of high-resolution elevation data. The software tools used for the analysis, QGIS and the SAGA plugin, are both open-source and readily available online, making them accessible for future updates and analyses.

The flow direction and accumulation maps, along with the Strahler stream order classification, were analysed to pinpoint areas at high risk of flooding. By overlaying these maps with existing and planned infrastructure, it was possible to assess potential flood impacts on the around the OIZ and Project area (Figure 5.28).

[23] https://www.supergeotek.com/SpatialAnalyst_ENG_HTML/stream_order.htm

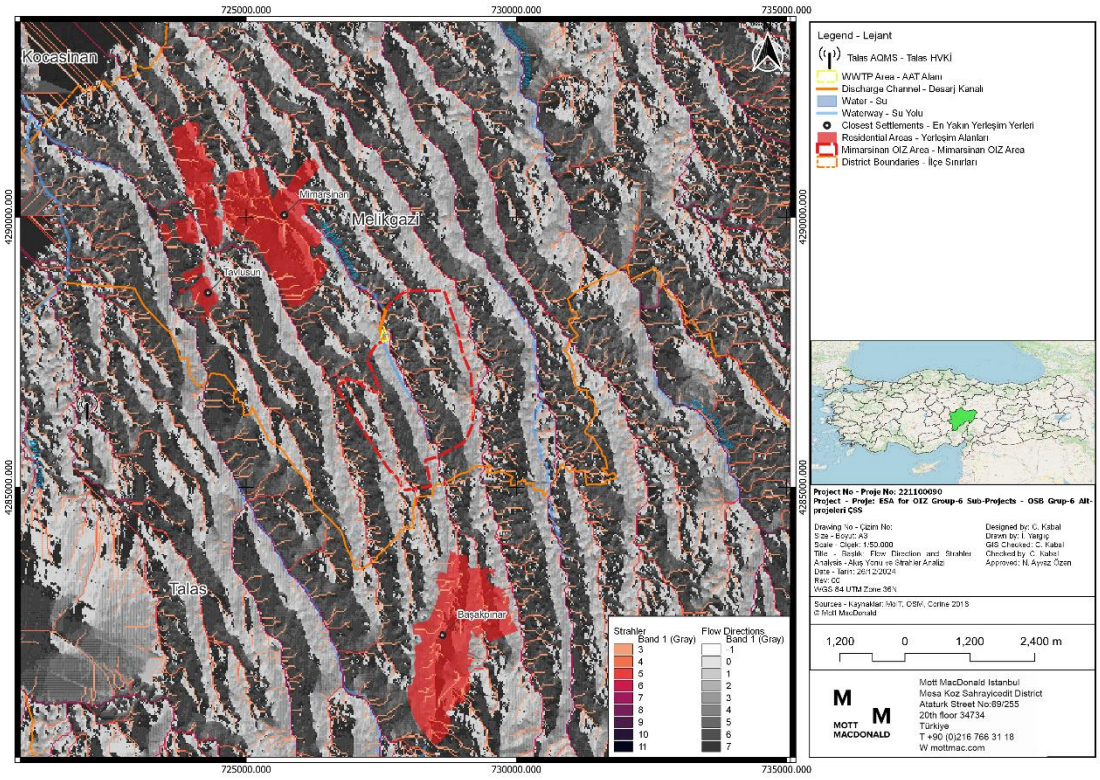


Figure 5.28. Flow Direction and Strahler Analysis

The primary output of this analysis is a detailed flow direction map that shows the direction of water flow through OIZ and the Project area. As detailed in Section 5.3, the elevation in the Project area decreases from south to north. The flow direction map given in Figure 5.28 clearly shows that water flows directly from Başakpınar Neighborhood located south of the Organized Industrial Zone (OIZ), to the Mimarsinan Neighborhood in the north. This direct flow path indicates that the area is likely to develop a surface runoff pattern (flash flood). Based on the topographic gradient and surface flow direction from south to north, the Project area is exposed to potential flood risk, particularly in downstream sections where surface runoff is likely to accumulate and affect both the OIZ and nearby low-lying Neighbourhoods. Accordingly, appropriate flood risk mitigation measures will be incorporated into the Project design as detailed in *Chapter 8. Environmental and Social Aspects and Best Practice Mitigation Measures*.

During the site visit carried out on 26 December 2024, the location at Mimarsinan Neighborhood where recent flood events occurred in May and June 2024 and resulted in damage on roads were observed. The Mukhtar of the Mimarsinan neighbourhood highlighted issues related to flooding and overflow complaints in both the Mimarsinan and Fatih neighbourhoods. The Mukhtars submitted a petition to the relevant authorities, indicating that the neighbourhoods lack adequate infrastructure to handle stream overflow or flooding after heavy rainfall. The locations and the views form the locations are presented in Figure 5.29.

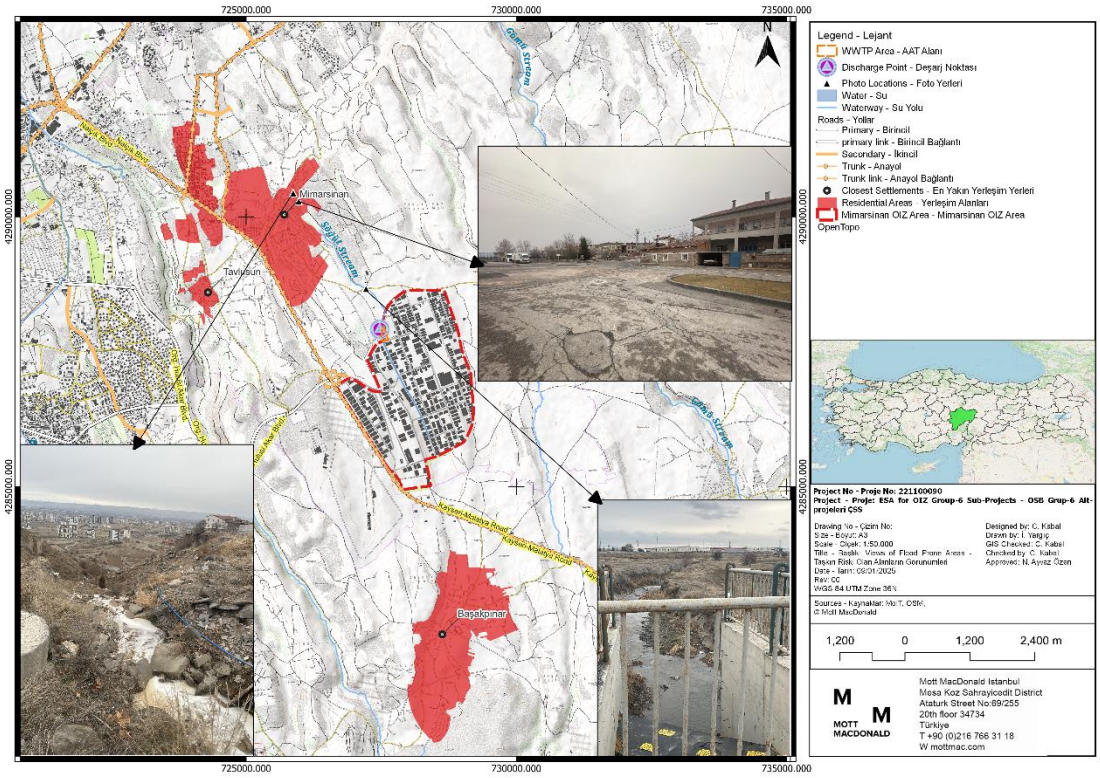


Figure 5.29. Views of Flood Prone Areas (Photographs are taken on 26 December 2024)

5.13 Biodiversity and Protected Areas

The subjects encompassed within the biological environment include areas of high biodiversity value that are legally protected and internationally recognized, habitat classification, terrestrial flora and fauna, and the evaluation of critical habitats.

5.13.1 Methodology

The baseline data for the biological environment of the Project Area have been gathered from a thorough review of existing scientific literature, including published research on habitats and species, field surveys, and expert assessments.

Field studies concerning the biological environment of the Project Area, were conducted on 26 December 2024. These comprehensive studies included detailed investigations of both terrestrial and aquatic ecosystems, with a focus on identifying and documenting the various species of flora and fauna present. Additionally, the studies involved the thorough classification and description of the habitats within the area, aiming to assess the ecological characteristics and biodiversity of the area.

The identification and compilation of floral and faunal species of conservation significance were conducted in accordance with the International Union for Conservation of Nature (IUCN) Red List. This includes species classified as Critically Endangered (CR), Endangered (EN), Vulnerable (VU), as well as other threatened and endemic species, all of which are recognized for their high conservation priority. The Project focuses on the comprehensive listing of these species to ensure that their conservation status is properly assessed and that appropriate protective measures are considered.

Identification of conservation-sensitive areas (National Parks, Wetlands, Nature Reserve Areas, Natural Parks, Wildlife Development Sites, World Heritage Natural Sites, Biosphere Reserves, Ramsar Wetlands of International Importance, Key Biodiversity Areas, Important Bird Areas, and Alliance for Zero Extinction Sites) in the Project AoI.

Flora

The plant families were organized in alphabetical order within the floristic lists. Each plant species was accompanied by its corresponding Turkish name, which was sourced from the Türkçe Bitki Adları Sözlüğü (Dictionary of Turkish Plant Names) by (Baytop T.,1997)[24]. Potential plant species for the Project area have been listed. Additionally, the list includes information on the endemism of the plant species, their IUCN categories, and their status under CITES and the Bern Convention. Additionally, the list includes information on the phytogeography of each plant, its presence or absence in the area, its relative abundance, its endemism status, and its IUCN conservation category (Ekim et al., 2000)[25]. The habitat types in which each species is found, as well as the altitudes at which they have been observed, were also documented. The comprehensive list of plant species found in the Project Area and its surrounding environment is provided in Table 5.10.

The habitats within the Project Area have been evaluated in accordance with the EUNIS (European Nature Information System) classification system.

Fauna:

Studies were conducted through a combination of direct field observations, systematic surveys, and a comprehensive review of relevant literature, all within the Project Area and its surrounding environment. The objective of these studies was to identify and assess the faunal species present in the area.

The survey involved the identification of species and their preferred habitats by examining a variety of biological indicators. These included the inspection of nests, offspring, footprints (particularly for birds and mammals), droppings, feces, food remnants (especially for mammals), as well as other physical traces such as skin, horns, shields (e.g., carapace), and footprints. These indicators were carefully studied to provide a thorough understanding of the local fauna and their ecological characteristics. The comprehensive list of fauna species found in the Project Area and its surrounding environment is provided in Table 5.11.

Aquatic:

An aquatic habitat identification and assessment study was carried out in Söğüt Stream, focusing on the areas around the existing wastewater treatment plant (WWTP) discharge point. The study was conducted by a biodiversity expert, who performed a thorough examination that included a comprehensive literature review.

Following the field studies aimed at evaluating the condition of the aquatic habitat, species inhabiting Söğüt Stream were identified through a combination of direct field observations, surveys, and an extensive review of relevant literature. The comprehensive list of fish species possible to be found in the Project Area and its surrounding environment is provided in Table 5.12.

[24] Turhan Baytop. Türkçe Bitki Adları Sözlüğü/ 3. Bsk.-Ankara: Türk Dil Kurumu,2007

[25] Ekim, T., Koyuncu, M., Vural, M., Duman, H., Aytaç, Z., Adıgüzel, N. Ankara 2000, Türkiye Bitkileri Kırmızı Kitabı (Eğrelti ve Tohumlu Bitkiler) Red Data Book Of Turkish Plants (Pteridophyta and Spermatophyta)

5.13.2 Habitats

The Project Area is situated within the boundaries of the Mimarsinan OIZ an area that has been subjected to various human-induced alterations, primarily stemming from extensive industrial activities. Consequently, the region has undergone significant anthropogenic transformation, resulting in the complete loss of its natural or semi-natural habitat characteristics. As a result, the area can now be classified as an entirely anthropogenic environment. It is important to note that there are no adjacent regions with natural habitat status near the Project area; instead, the surrounding landscape is dominated by agricultural and industrial zones. Furthermore, additional observations were carried out in the Söğüt Stream, where the planned WWTP will discharge its effluent.

The habitats within the Project Area have been evaluated in accordance with the EUNIS (European Nature Information System) classification system. This classification framework is particularly valuable as it facilitates the alignment of national habitat classifications with international standards. Additionally, it enables the identification of corresponding EUNIS habitat types that are listed in Annex I of the European Union's Habitats Directive, which is crucial for the designation of Special Areas of Conservation (SACs). Furthermore, the EUNIS classification system plays a key role in assessing critical habitats, as it allows for comparison with habitats included in the European Red List of Habitats, which provides a comprehensive evaluation of the conservation status of European habitats.

The only habitat type present within the Project Areas is classified as “J1.4 Urban and suburban industrial and commercial sites still in active use”, which represents a modified habitat.(See Figure 5.30) This habitat type is characterized by significant alterations due to ongoing industrial and commercial activities, resulting in a departure from its natural or semi-natural state. As such, the area is heavily influenced by human intervention and is primarily utilized for industrial and commercial purposes, leaving limited space for the preservation of natural ecological features. Habitat map is provided in the Figure 5.30.

The habitats observed within the Area of Influence are presented in the Table 5.9.

Table 5.9 Habitats in the Area of Influence

EUNIS Code	Level	EINUS Name	Area (Ha)	Percentage (%)
I1.3	3	Arable land with unmixed crops grown by low-intensity agricultural methods	717.6844	51.11
J1.4	3	Urban and suburban industrial and commercial sites still in active use	495.7586	35.30
J1.2	3	Residential buildings of villages and urban peripheries	128.3074	9.14
J4.6.	3	Pavements and recreation areas	9.1259	0.65
J4.2.	3	Road Networks	40.5907	2.89
C2.5	3	Temporary running waters	12.792	0.91
Total	1404.259	100	Total	1404.259

Photo 5.9. J1.4 Rural Industrial and Commercial Sites Still in Active Use Habitat

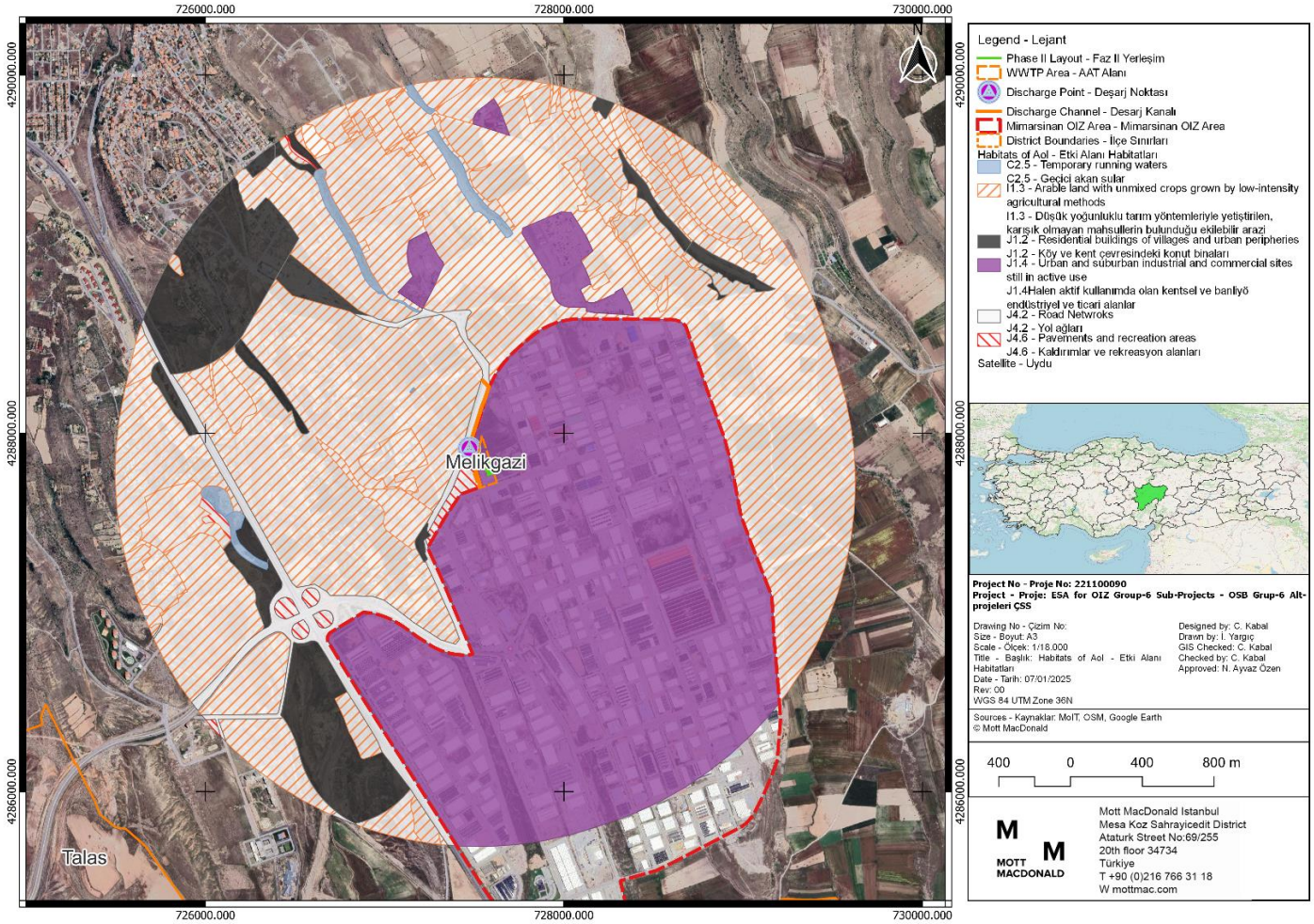


Figure 5.30. Habitat Map

Flora

The Project area encompasses both the existing parking lot and a grassy field with scattered trees. As the area is primarily designated for recreational use, it was found to have limited natural biodiversity, with only a small number of plant species identified. The identified flora species are listed in Table 5.10. Among these, 2 species were classified as LC (Least Concern), 1 as NT (Near Threatened), and 8 as NE (Not Evaluated) according to the IUCN Red List. None of the species identified are listed under the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) or the Bern Convention Appendix. Furthermore, all the identified species were found to be free from significant risk or threat. According to the IUCN, *Abies cilicica* subsp. *cilicica*, categorized as Near Threatened (NT), has been recorded based on literature sources; however, it was not observed within the project area, which is currently under anthropogenic pressure.

Table 5.10 Flora Species in and Around the Project Area

Family	Species	Turkish Name	Endemism	IUCN	CITES	BERN	Resource
Apiaceae	Eryngium campestre var. virens Link	Boğa Dikeni	-	NE	-	-	Literature
Asteraceae	Achillea coarctata Poir.	Civanperçemi	-	NE	-	-	Literature
	Carduus nutans subsp. *leiophyllus* (Petrovič) Stoj. & Stef.	Deve Dikeni	-	NE	-	-	Literature
Boraginaceae	*Onosma isaurica* Boiss. & Heldr.	Emzik Otu	-	NE	-	-	Literature
Brassicaceae	Aethionema armenum Boiss.	-	-	NE	-	-	Literature
Fabaceae	Astragalus melanocephalus Boiss..	Geven	-	NE	-	-	Literature
Liliaceae	*Asphodeline taurica* (Pall. ex M.Bieb.) Endl.	Çiriş	-	NE	-	-	Literature
Papaveraceae	Papaver rhoeas L.	Gelincik	-	LC	-	-	Literature
Pinaceae	Abies cilicica subsp. cilicica (Ant. Et Kotschy) Carr.	Toros Göknarı	-	NT	-	-	Literature
Poaceae	Poa annua L.	Tek Yıllık Salkım Otu	-	LC	-	-	Literature
	Stipa holosericea Trin.	Palak	-	NE	-	-	Literature

Fauna

Due to the significant presence of human activity and traffic in the area, the faunal diversity was found to be quite limited. As a result, only bird species were successfully identified during the

field surveys. The constant human disturbances, including vehicular movement and other recreational activities, likely contributed to the scarcity of other wildlife species in the area. Additionally, based on a thorough review of existing literature and previous studies on the region, it was confirmed that only bird species have been consistently documented within the area. The identified fauna species are listed in Table 5.11. Among these, 5 species were classified as LC (Least Concern), and 1 as NE (Not Evaluated) according to the IUCN Red List. None of the species identified are listed under the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES). 3 species are listed in BERN Appendix III and 2 species are listed in BERN Appendix II. Furthermore, all the identified species were found to be free from significant risk or threat.

This further suggests that the local fauna is primarily composed of avian species, with little to no presence of other terrestrial animals, likely due to the ongoing anthropogenic pressures in the environment.

Table 5.11 Fauna Species in and Around the Project Area

Family	Species	Turkish Name	Endemism	IUCN	CITES	BERN	Resource
Columbidae	Columba livia	Kaya Güvercini	-	LC	-	App-III	Literature
Corvidae	Corvus cornix	Leş Kargası	-	NE	-	App-III	Literature
Muscicapidae	Erithacus rubecula	Kızılgerdan	-	LC	-	App-II	Literature
Fringillidae	Fringilla coelebs	İspinoz	-	LC	-	App-III	Literature
Muscicapidae	Phoenicurus ochruros	Kara Kızılkuyruk	-	LC	-	App-II	Literature
Passeridae	Passer domesticus	Serçe	-	LC	-	-	Literature

Aquatic Biodiversity

In the course of researching the aquatic environment of Söğüt Stream, the primary objective was to first identify the fish species, as they are the key indicator group most significantly impacted by both construction and operational activities associated with the Project.

As part of the field survey, the upstream areas of Söğüt Stream were also visited, and it was observed that the stream has been subjected to pollution from other facilities located outside of the OIZ boundary that discharge their effluents into the stream. This pollution has led to a deterioration in the water quality, which could have potential implications for the aquatic ecosystem, particularly the fish populations that rely on the stream for habitat.

Following a thorough review of the studies conducted in the region, as well as an analysis of IUCN resources, the fish species presented in Table 5.12 have been identified. These species are primarily found in Söğüt Stream and the tributaries of the stream, including the Zamantı River. These watercourses serve as important aquatic habitats for various fish species. However, despite their documented presence in the literature and previous studies, none of the species listed in the table were observed during the field studies conducted as part of this Project. This discrepancy may be attributed to a variety of factors, such as seasonal variations, changes in habitat conditions, or the impact of anthropogenic activities that may have influenced the distribution and visibility of these species at the time of the survey.

The identified fish species are listed in Table 5.12. Among these, 6 species were classified as LC (Least Concern), and 1 as EN (Endangered), 1 as CR (Critically Endangered) according to

the IUCN Red List. None of the species identified are listed under the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) or BERN Appendixes.

Oxynoemacheilus seyhanensis is restricted to the upper Zamanti between Pinarbasi and Tomarza (around 30 km long, with an AOO and EOO of 60 km²); this is a headwater stream in the Seyhan River watershed in southern Anatolia, Türkiye.

Salmo platycephalus is endemic to Türkiye, where it is restricted to tributaries of River Zamantı (Karagöz, Soğuksu and Uzunyayla, near the town Pınarbaşı), and a tributary of the River Seyhan in south-eastern Türkiye.

Söğüt Stream is classified as a C2.5 habitat. The C2.5 habitat is referred to as "Temporary running waters". The Zamantı River is one of the two main tributaries of the Seyhan River. Therefore, it can be inferred that both endemic fish species reported in the literature for the Zamantı River may also be present in the Seyhan River. However, the section of the Söğüt Stream near the project discharge point has been identified as an intermittent watercourse, and the presence of endemic fish species in this stream is considered unlikely. This habitat is not suitable for endemic fish species.

Fish species classified as Critically Endangered (CR) and Endangered (EN) according to the IUCN Red List are considered to be of particularly high conservation concern due to their vulnerability and the significant risks they face in their natural habitats. These species are highly sensitive to changes in environmental conditions, and even minor disturbances can have significant adverse effects on their populations. However, it is important to note that the wastewater to be discharged from the treatment plant is designed to comply with all applicable legal standards and environmental regulations. The discharge will meet strict criteria regarding its chemical composition, ensuring that it does not contain harmful substances that could negatively affect the surrounding ecosystem. As a result, the treated effluent is not expected to have any major detrimental impact on the receiving aquatic environment or the freshwater habitats that support local biodiversity, including these sensitive fish species. The careful adherence to regulatory requirements and the implementation of best practices in wastewater treatment will significantly reduce the potential for any adverse effects on the ecological health of the area.

Table 5.12 Possible Fish Species in Söğüt Stream

Family	Species	Turkish Name	IUCN	BERN	CITES	Endemism	Resource
Tincidae	Tinca tinca	Kadife Balığı	LC	-	-	-	Literature
Cyprinidae	Cyprinus carpio	Sazan	LC	-	-	-	Literature
Percidae	Sander lucioperca	Sudak	LC		-	-	Literature
Leuciscidae	Squalius cephalus	Ak Balık	LC	-	-	-	Literature
Siluridae	Silurus glanis	Yayın Balığı	LC	-	-	-	Literature
Salmonidae	Oncorhynchus mykiss	Gökkuşağı Alabalığı	LC	-	-	-	Literature
Balitoridae	Oxynoemacheilus seyhanensis	-	CR	-	-	Endemic	Literature
Salmonidae	Salmo platycephalus	Anadolu alabalığı	EN	-	-	Endemic	Literature

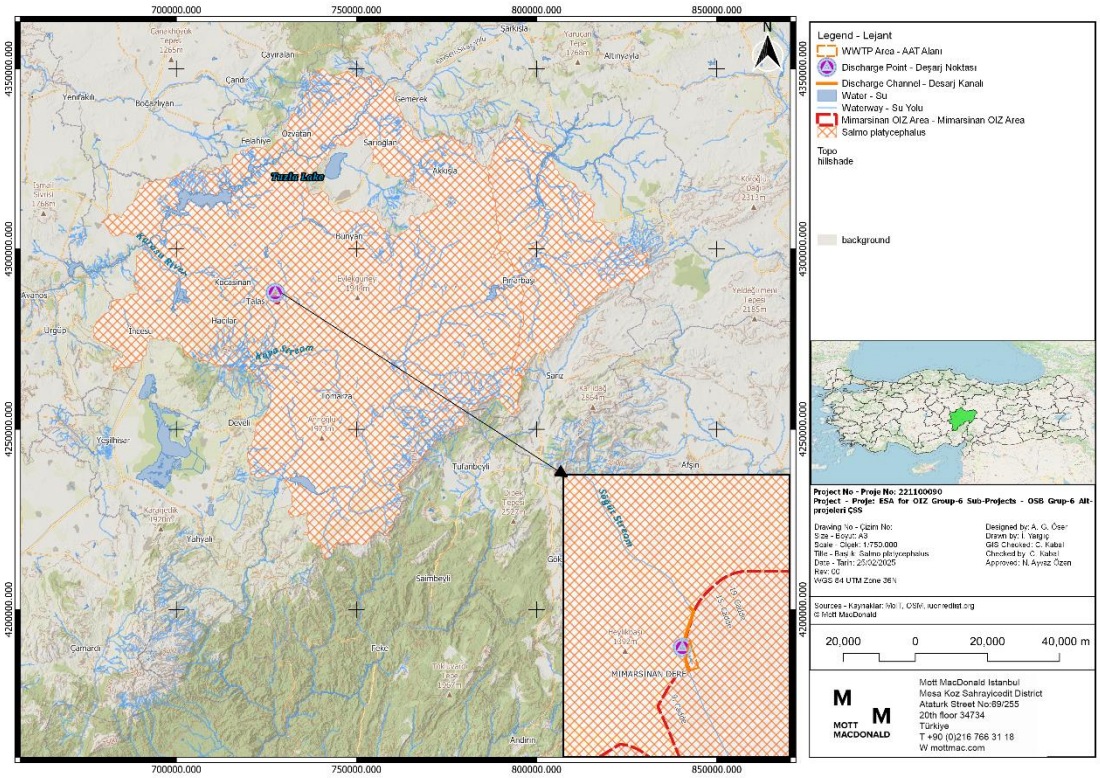


Figure 5.31. IUCN Distribution Map of *Salmo platycephalus*

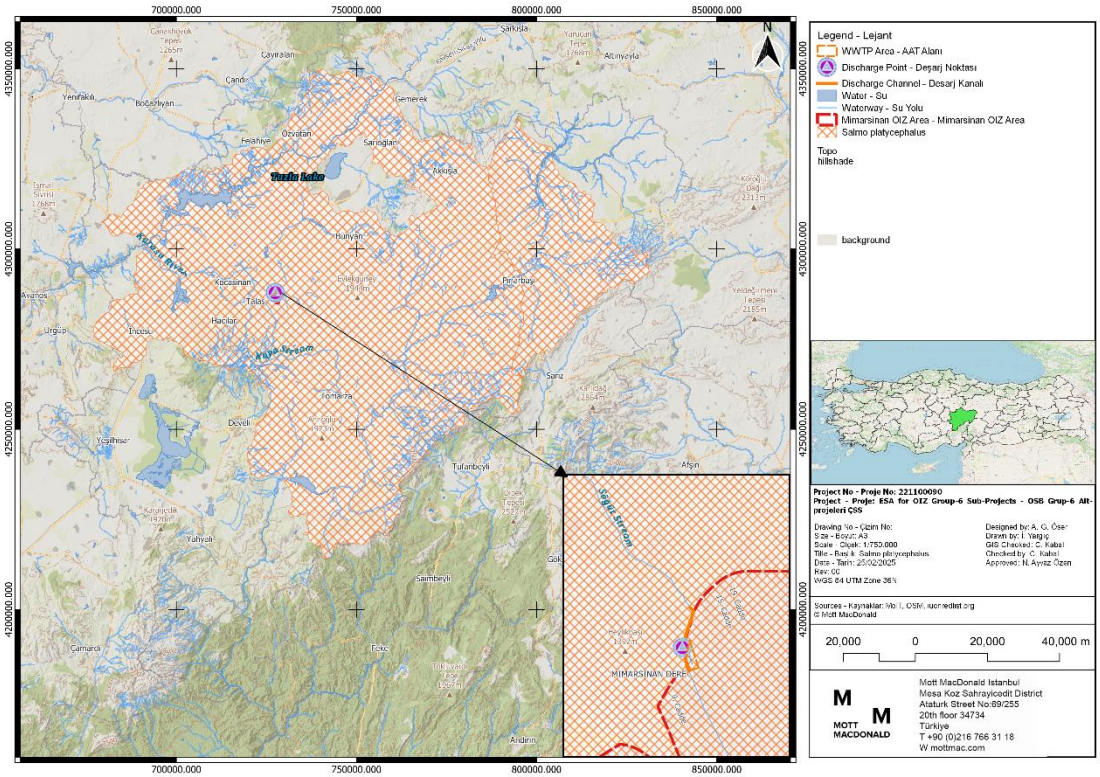


Figure 5.32. IUCN Distribution Map of *Oxynoemacheilus seyhanensis*

Protected Areas

To identify and assess the protected areas within the Project Area and its immediate surroundings, a comprehensive desktop study and literature review were conducted. This research utilized the databases and resources provided by relevant institutions, in alignment with the scope of the Project.

National Protected Areas

The findings indicate that there are no National Parks, Nature Parks, Nature Monuments, or Nature Reserve Areas within the Project Area, as defined by Articles 2 and 3 of the National Parks Law. Additionally, the Project Area does not encompass any Wildlife Protection Areas, Wildlife Development Areas, or Wild Animal Nestling Areas, which are designated under the Land Hunting Law. These areas, which are critical for the conservation of biodiversity and the protection of wildlife habitats, are not present within the boundaries of the Project Area.

International Recognized Areas

Internationally recognized areas, as exclusively defined under the World Bank Environmental and Social Standard 6 (WB ESS6), include UNESCO World Heritage Natural Sites, Biosphere Reserves, Ramsar Wetlands of International Importance, Key Biodiversity Areas (KBA), Important Bird Areas (IBA), and Alliance for Zero Extinction (AZE) Sites. These areas are designated for their exceptional ecological significance and are subject to specific conservation measures to protect their biodiversity and ensure the sustainable management of natural resources. Doğa Derneği, published an inventory on ÖDAs in Türkiye in 2006 in collaboration with the Ministry of Environment and Forestry, integrating survey results across the country with expert opinions.

Using up-to-date data, internationally recognized areas in and around the Project Area have been identified and mapped (See Figure 5.33), along with their respective distances from the Project site. The evaluation of these areas is as follows:

There are no internationally recognized areas located within or immediately surrounding the Project Area. The closest internationally recognized areas are Erciyes Dağı ÖDA (Önemli Doğa Alanı or Key Biodiversity Areas), which is situated approximately 7 km from the Project Area, and Hürmetçi Sazlığı KBA (Key Biodiversity Area), located around 20 km away from the Project Area.

Based on the research conducted using the most current databases, it can be concluded that there are no nationally protected or internationally recognized areas in or around the Project Area.

Table 5.13 Protected Areas

Protected Area	Distance to the Project Area
Hürmetçi Sazlığı Wetland, KBA, IBA	20 km
Tuzla Palas Lake Wetland Registration Border	30 km
Sultan Sazlığı Ramsar Site; KBA, IBA	40 km
Erciyes Dağı Önemli Doğa Alanı (ÖDA)	7 km

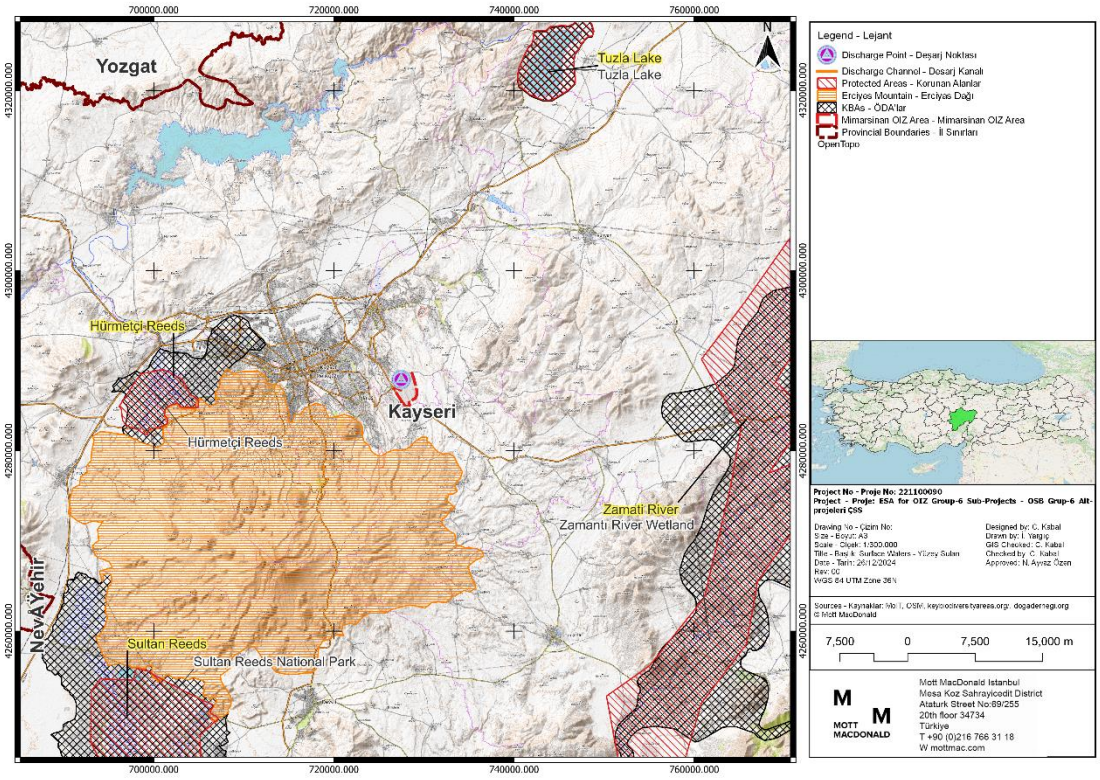


Figure 5.33. Protected Areas Around the Project Area

6 SOCIAL BASELINE OF THE PROJECT

This chapter provides a site-specific overview of the social baseline structure within the Project Area of Influence (AoI). Secondary data was gathered from screening reports and desk studies, while primary data was collected through field studies conducted during the site visit as part of the ESMP. Based on the primary and secondary data within the scope of ESMP, the Project's AoI has been identified as Mimarsinan, Tavlusun and Başakpınar neighbourhoods and the social field study was carried out in these neighbourhoods within the scope of ESMP. The neighborhoods located at distances of 1.5 km, 3 km, and 4.1 km to the Project site, respectively. On December 26, 2024, interviews were conducted with the mukhtars[26] of Başakpınar, Tavlusun, and Mimarsinan, as well as with authorities from the Mimarsinan OIZ in the scope of ESMP. The social baseline and impact assessment is based on analysis including primary and secondary data. The Mimarsinan, Tavlusun and Başakpınar mukhtars' statements in the report are interview data conducted as part of the ESMP. The social baseline encompasses observations of the areas, information about the characterization of the Project AoI, and the identification of risks and impacts along with proposed mitigation measures.

6.1 Demography and Population

According to Address-Based Population Registration System of Turkish Statistical Institute (TurkStat)[27] for the year of 2023, the population of Kayseri province is 1,445,683 and the population of Melikgazi and Talas district are 585,483 and 168,172, respectively. Melikgazi district, where Mimarsinan OIZ is located, is the most populated district of Kayseri. The populations of Mimarsinan, Tavlusun and Başakpınar neighborhoods are given in Table 6.1.

Table 6.1. Population of the Settlements in the Project AoI (TurkStat, 2023)

Neighborhood	Distance to the Project area	Female	Percent	Male	Percent	Total
Mimarsinan	1.5 km	1,667	49 %	1,732	50,9%	3,399
Tavlusun	3 km	2,545	47,1%	2,857	52,8%	5,402
Başakpınar	4.1 km	1,956	49,7%	1,972	50,2%	3,928

According to the mukhtars interviews conducted in the scope of ESMP on 26 December 2024, the neighbourhoods experienced immigration after the earthquake in 2023 in Türkiye. In addition, population increase is expected as a result of both the development of Mimarsinan OIZ and the Projects planned to be realised in the region. In all three neighbourhoods, the male population is slightly higher than the female population. According to the data obtained from the mukhtars, the working age population (15-64 ages) is the largest proportion in the neighbourhoods. When population density is examined, Tavlusun is the most populous neighbourhood with a population of 5,402 followed by Başakpınar (3,928), while Mimarsinan stands out as the neighbourhood with the smallest population (3,399). Considering the planned limited employee recruitment for Project, the population influx to the region is not expected due to the Project construction or operation activities.

[26] Headmen or head of the neighbourhood

[27] Turkish Statistical Institute

6.2 Cultural Heritage

6.2.1 Tangible Cultural Heritage

There are many important archaeological sites which belong to prehistoric periods that have been registered in and around the Kayseri province. Kayseri has a rich cultural heritage from the Neolithic, Chalcolithic, Early Bronze Age, Hittite, Phrygian, Hellenistic, Roman, Byzantine, Seljuk, Ottoman and Turkish Republic periods.

The archaeological artefacts which belong to the Neolithic Period have been encountered in Avla Dağ, Damsa, Değirmenönü, Hassanlar, İğdeli Çeşme, İlfat Kayaliği and Samsunhöyük archaeological sites. The Chalcolithic Period-related artefacts have been observed in Civelek Cave, Külüntepe, Paşalı, and Taşlıburun archaeological sites in Kayseri.

Kültepe (Kaneş Karum) is one of the most known archaeological settlements in Kayseri. The settlement was occupied from the Early Bronze Age, Middle Bronze Age and Late Bronze Age. Kayseri and its around were located under the domination of East Phrygia during the Iron Age. Kayseri came under Persian rule in the middle of the 6th century BC ruled by the Satrapy of Cappadocia. In the 1st century BC, Kayseri was dominated by the Roman Empire. The presence of many archaeological remains such as rock-cut architecture and rock churches, where there are traces of settlements belonging to the Byzantine Period, shows that the importance of the region continued during the Byzantine Period.

After 1071 AD, the Bozok Turkmens of the Oguz tribe played an important role in the Turkification of the region. In the Kayseri, the Great Seljuks, the Anatolian Seljuks, Dulkadiroğulları, Karamanoğulları and the Ottomans ruled in the given order. There are some known settlements of cultural heritage importance in and around the Project Area (Table 6.2 and Figure 6.1)

Page 82 of 209

Table 6.2 Tangible Cultural Heritage Sites within and in the Vicinity of the Project Area

No	Name	Province/ District	Neighbourhood	Distance to Project Area (km)	Periods					
					Chalcolithic Period	Bronze Age	Iron Age	Hellenistic Period	Roman Period	Seljuks
1	Çalkan 1St Degree Archaeological Site	Kayseri	Tavlusun	2,5						
2	Gürpınar 1St Degree Archaeological Site		Gürpınar	6,8						
3	Mimar Sinan 1St Degree Archaeological Site		Mimar Sinan	1,8						
4	Karlık 1St Degree Archaeological Site		Tavlusun	4,2						
5	Karaağ 1St Degree Archaeological Site		Başakpınar	4,5						
6	Kapıka 1St Degree Archaeological Site		Başakpınar	4,6						
7	Karaağ 2		Başakpınar	4						
8	Derevenk Valley		Tavlusun	3,7						
9	İspile Han		Mimar Sinan	4						

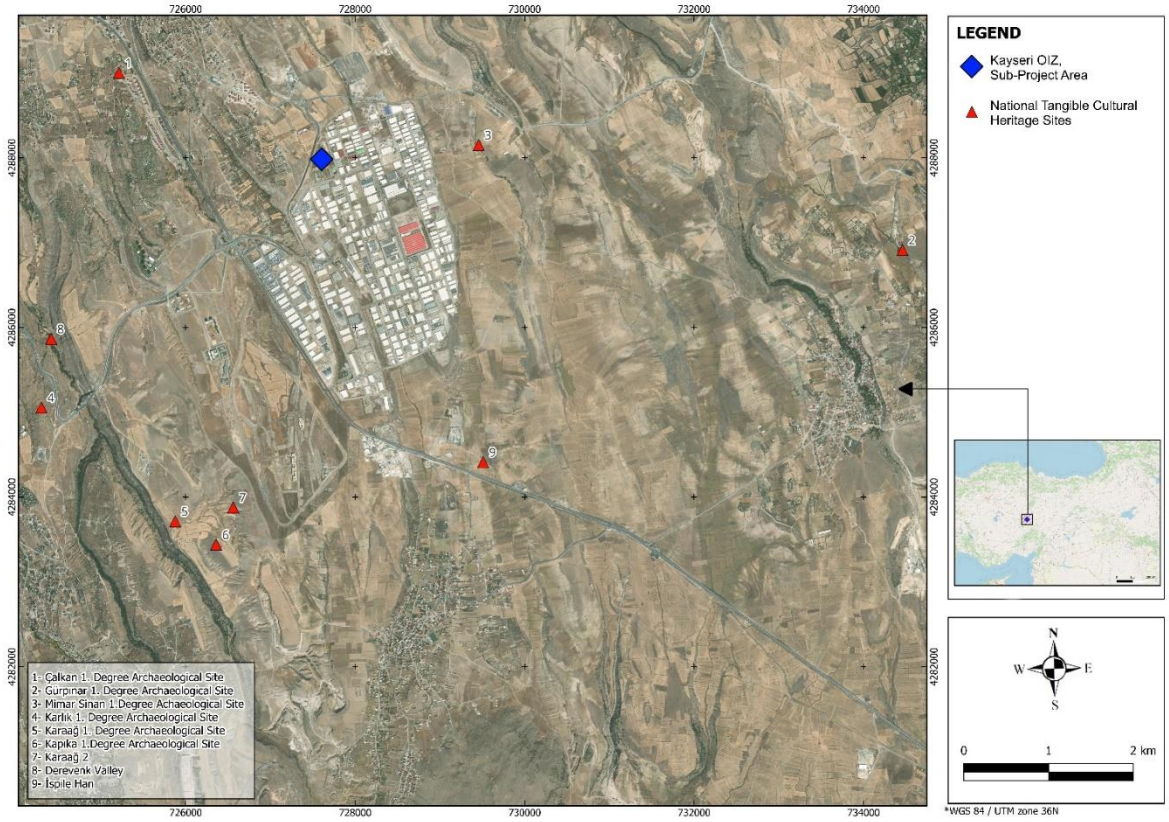


Figure 6.1. Tangible Cultural Heritage Sites within and in the Vicinity of the Project Area

6.2.2 Intangible Cultural Heritage

Nationally and internationally known intangible cultural heritage assets in the close vicinity of the Project Area are presented in Table 6.3 and Table 6.4. As of 2025, there are 31 elements of Türkiye inscribed on the UNESCO Representative List of Intangible Cultural Heritage. Among these elements, there are 7 elements registered in Kayseri province where the Project Area took place, as shown in Table 6.3.

Table 6.3 Intangible Cultural Heritage Items Registered in UNESCO Representative List of Intangible Cultural Heritage of Project Area Vicinity[28]

No	Intangible Cultural Heritage Element	Year of Admission to the UNESCO List
1	Traditional Sohbet Meetings	2010
2	Ceremonial Keşkek tradition	2011
3	Turkish Coffee Culture and Tradition	2013
4	Flatbread Making and Sharing Culture: Lavash, Katyrma, Jupka, Yufka Katrıma, Jupka, Yufka	2016
5	Spring Celebration– Hıdrellez	2017
6	Culture of Çay (tea), a symbol of identity, hospitality and social interaction	2022
7	Iftar/Eftari/Iftar/Iftor and its socio-cultural traditions	2023

[28] Please check the following link; obtained on 06.01.2025 from https://www.unesco.org.tr/Pages/126/123/UNESCO-Somut-Olmayan-K%C3%BClt%C3%BCrel-Miras-Listeleri

The ICH elements registered in the national inventory in Kayseri is presented in Table 6.4 .

Table 6.4 Intangible Cultural Heritage Items Registered in the National Inventory of Project Area Vicinity[29]

No	Element Group Titles	Inventory / Local Applications
1	Weaving Art and Traditions	Kolan Weaving,
2	Traditional Children's Games and Toys	Leapfrogging, Arı vız, Aç kilit, Munnaraz, Happan, Güvercin çatması, Lop, Dalye
3	Wedding Traditions	Betrothal, Henna Night in Afşars, Groom's head, Bridal Bath
4	Traditions and Practices Based on Beliefs	Children's Prayer for Rain
5	Faith, Celebration and Traditions Linked to the Calendar	Lamb Washing Ceremonies
6	Folk Narrative Tradition	Ağ Gelin Myth
7	Lamentation Traditions	Afshar People Elegies
8	Traditional Theatrical Arts and Acting	Barbar Play, Water Play, Culluk (Türkiye) Play, Sinsin Play
9	Traditional Animal Husbandry and Social Practices	Giving Gift
10	Turkish Culinary Culture/ Traditional Food and Beverage Making and Social Practices	Köfter, Circassian Cheese, Dolaz, Telteli Dessert, Menteş Food, Tepsi Mantısı, Kayseri Mantısı, Bacon, Sujuk, Pırtımpırt

There is no adverse impact on the *Section 6.2.1 and 6.2.2* mentioned tangible and intangible cultural assets which will be caused by the Project activities.

Any tangible and intangible cultural assets were not encountered within the boundaries of the AoI, in case of chance findings, the chance find procedures will be applied.

The general layout of the Project area is given in Figure 6.2 below.

[29] Please check the following link; obtained on 06.01.2025 from https://aregem.ktb.gov.tr/TR-344757/somut-olmayan-kulturel-miras-turkiye-ulusal-envanteri.html

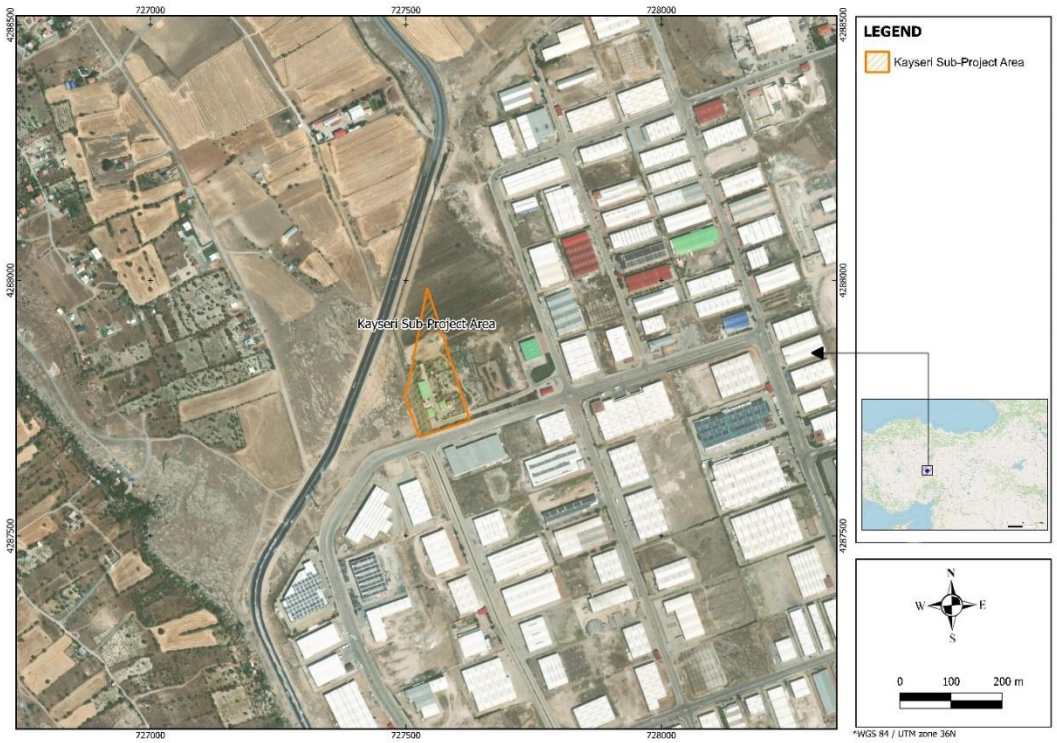


Figure 6.2. General Layout of the Project Area

The general views from the Project area are given below.

Photo 6.1 General View from Site	Photo 6.2. General View from Site
	

6.3 Livelihood and Employment

The fact that the province has an important cultural background in trade and crafts from the past to the present has a great importance in the development of Kayseri province. Kayseri province is an area of both investment and trade with its favourable transport and energy facilities, as well as its rich underground resources and significantly developed industry. The main agricultural products are wheat, barley, sugar beet, sunflower, crops, apples, and grapes. In

addition, sheep and cattle farms are the main source of livestock[30] (Kayseri Governorship, 2024).

According to 2023 TurkStat data[31], Kayseri province, which has an industry-based economy, has a per capita income below Türkiye's average (13,243 $). Kayseri Province has a gross domestic product of 10,996 $ per capita, ranking 39th in Türkiye. The main industries are flour, bakery products, sugar, milk, meat products, fruit juice, canned food, animal feed, weaving, leather, tractor machine tools, machinery, metal goods, cardboard, cable, pipe, plastic, brick, and factories producing batteries[32]. Within Mimarsinan OIZ, there are a total of 437 companies that mainly produce food, construction building materials, metal products, and furniture products (Please see Figure 2.1. Distribution of Different Sectors in Mimarsinan OIZ).

6.3.1 Major Economic Activities in Settlements Located in the Project AoI

The main economic activity in the settlements is industry, as the interview data is based on the data obtained during the field study conducted within the scope of the ESMP. Construction, manufacturing and other industrial activities are the main sources of economic activity in the settlements. Local people are employed both in local industrial sectors and construction projects outside the province. Also, there are local workers are employed in the OIZ. Based on the interviews conducted in the surrounding neighborhoods, the mukhtars states that the OIZ contributes to thethe local economy and means of livelihoods of the households. The development of animal husbandry and agricultural-based industry in the region was stated by the muhktars as important for households involved in these economic activities.. The main economic activities in the neighbourhoods in the Project AoI area are given in Table 6.5.

Table 6.5. Major Economic Activities in the Settlements Located in the Project AoI[33]

Settlement	Primary Economic Activity	Secondary Economic Activity	Tertiary
Mimarsinan	Construction	Livestock	Agriculture
Tavlusun	Construction	Livestock	Agriculture
Başakpınar	Construction	Livestock	Agriculture

Source: Mott MacDonald Field Study, December,2024

While there is an expectation in these settlements that the Project will improve their livelihoods due to expecting the development of the OIZ, no negative impacts are expected. Nevertheless, it will be taken into consideration that the wastes of the factories and enterprises within the OIZ will be managed and dust will be prevented during the construction period closely pasture and agricultural areas.

6.4 Education and Health Services

According to the 2023 Formal Education Statistics by TurkStat, the literacy rate in Melikgazi is 89.4%. This rate is comprised of 49.9% for men and 50.1% for women. In Melikgazi district, there are 146,946 students, 395 educational institutions, 5,329 classrooms, and 9,122 teachers. The number of students per classroom is 28 for primary and secondary schools, 26 for general middle education level, and 28 for technical education status. According to mukhtars in the Mimarsinan, Tavlusun and Başakpınar neighbourhoods there are primary and secondary schools in the settlements. However, only Başakpınar has a high school; the children in

[30] Agriculture I Kayseri Governorship

[31] Turkish Statistical Institute

[32] Economic Structure I Kayseri Provincial Culture and Tourism Directorate

[33] Field Study, 2024 conducted by Mott MacDonald, Türkiye

Tavlusun and Mimarsinan have the opportunity to go to the nearby settlement for their education.

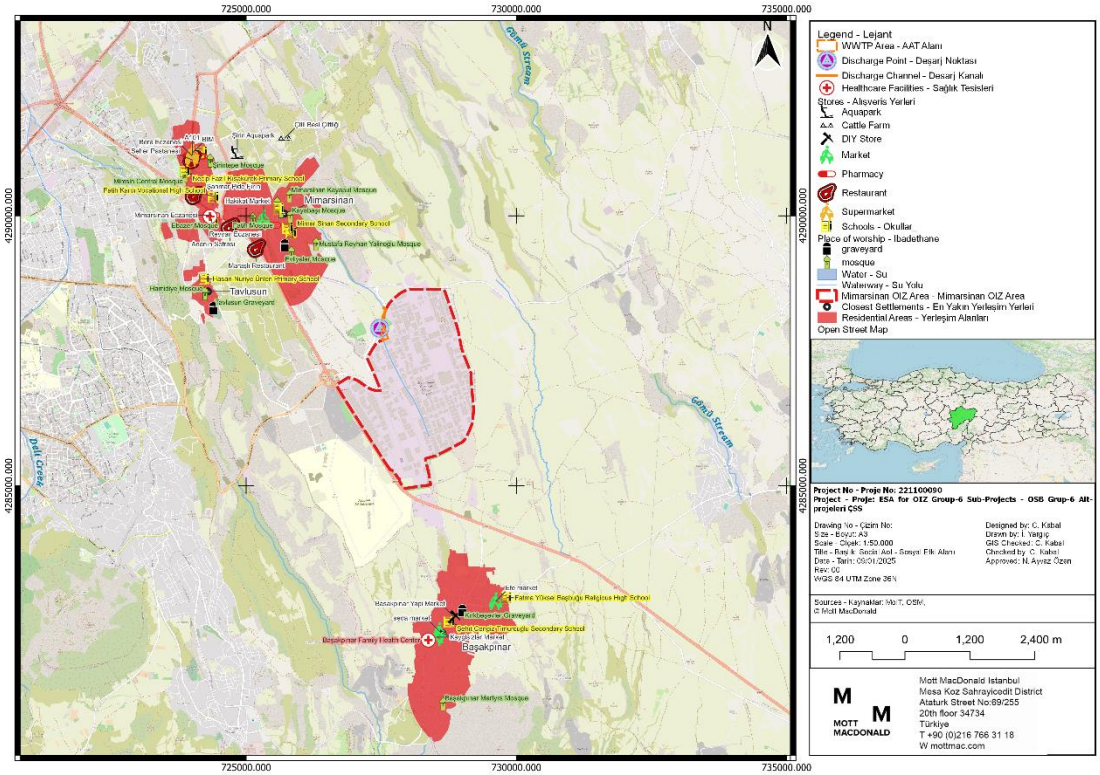


Figure 6.3. Education and Health Facilities

Figure 6.3 is a map showing the schools near the OIZ within the Mimarsinan, Tavlusun and Başakpınar neighbourhood. Educational facilities are available within a 5.58 km radius, including Abdullah Gül University, which is located 2 km from the OIZ area, as well as several primary and secondary schools and a vocational high school. The Table 5.1 presents the list of close settlements and receptors (schools, health centers, graveyards and mosques) to the Project AoI. Accordingly, the routes of children who use shuttle services or public transport for education intersect with the vehicles that provide access to the OIZ, but no Project-related transport problems are expected in this regard.

Kayseri has a total of 27 hospitals, including 1 university, 14 public hospitals and 12 private hospitals, along with their health facilities, infrastructure and staff. The public, private and university hospitals provide services to the local population as well as to patients from the surrounding regions and neighbouring provinces. The number of beds per 100,000 inhabitants in Kayseri is 2.3, the same average as in Türkiye. In addition, the total number of doctors in Kayseri is 789 compared to the national total of 53,697 (TurkStat, 2022).

Melikgazi district, which is at the top of the health services ranking in Kayseri, has 14 hospitals. There are many health centres and hospitals in Melikgazi. The nearest hospital is " Erciyes University Hospital " with 8 km away from the OIZ. There are health centres in Mimarsinan, Tavlusun and Başakpınar neighborhood, but the nearest state hospital is almost 20-30 km away from the settlements. There are also physicians who regularly visits the neighbourhoods for home care services (see *Section 5.2*).

6.5 Vulnerable Groups and Social Equity

Based on the WB ESS 10, disadvantaged or vulnerable groups need more attention to ensure equal interaction in society and to overcome the obstacles, challenges and risks they experience. These challenges may arise from factors such as gender, economic status, ethnicity, age, language, disability, or other conditions. Addressing their needs requires specialised assistance, support, or protection measures to protect their rights, well-being, and access to equal opportunities. During the field study, vulnerable groups such as households with low-income groups, persons with disabilities, and refugees have been identified within the Project impact area. Table 6.6. presents the identified vulnerable groups during the field study.

Table 6.6. Vulnerable Groups in the Settlements Located in the Project AoI[34]

Settlement	Individuals over 65 years of age living alone	Low-income Families	Physically / Mentally disabled	Refugee	Total
Mimarsinan	15	15	2	2	34
Tavlusun	10	127	10	20	167
Başakpınar	1	37	7	1	46

Source: Mott MacDonald Field Study, December,2024

There are approximately 23 Syrian nationals in total in the neighbourhoods. It was learnt that people in these households speak Turkish and are employed. There is a private centre for the education and rehabilitation of children with special needs in Mimarsinan. No Project-specific impact is expected. However, it should be ensured that all disadvantaged and vulnerable groups are considered, given special attention and equal inclusion in the stakeholder engagement process especially accessing the Project grievance mechanism.

6.6 Infrastructure Services

There is infrastructure for electricity, water, natural gas and transport in the neighbourhoods. Table 6.7. presents the infrastructure of the settlements. Mukhtars said the neighbourhood's services and infrastructure are generally adequate. The interviews conducted with mukhtars on 26 December 2024 revealed that there are promenades that are used by the residents for picnics or local celebrations. However, there is not enough facility area for sports, playing or socializing.

Table 6.7. Infrastructure Information in the Settlements Located in the Project AoI[35]

Settlement	Water Resource	Irrigation Resource	Sewerage System	Waste Management	Mass Transportation Vehicle
Mimarsinan	Municipal Water	-	Sewage System	Melikgazi Municipality	Bus
Tavlusun	Municipal Water	Well Water	Sewage System	Melikgazi Municipality	Bus
Başakpınar	Municipal Water	-	Sewage System	Talas Municipality	Bus

Source: Mott MacDonald Field Study, December,2024

[34] Field Study, 2024 conducted by Mott MacDonald, Türkiye
[35] Field Study, 2024 conducted by Mott MacDonald, Türkiye

The Mukhtars identified the following major problems in the neighbourhood:

- Lack of adequate infrastructure to deal with stream overflow or flooding after heavy rainfall,
- Insufficient traffic control on the highway near the neighbourhoods
- Inadequate infrastructure for the population
- Lack of social services and facilities for women and young people

In current situation, the WWTP in Mimarsinan OIZ has already discharged the Söğüt Stream after the treatment. The wastewater of the Project is planning to be discharged into the Söğüt stream after the capacity increasing. In addition, water for construction and operation will be supplied from the OIZ network. Since the water requirements for the Project are below the limit of use, there wouldn't expected adverse effect on groundwater resources. Since there is sufficient infrastructure for the Project, no impact is expected in the Project AoI. The Projects' infrastructure is detailed in *Section 5.1*.

6.7 Traffic and Transportation

The Kayseri-Malatya highway connects Central Anatolia to the east. The Kayseri Mimarsinan OIZ is close to the road. It is advantageous to close the highway, which is one of the most important industrial roads in Central Anatolia. The city is seen as significant investment due to its location and the potential for industrialisation. The Kayseri Mimarsinan OIZ's location on a major route and proximity to the city centre is a significant advantage for investors and employers. Since there are sufficient transport routes and the OIZ is connected to the highway, the Project does not require any new structures such as roads, bridges, etc.

The Kayseri-Malatya Highway (on D300) is a divided road with two lanes in each direction. According to the 2023 state highways traffic volume map published by the General Directorate of Highways, the annual average daily traffic on the Highway traffic segment passing through the south of the OIZ is 16,918 vehicles. Of these vehicles, 11,900 are automobiles, 1,413 are medium goods vehicles, 349 are buses, 991 are trucks and 2,265 are articulated trucks (KGM, 2024).[36] The traffic volume map is shown in the Figure 6.4.

[36] State Roads Traffic Volume Map I KGM

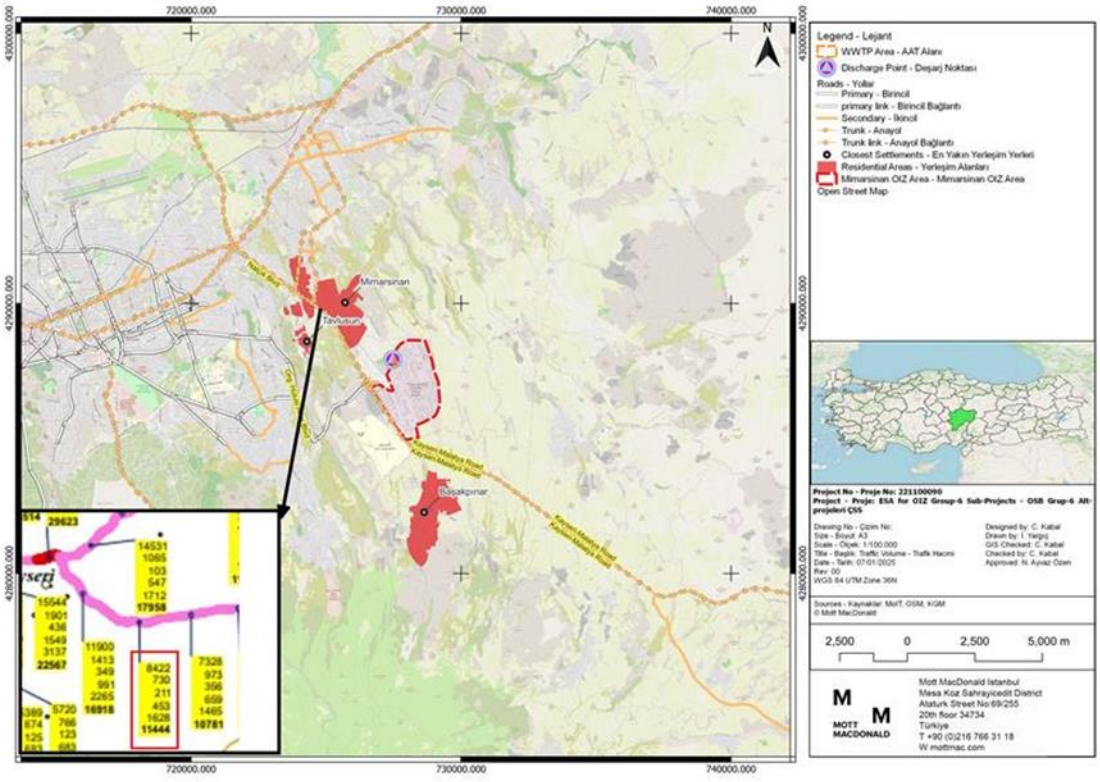


Figure 6.4. Highways Traffic Volume Map in Kayseri

Increased traffic load is not expected in the Project AoI during the construction activities of the Project, because the route for the waste disposal activities (*Section 7.1.10*) has limited intersection with the highway, which is shown in Figure 7.5 and Figure 7.6.

7 ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS OF THE PROJECT

7.1 Environmental Risks and Impact of the Project

The environmental risks associated with the Project are considered "Moderate" due to the following reasons:

- Construction Works: The typical impacts of construction activities, such as noise, dust, and waste generation, can be effectively mitigated with appropriate measures. Common effects like odor, noise, occupational health and safety (OHS) concerns, and the generation of wastewater and sludge can be managed using established management systems.
- Surrounding Environmental Receptors: No negative impact on surrounding environmental receptors is anticipated.
- Flora, Fauna, and Ecosystem: There is no expected negative impact on local flora, fauna, and ecosystems.
- Project Area: Activities will be confined to the area allocated to the wastewater treatment plant (WWTP) within the borders of the Organized Industrial Zone (OIZ).
- Waste Disposal: Waste will be disposed of in accordance with national regulations and the World Bank Environmental, Health, and Safety (EHS) Guidelines.

7.1.1 Land Use

The Project area is located in Kayseri Province, Melikgazi District, Mimarsinan Neighborhood, specifically at Block 7553, Parcel 31. It spans an area of 18,809.24 m^2 and is owned by the Kayseri Mimarsinan Industrial Zone Directorate. The Project area has been owned by the OIZ since 2010 and no legacy issues have been reported[37]. While the industrial setting limits the ecological sensitivity, potential impacts such as soil erosion, changes to drainage patterns, and aesthetic disruptions should be managed carefully.

7.1.1.1 Pre-Construction Phase

During the pre-construction phase, the Project involves site preparation activities, including topsoil stripping. Topsoil stripping will be carried out from an area of approximately 2,715 m^2. Some portions of the stripped topsoil will be used for landscaping purposes after construction and remaining portions will be used in areas that will be needed in the Kayseri Mimarsinan OIZ area. No trees or potentially sensitive vegetation will be cut or relocated. Furthermore, no significant sized impermeable surface will be constructed, thus any impacts related to impervious areas are not expected at this phase. In addition, the potential land use impacts of site preparation activities on air quality are given in *Section 7.1.6*.

Consequently, the impact magnitude may be evaluated as minor. The sensitivity of the nearby receptors which are employees, and the local stakeholders can be evaluated as medium. This gives a minor overall impact.

[37] io Environmental Solutions Research & Development Company, AQWADEM, and PROJETAS (2023). Kayseri Mimarsinan Industrial Zone: Capacity Increase of Existing Wastewater Treatment Plant Environmental & Social Screening Report. Republic of Türkiye Ministry of Industry and Technology, 47.

7.1.1.2 Construction Phase

In the construction phase, temporary changes in land use will occur due to the excavation works and construction of additional units for the existing WWTP. Some portion of the excavated material will be used for backfilling while the excavation that is unsuitable for reuse will be stored in designated areas within the administrative boundaries of Kayseri Metropolitan Municipality. In addition, construction machinery and equipment may disturb the landscape of the Project area. These changes will be managed to avoid encroachment on adjacent land parcels and ensure compliance with regulations. Measures will also be implemented to restore any temporarily used areas post-construction. No significant sized impermeable surface will be constructed, thus any impacts related to impervious areas are not expected at this phase. In addition, the potential land use impacts of construction activities on air quality are given in *Section 7.1.6*.

Hence, the impact magnitude may be evaluated as minor. The sensitivity of the nearby receptors which are employees, and the local stakeholders can be evaluated as medium. This gives a minor overall impact.

7.1.1.3 Operation Phase

During the operational phase, no additional activities that would increase land use are anticipated. The Project site will permanently serve as a wastewater treatment facility, and no impacts on the landscape outside of the WWTP area are expected.

Potential impacts during the operation phase will stem from the maintenance operations of the WWTP equipment. Since these activities will be confined to a specific area, the site's landscape will largely remain unaffected. To further minimize any impact on the landscape, the maintenance zone will be clearly defined and restricted.

Additionally, impermeable surfaces and structures can change local hydrology by increasing runoff and impacting surrounding areas. However, since the new equipment will be connected to the existing wastewater treatment plant's drainage system, the impact of these impermeable areas will be minimal.

Hence, the impact magnitude may be evaluated as minor. The sensitivity of the nearby receptors which are employees, and the local stakeholders can be evaluated as medium. This gives a minor overall impact.

7.1.2 Geology

7.1.2.1 Pre-Construction Phase

As no impact is foreseen on the geology and no risk have been identified, no mitigation measure was identified. Mitigation measures regarding earthquake and seismicity were identified in *Section 0.*

7.1.2.2 Construction Phase

As no impact is foreseen on the geology and no risk have been identified, no mitigation measure was identified. Mitigation measures regarding earthquake and seismicity were identified in *Section 0.*

7.1.2.3 Operation Phase

As no impact is foreseen on the geology and no risk have been identified, no mitigation measure was identified. Mitigation measures regarding earthquake and seismicity were identified in *Section 0.*

7.1.3 Hydrogeology

7.1.3.1 Pre-Construction Phase

During the pre-construction phase, vegetation removal can lead to increased soil erosion and sedimentation in nearby water bodies. Nevertheless, as the scale of the possible disturbance is minor the overall magnitude is considered as minor. Since the receptor sensitivity was identified as low as the Söğüt Stream water is not being used for irrigation, drinking or utilities the overall impact significance is negligible.

7.1.3.2 Construction Phase

In the construction phase, excavation and topsoil removal can increase the risk of soil erosion, leading to sedimentation in streams and rivers. Construction activities can introduce pollutants, such as oils and chemicals, into groundwater and surface water. The use of heavy machinery and excavation can affect local groundwater levels and flow. Additionally, if construction waste is not managed properly, it can contaminate water resources. Thus, the magnitude of the impact was determined as moderate. Which results in impact with a minor significance.

7.1.3.3 Operation Phase

During the operation phase, improperly treated wastewater from the WWTP can contaminate Söğüt Stream, affecting water quality and aquatic life. However, as the overall goal of the Project is to increase the actual capacity of the WWTP the effluent quality is expected to increase thus minor-magnitude-impact is foreseen.

Chemicals to be used in the treatment process can pose a risk if not handled and disposed of properly. Poor maintenance of treatment units can lead to leaks and spills, contaminating water resources. Considering the type and amount of the chemicals to be used during the operation, the magnitude of this impact was identified moderate which makes an overall impact of minor significance.

7.1.4 Climate and Vegetation

7.1.4.1 Pre-Construction Phase

Before the commencement of a Project, the impacts on climate and vegetation can vary based on the type of development, its location, and the prevailing environmental conditions. The Project will involve minimal vegetation removal for grass and recreational areas. Hence, minor impact is foreseen within the Project area during pre-construction phase within the Project area. Considering the receptor sensitivity is medium, the overall impact significance results in minor.

7.1.4.2 Construction Phase

During construction, activities can release greenhouse gases (GHGs) such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), contributing to climate change. This is particularly significant if the Project involves removing vegetation, in a limited area which serves as a carbon sink. Construction equipment like excavators, bulldozers, and cranes often rely on fossil fuels, and temporary power sources such as generators at construction sites also emit GHGs. Additionally, transporting construction materials and workers to the site generates transportation-related emissions. Heavy construction equipment can compact the soil, making it less suitable for plant growth and affecting vegetation regeneration post-construction.

Yet, the scale of Project and expected emissions calculated in *Section 7.1.6* those are not exceeding the limit, get the expected impact magnitude into minor. The sensitivity of the nearby

receptors which are workers, and the local stakeholders can be evaluated as medium. This gives a minor overall impact.

7.1.4.3 Operation Phase

During the operation phase, the Project 's contribution to climate change would be due to the use of fossil fuel sourced combustion, the energy requirements of the wastewater treatment plant (WWTP). and the exhaust of WWTP reactors. However, not much of an emission is generally expected from chemical and biological treatment units, and the fossil fuel consumption shall be limited. Hence the impact magnitude may be evaluated as minor. The sensitivity of the nearby receptors which are employees, and the local stakeholders can be evaluated as medium. This gives a minor overall impact.

7.1.5 Soil Quality

7.1.5.1 Pre-Construction Phase

During the pre-construction phase of a Project, several minor impacts on the soil environment can occur due to the site preparation and earthwork.

- Disruption of natural soil and land structure due to site preparation and vegetation removal
- Mixing of soil layers.
- Soil contamination from potential leaks and fuel spills.

Since these foreseen impacts are confined within the Project area and shall be managed easily, the impact magnitude can be evaluated as minor, and the receptor sensitivity is medium resulting in minor overall impact significance.

7.1.5.2 Construction Phase

The environmental impacts that are foreseen during the construction period may include various disturbances and potential contamination risks. The natural soil and land structure are expected to be significantly disrupted due to excavation. The operation of heavy construction machinery further exacerbates this disruption. Additionally, filling can lead to the mixing of different soil layers, which can alter the soil's natural composition and properties.

There may be a considerable risk of soil contamination as well. Leaks and spills of fuels, paints, and oils from construction machinery and equipment can introduce harmful substances into the soil. Uncontrolled storage or disposal of solid waste also pose an impact on soil quality. This contamination risk shall be mitigated by proper handling and storage of these materials. However, the region, with its diverse soil profile, has been suitable for various agricultural activities, contributing to its productivity. No soil contamination has been detected in the operating areas or surrounding areas in the past.

Another concern is the improper replacement of soil to its original state after construction activities. If the soil is not correctly restored, it can lead to long-term negative effects on the soil structure and fertility of the soil. However, this issue shall be eliminated with the separate storage of top and sub-soil layers.

In accordance with the above indicated information, the anticipated environmental impact is minor. The overall importance of the impact is minor when combined with the medium receptor sensitivity.

7.1.5.3 Operation Phase

During the operation phase, the most expected impacts are due to spills and leakage from the chemical and biological treatment units. Additionally, the oil, chemical spillage, and improper

sludge management may pose an impact on soil quality. If relevant mitigation measures are not applied, the generated sludge from the WWTP may lead to environmental and health concerns regarding soil quality, as given below:

- Accumulation of toxic metals (e.g., lead, cadmium, mercury) can reduce soil fertility and pose risks to ecosystems and human health.
- Harmful bacteria, viruses, and parasites in untreated sludge may persist in soils, contaminating crops and water sources.
- Excess nitrogen and phosphorus can lead to soil degradation and water pollution through runoff.
- Persistent organic pollutants (POPs), pharmaceuticals, and other chemicals in sludge can accumulate in soils and enter the food chain.
- High salt content and improper application can degrade soil structure, reduce water infiltration, and hinder plant growth.

However, it should be noted that the wastewater effluent analysis demonstrates no significant heavy metal and pollution indications as shown in *Section 5.10. Wastewater Management*. Hence, the above concerns are not in high certainty to occur. Moreover, with the proper mitigations, these possibilities shall be eliminated.

Considering the facts discussed above and, the expected environmental impact is minor. Together with the medium receptor sensitivity, the overall impact significance becomes minor.

7.1.6 Air Quality and Odor

7.1.6.1 Pre-Construction Phase

During the pre-construction phase of the Project, topsoil stripping will be conducted as part of the land preparation process. The Table 7.1 below presents the uncontrolled and controlled dust emissions resulting from this process. For detailed calculations, please see Annex 12.8.

Table 7.1. Uncontrolled and Controlled Dust Emissions in Pre-Construction Phase

Sources	Emissions	
	Uncontrolled (kg/h)	Controlled (kg/h)
Dismantling/Excavation	0.0452	0.0226
Storage	0.024	0.012

The emission rates were determined using a worst-case scenario, assuming all vehicles operate in one location without any controls. The findings show that the calculated dust emission rates for both uncontrolled and controlled activities are well below the 1 kg/hour limit set by the Regulation on Industrial Air Pollution Control for non-stack sources.

In addition to dust emissions, heavy construction machinery will generate exhaust emissions. Key pollutants from vehicle exhaust gases include NO_x, CO, TOC, SO_x, and PM. The nature of these emissions is influenced by factors such as the vehicle's age, engine speed, operating temperature, ambient temperature, and pressure, as well as the type and quality of fuel used. Table 7.2 below presents information on both dust and gas emissions from vehicles.

Table 7.2. Emissions for 1 L Diesel Consumption

Pollutant	Emissions (g/h)	Project Standards (kg/h)
CO	0.7225	50
NO_x	3.4425	4
PM	0.255	1

SO_X	0.2125	6
TOC	0.255	3

Upon evaluation of the calculated values (Annex 12.8), it is evident that exhaust emissions from heavy construction machinery are also below the Project standards. Hence the impact magnitude may be evaluated as minor. The sensitivity of the nearby receptors which are employees, and the local stakeholders can be evaluated as medium. This gives a minor overall impact.

As mentioned in Section 5.7 Air Quality and Odor, the interviews conducted in the surrounding neighbourhoods, odour-related complaints during the summer months and due to flooding in heavy rainfall periods were stated by mukhtars. Hence, although the impact magnitude is anticipated to be minor, the sensitivity of the nearby receptors shall be evaluated as high. This gives a moderate overall impact.

7.1.6.2 Construction Phase

The excavation generated during the construction phase will be used as filling material while the excess excavation will be stored and disposed of as specified in the Regulation on the Control of Excavation Soil, Construction and Demolition Waste. The uncontrolled and controlled dust emissions resulting from the excavation process in construction activities are shown in Table 7.3 below. For detailed calculations, please see Annex 12.8.

Table 7.3. Air Quality Project Standard and Calculated Emission Values in Construction Phase

Sources	Emissions		Project Standard	Unit
	Uncontrolled	Controlled		
Dismantling/Excavation	0.15	0.08	1	kg/h
Loading	0.06	0.03		
Transportation	0.24	0.12		
Storage	0.002	0.0012		

The emission rates were determined using a worst-case scenario. The findings show that the calculated dust emission rates for both uncontrolled and controlled activities are well below the 1 kg/hour limit set by the Regulation on Industrial Air Pollution Control for non-stack sources.

In addition to dust emissions, heavy construction machinery will generate exhaust emissions. Key pollutants from vehicle exhaust gases include NO_x, CO, TOC, SO_x, and PM. The nature of these emissions is influenced by factors such as the vehicle's age, engine speed, operating temperature, ambient temperature, and pressure, as well as the type and quality of fuel used. Table 7.4 below presents information on both dust and gas emissions from vehicles.

Table 7.4. Emissions for 1 L Diesel Consumption

Pollutant	Emissions (g/h)	Project Standards (kg/h)
CO	1.8062	50
NO_X	8.6062	4
PM	0.6375	1
SO_X	0.5313	6
TOC	0.6375	3

Upon evaluation of the calculated values (Annex 12.8), it is evident that exhaust emissions from heavy construction machinery are also below the Project standards except for the NO_x emissions. However, since these emissions are calculated based on the worst-case scenario

where all construction vehicles are used simultaneously, it is not expected that such high emissions will be reached during the construction stage. Hence the impact magnitude may be evaluated as minor. The sensitivity of the nearby receptors which are employees, and the local stakeholders can be evaluated as medium. This gives a minor overall impact.

7.1.6.3 Operation Phase

During the operation phase of the facility, release of air emissions, such as ammonia, hydrogen sulfide, methane, and volatile organic compounds (VOCs), may arise from biological treatment processes, sludge handling, and storage units. These emissions can degrade local air quality and contribute to atmospheric pollution, posing potential health risks to workers and nearby communities. Additionally, the generation of odors from anaerobic decomposition of organic matter can create nuisance issues, impacting the quality of life for surrounding populations.

According to the Kayseri Mimarsinan Organized Industrial Zone: Capacity Increase of Existing Wastewater Treatment Plant Environmental & Social Screening Report, the Kayseri Mimarsinan OIZ hasn't received any odor-related complaints while the existing WWTP is in operation.

If odour generation will be observed during the future operation staff will check and revise operational conditions. In addition, anyone who has a complaint about odor will be able to use the Grievance Mechanism.

Based on the letter of conformity received from the Kayseri Provincial Directorate of Environment and Urbanization, numbered 62159566-150/E.8423 and dated 05.05.2021, it was determined that the Wastewater Treatment Plant was exempt from the environmental permit(s) on Air Quality Control (Annex 12.4). Therefore, air quality measurements will be carried out upon grievances. Hence the impact magnitude may be evaluated as minor. The sensitivity of the nearby receptors which are employees, and the local stakeholders can be evaluated as medium. This gives a minor overall impact.

As mentioned in Section 5.7 Air Quality and Odor, the interviews conducted in the surrounding neighbourhoods, odour-related complaints during the summer months and due to flooding in heavy rainfall periods were stated by mukhtars. Hence, although the impact magnitude is anticipated to be minor, the sensitivity of the nearby receptors shall be evaluated as high. This gives a moderate overall impact.

7.1.7 Noise

According to Regulation on Environmental Permit and Licences (Official Gazette No.29115, dated 10.09.2014) the WWTP area established in the regions where industries are collectively located are not subject to environmental permits related to the noise. Since the Mimarsinan, Tavlasun, and Başakpınar Neighborhoods are located approximately 2 km, 3.3 km, and 4.6 km from the Project area, it is expected that there will be no significant noise pollution resulting from Project activities.

According to the Regulation on Environmental Permits and License (Official Gazette No. 29115, dated 10.09.2014), wastewater treatment plants (WWTP) located in industrial zones are exempt from environmental permits related to noise. Given that the Mimarsinan, Tavlasun, and Başakpınar neighborhoods are situated approximately 2 km, 3.3 km, and 4.6 km from the Project area, it is anticipated that the Project activities will not cause significant noise pollution.

In addition, in the letter of conformity received from the Kayseri Provincial Directorate of Environment and Urbanization, numbered 62159566-150/E.8423 and dated 05.05.2021, it was determined that the Wastewater Treatment Plant was exempt from the environmental permit(s) on Noise Control (Annex 12.4). Moreover, the mukhtars in these neighbourhoods stated that no impact related to noise is anticipated during the construction.

7.1.7.1 Pre-Construction Phase

During the pre-construction phase, noise may be generated by vehicles and machinery used for land preparation activities. As the Project is located in an industrial area, there are no sensitive receptors, such as residential areas, health centres, schools, or mosques, in close proximity to the Project site. However, assuming that the equipment to be used during the pre-construction phase of the project will operate at the same time, the noise level has been calculated depending on their power (Annex 12.9). Based on the calculations, the decreasing trend of sound with distance is observed and given in Figure 7.1.

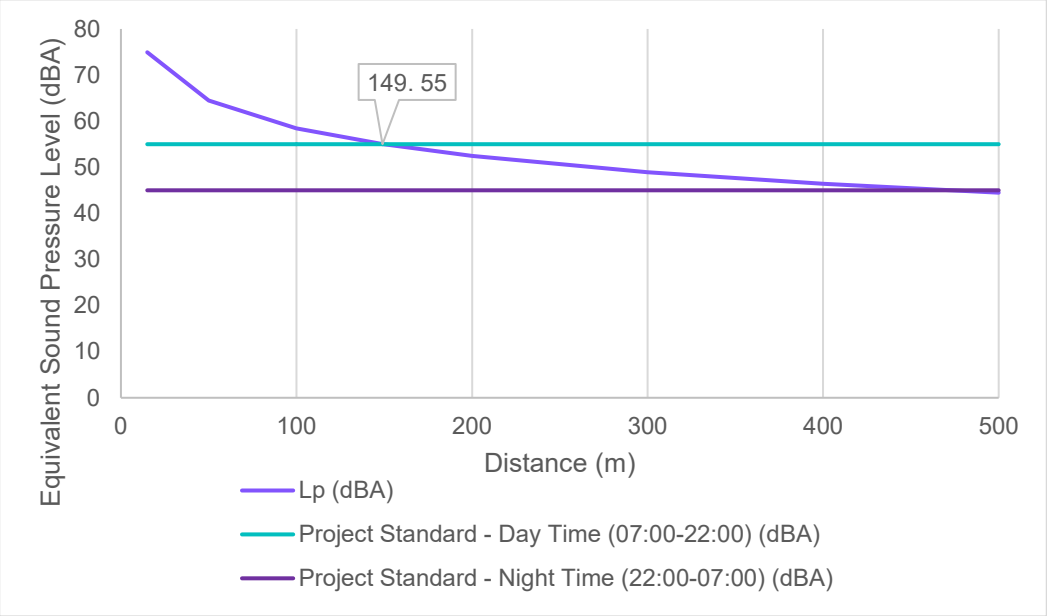


Figure 7.1. Distribution of Noise Depending on Distance for Pre-Construction Phase

Since the noise impacts includes the OIZ area and a 500-meter area of influence around it, 500 m is taken as the maximum distance for noise impact. The results show that the calculated noise levels are above the Project Standards up to a distance of approximately 150 m for both during the day and at night. It should be noted that there are no residential settlements within the 150 m of the OIZ. Beyond 150 m, the noise levels drop below the Project Standards during the day; however, they remain above the Project Standards at night.

Considering the closest settlement to the Project area is located 1.5 km away and no significant pre-construction activities are expected at night, the impact magnitude may be evaluated as minor. The sensitivity of the nearby receptors which are employees, and the local stakeholders can be evaluated as medium. This gives a minor overall impact.

7.1.7.2 Construction Phase

The construction phase of the Project involves various activities that are likely to generate noise, including the use of transportation vehicles, machinery, and outdoor equipment for site preparation and construction work. However, assuming that the equipment to be used during the pre-construction phase of the project will operate at the same time, the noise level has been calculated depending on their power (Annex 12.9). Based on the calculations, the decreasing trend of sound with distance is observed and given in Figure 7.2.

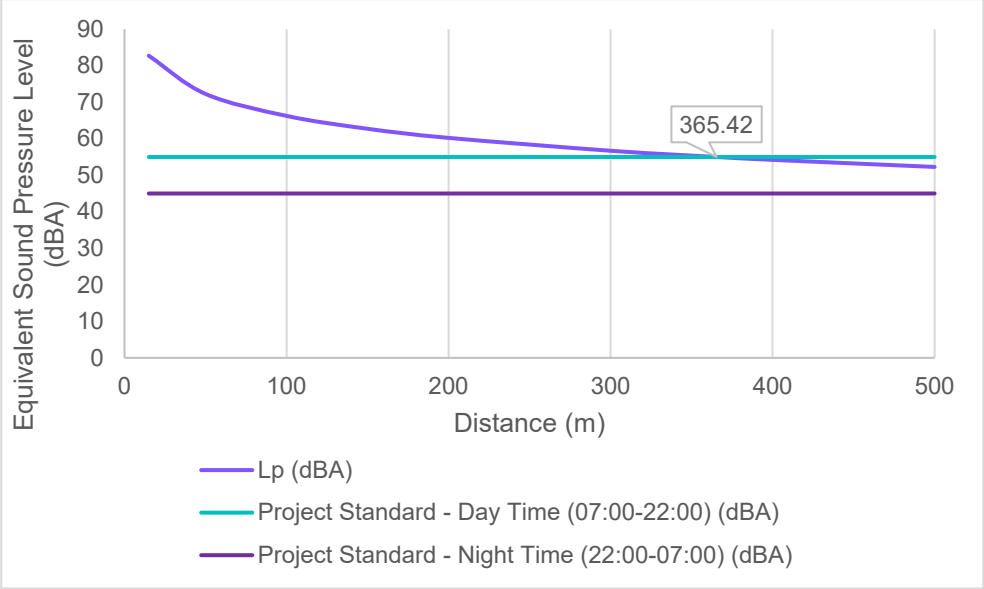


Figure 7.2. Distribution of Noise Depending on Distance for Construction Phase

Since the noise impacts includes the OIZ area and a 500-meter area of influence around it, 500 m is taken as the maximum distance for noise impact. The results show that the calculated noise levels are above the Project Standards up to a distance of approximately 365 m for both during the day and at night. It should be noted that there are no residential settlements within the 365 m of the OIZ. Beyond 365 m, the noise levels drop below the Project Standards during the day; however, they remain above the Project Standards at night

Considering the closest settlement to the Project area is located 1.5 km away and the Project is located in an industrial area where there are no sensitive receptors, such as residential areas, health centres, schools, or mosques, in close proximity, the impact magnitude may be evaluated as minor. As defined in Section 5.1 and illustrated in Figure 7.3, the closest receptors, including settlements, educational facilities, healthcare centers, and mosques, are located beyond the Area of Influence (AoI) of the Project. Therefore, noise impact on these receptors is not considered significant. The sensitivity of the nearby receptors which are employees, and the local stakeholders can be evaluated as medium. This gives a minor overall impact.

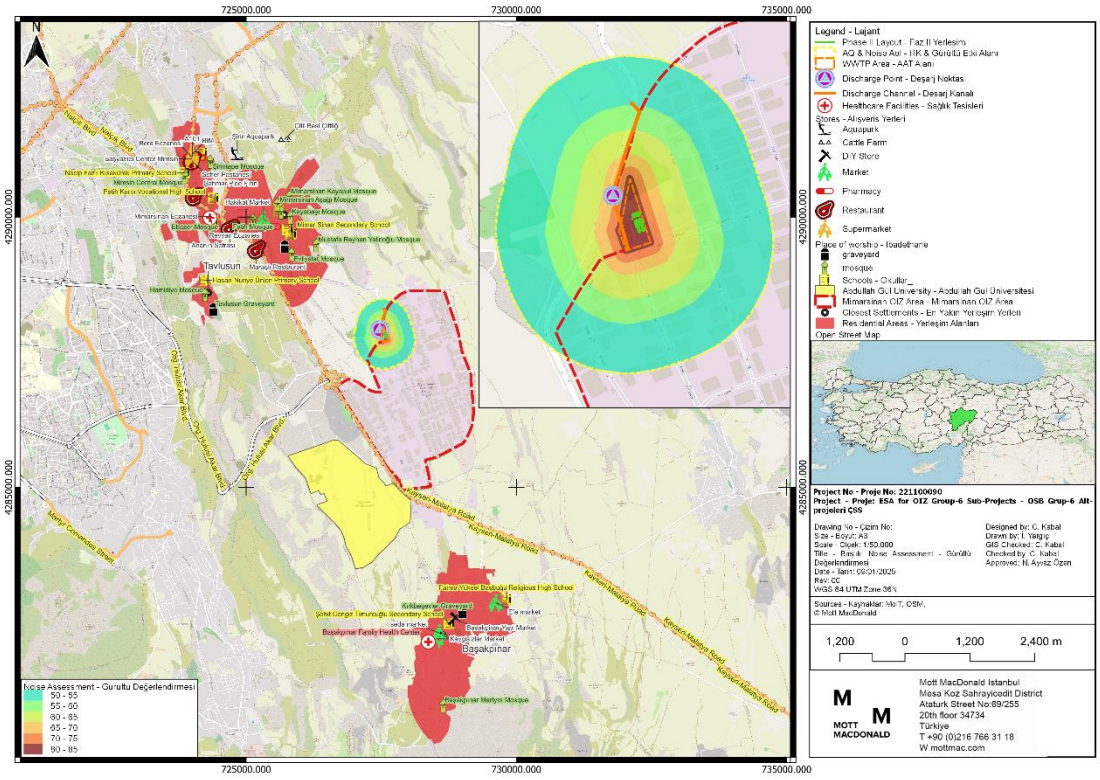


Figure 7.3. Area of Influence of Noise During the Pre-Construction and Construction Phases

7.1.7.3 Operation Phase

During the operation phase of the Project, noise will be generated by WWTP equipment, including engines, compressors, pumps, and blowers. The noise levels from this equipment are expected to remain constant, as all equipment will operate during plant hours. To minimize noise, the equipment will be housed in isolated, enclosed buildings, with some submerged in wastewater. As a result, no significant noise is anticipated during the operation of the WWTP. Additionally, since the Project is located in an industrial area, there are no sensitive receptors, such as residential areas, health centres, schools, or mosques, in close proximity to the Project site. Hence the impact magnitude may be evaluated as minor. The sensitivity of the nearby receptors which are employees, and the local stakeholders can be evaluated as medium. This gives a minor overall impact.

7.1.8 Water Resources and Use

7.1.8.1 Pre-Construction Phase

Water usage during the pre-construction phase of a wastewater treatment plant is essential for activities like dust suppression, soil compaction, and preparing construction materials. During the pre-construction phase of a wastewater treatment plant, no significant impacts is anticipated. By implementing efficient water management practices, such as recycling and reusing water, preventing runoff and contamination, minimizes any potential environmental impacts.

Hence, although the receptor sensitivity shall be evaluated as medium, the impact magnitude is expected to be minor resulting in minor overall impact significance.

7.1.8.2 Construction Phase

During the construction phase of a wastewater treatment plant, several potential effects on water usage and the environment should be considered.

Construction activities such as concrete mixing, dust suppression, and equipment cleaning can lead to a higher demand for water. Moreover, the increasing temporary employment will increase the water consumption.

According to 2022 TurkStat data[38] average daily per capita amount of water withdrawn to drinking and potable water network by municipalities is 0.226 m^3 /day. Hence,

$$Water\ consumption = number\ of\ employees\ x\ daily\ consumption\ rate\ per\ capita$$

$$Water\ Consumption = 50\ x\ 0.226\frac{m^3}{day}$$

$$Water\ Consumption = 11.3\frac{m^3}{day}$$

As mentioned in *Section 5.9 Water Resources*, average water consumption of municipal water is 2109 m^3/day for all establishments within the OIZ area. Hence, when the additional water consumption by employment is compared, the impact is anticipated to be low.

- Construction sites can generate runoff that carries sediments and pollutants into nearby water bodies. The Söğüt Stream which treated effluent wastewater is being discharged is located 500 m away from the Project area[39]. This can lead to sedimentation, which can affect water quality and aquatic habitats. However, it should be noted that Water used for dust suppression will be absorbed by soil or lost by evaporation, preventing surface runoff formation or wastewater generation. Hence, an adverse impact is not anticipated.
- There is a potential for water contamination from spills or leaks of fuels, oils, and other chemicals used during construction. These contaminants can enter water bodies through runoff, posing risks to both the environment and public health. Proper management of storage and handling of construction materials, fuels, lubricants, and chemicals is crucial to prevent spills and leaks, ultimately reaching groundwater.

The receptor sensitivity shall be considered as high given that the Söğüt stream is a nearby water that might be affected by the nature of the construction activities. However, the impact magnitude is expected to be minor with the proper mitigation and measurement, resulting in moderate overall impact significance.

7.1.8.3 Operation Phase

During the operation phase of a wastewater treatment plant, water usage and its potential effects on the environment need careful consideration. Here are some key points to be aware of:

- The plant will require water for various operational processes, including cleaning, cooling, and chemical preparation. While this usage is necessary, it is important to manage it efficiently to avoid excessive demand on local water resources.

[38] TÜİK Kurumsal- biruni.tuik.gov.tr/medas/?kn=120&locale=tr

[39] io Environmental Solutions Research & Development Company, AQWADEM, and PROJETAS (2023). Kayseri Mimarsinan Industrial Zone: Capacity Increase of Existing Wastewater Treatment Plant Environmental & Social Screening Report. Republic of Türkiye Ministry of Industry and Technology, 47.

- Treated wastewater will be discharged from the plant. It is crucial to ensure that this effluent meets regulatory standards to prevent contamination of local water bodies. Continuous monitoring and proper treatment processes are essential to maintain water quality.
- Chemicals used in the treatment process, such as coagulants and disinfectants, can pose risks if not handled properly. Proper storage, handling, and disposal of these chemicals are necessary to prevent accidental spills and contamination.
- The treatment process generates sludge, which needs to be managed and disposed of appropriately. Improper handling of sludge can lead to soil and water contamination.
- The operation of the plant requires energy, which indirectly affects water resources through the water-energy nexus. Efficient energy use and the adoption of renewable energy sources can help mitigate this impact.
- Regular maintenance of the plant involves cleaning and servicing equipment, which can generate wastewater and require water usage. Proper management of these activities is essential to minimize environmental impacts.

However, as mentioned in *Section 7.1.5 Soil Quality*, the effluent wastewater does not contain a contaminant nor high heavy metal trace. Hence, the contamination for nearby water bodies and groundwater is not anticipated. Given that the Söğüt stream is a nearby body of water that could be impacted by the nature of the building operations, the receptor sensitivity will be regarded as high. However, with appropriate mitigation and measurement provided in this ESMP and additional management plans, the impact size will be minor, leading to a moderate overall impact significance.

7.1.9 Wastewater Management

7.1.9.1 Pre-Construction Phase

During Pre-Construction phase of the Project, the expected activities do not require additional employment. Hence, no impact is foreseen in this stage of the Project.

7.1.9.2 Construction Phase

During the construction period, the number of workers for the activities will be around 50, creating a domestic wastewater source that might have an impact. This type of wastewater will come from places like eating areas and restrooms where staff needs are satisfied. They will use the restrooms, showers, and other amenities at the current WWTP, where the generated wastewater will be treated by the existing WWTP.

According to 2022 TurkStat data[40], average daily per capita amount of wastewater discharged through sewerage network by municipalities is 0.157 m^3 /day. Hence,

$$WWto\ be\ generated = number\ of\ employees\ x\ daily\ cwastewater\ generation\ rate$$

$$WWto\ be\ generated = 50\ x\ 0.157\frac{m^3}{day}$$

$$WWto\ be\ generated = 7.85\frac{m^3}{day}$$

Considering the fact that daily average inflow of the existent WWTP is 1,833 m^3 /day, the impact of the wastewater generated by additional 50 workers becomes negligible. Moreover, although the effluent of the WWTP shall be discharged to the Söğüt Stream, as shown in Table 5.8, the effluent parameters demonstrate no exceedance of the WPCR Table 19 and Table 22 limit

[40] TÜİK Kurumsal- biruni.tuik.gov.tr/medas/?kn=120&locale=tr

values. Hence, although the receptor sensitivity shall be evaluated as medium, the impact magnitude is expected to be minor resulting in minor overall impact significance.

7.1.9.3 Operation Phase

During the operation phase of the plant, there will be domestic wastewater generated by employees. This type of wastewater will come from places like eating areas and restrooms where staff needs are satisfied. They will use the restrooms, showers, and other amenities at the current WWTP, where the generated wastewater will be treated by the existing WWTP.

Similarly, the increase in number of permanent employees will not be affecting the increase in flow nor the influent characteristics in a considerable manner. Hence, although the receptor sensitivity shall be evaluated as medium, the impact magnitude is expected to be minor resulting in minor overall impact significance.

7.1.10 Waste Management

Throughout the pre-construction, construction, and operational stage of the Project, various types of waste are anticipated to be produced. Proper waste management, in line with national legislation and international best practices, is crucial to prevent adverse effects on soil, surrounding water resources, and local ecosystems.

Waste generated during the Project activities will be managed following the waste management hierarchy outlined in Figure 7.4. In cases where waste generation is unavoidable, it is essential to reuse, recycle and recover secondary raw materials, use them as an energy source or dispose of them in a hierarchical order. All Project stages will comply with the national legislation and waste management requirements outlined in ESS1 and ESS3.

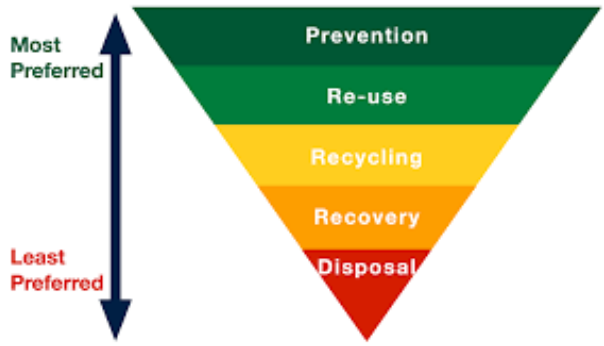


Figure 7.4. Waste Hierarchy

7.1.10.1 Pre-Construction Phase

Activities including planning, site preparation, and the delivery of first materials are usually associated with waste generation during the pre-construction stage. During this stage wastes anticipated to be produced can be given as:

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

According to the Kayseri Mimarsinan Organized Industrial Zone: Capacity Increase of Existing Wastewater Treatment Plant Environmental & Social Screening Report, topsoil stripping will be carried out from an area of approximately 2,715 m^2 at a depth of 0.3 m. In this context, total of 814.5 m^3 of topsoil will be stripped from the Project area prior to the construction activities. Some of the topsoil obtained will be used for landscaping purposes after construction, and some of it will be used in areas that will be needed in the Kayseri Mimarsinan OIZ.

No waste oil will be expected to be generated during the pre-construction stage of the Project since the oil changes of the construction machinery will be performed at licensed companies specializing in machinery maintenance.

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 be avoided, as tire replacements for pre-construction machinery and other vehicles used during this stage will be performed at local facilities designated for this purpose.

No substantial medical waste is expected to be generated on-site as part of the Project, since there is no infirmary at the Project location. Any medical interventions required during activities will be handled at hospitals or health centers in the Melikgazi District.

The average daily municipal waste per person in Kayseri is taken as 0.98 kg according to the municipal waste statistics of TurkStat (TurkStat, 2022). It is estimated that 50 people will be employed during the construction activities of the Project. Accordingly, the estimated amount of total municipal waste to be generated during theconstruction stage is given below. This amount also includes wastes such as paper, cardboard, glass, metal, plastic, and other recyclables, along with biodegradable waste.

$$50\ people\ x\ 0.98 \frac{kg}{person\ x\ day} = 49.0 \frac{kg}{day}$$

It was reported that domestic solid waste will be collected in temporary containers from the Kayseri Mimarsinan OIZ and transported to the provincial sanitary landfill for disposal. Hence, although the receptor sensitivity shall be evaluated as medium, the impact magnitude is expected to be minor resulting in minor overall impact significance.

Types of waste that can be generated in pre-construction stage and relevant disposal methods to be applied is given in Table 7.5.

Table 7.5. List of Possible Waste Types to be Generated during Pre-Construction Stage

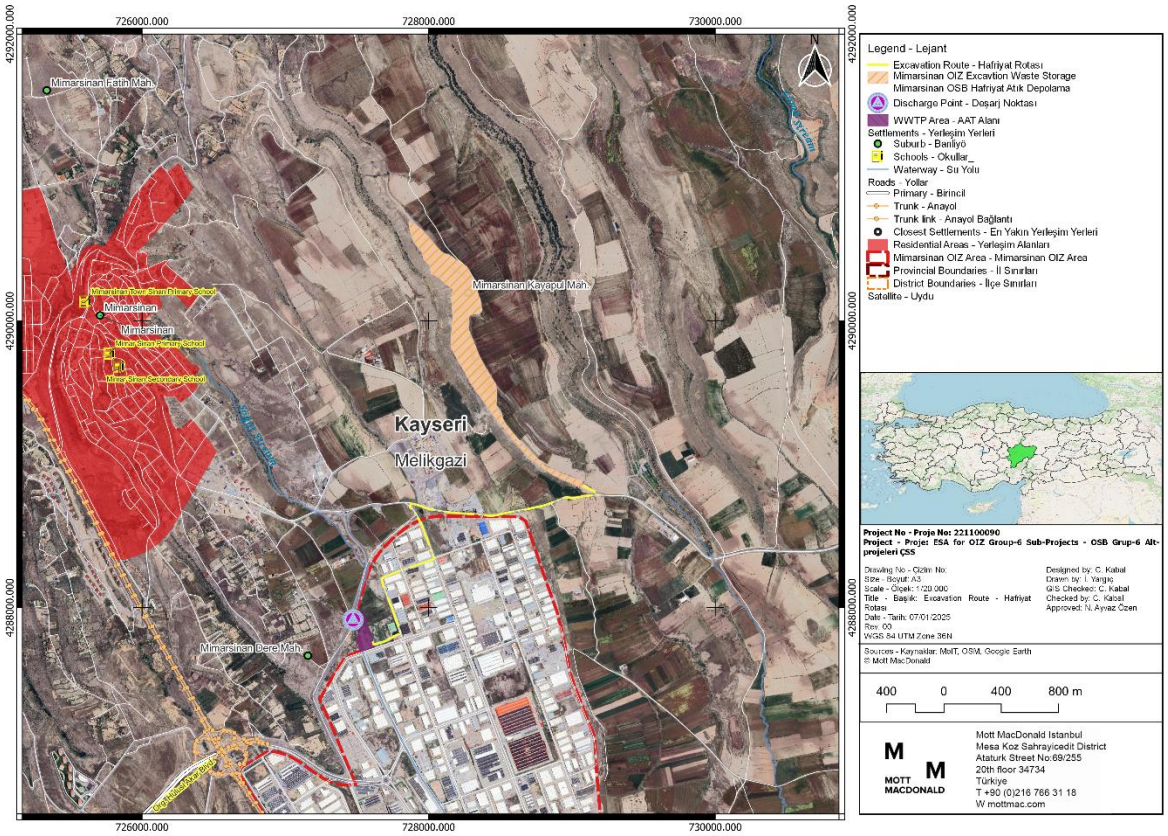
Waste Code	Waste Code Definition	Disposal Method
15 01	Packaging Waste (Including Packaging Waste Separately Collected by the Municipality)	Municipal Sanitary Landfill
15 02	Absorbents, Filter Materials, Cleaning Cloths and Protective Clothing	Municipal Sanitary Landfill
17 01	Concrete, Brick, Tile and Ceramic	Municipal Excavation Waste Storage Area
17 02	Wood, Glass and Plastic	Municipal Sanitary Landfill
17 04	Metals (Including Alloys)	Municipal Sanitary Landfill
17 05	Soil (Including Excavations from Contaminated Sites), Stones and Dredging Sludge	Municipal Excavation Waste Storage Area

17 09	Other Construction and Demolition Waste	Municipal Excavation Waste Storage Area
20 01	Separately Collected Fractions (Except 15 01)	Municipal Sanitary Landfill
20 03	Other Municipal Waste	Municipal Sanitary Landfill

7.1.10.2 Construction Phase

According to the Kayseri Mimarsinan Organized Industrial Zone: Capacity Increase of Existing Wastewater Treatment Plant Environmental & Social Screening Report, during the construction stage, the volume of waste generated by excavation activities is predicted to be the biggest in terms of tonnage. Accordingly, 9,000 m^3 of excavation soil is expected to be obtained after excavation in an area of 3,000 m^2 with a 3 m foundation. A portion of this excavation material will be used for backfilling. The excavation that is unsuitable for reuse will be stored in designated areas within the administrative boundaries of Kayseri Metropolitan Municipality in accordance with the provisions of the Regulation on the Control of Excavation Soil, Construction, and Demolition Wastes.

There are two excavated soil disposal area in Melikgazi district and one excavated soil disposal area in Kocasinan district within Kayseri Province[41]. The closest excavated soil disposal area is located at 3 km to the Project area in Melikgazi district which is located near the Kayseri Mimarsinan OIZ. The designated excavation area and the excavation route are shown in Figure 7.5.



[41] Kayseri Metropolitan Municipality Department of Environmental Protection and Control - Excavation Soil and Construction Demolition Waste Management Report,

Figure 7.5. Mimarsinan OIZ Excavation Waste Storage Area Location and Excavation Route

During the construction stage, there will be domestic solid wastes that will arise from the activities of the workers. It is estimated that 50 people will be employed during the construction activities of the Project. The total domestic solid waste generated from the construction activities is 49.0 kg/day following the same approach used during the pre-construction phase. This amount also includes wastes such as paper, cardboard, glass, metal, plastic, and other recyclables, along with biodegradable waste. Domestic solid waste will be collected in temporary waste containers from the Kayseri Mimarsinan OIZ and will be disposed of in the sanitary landfill of the province. The Kayseri Sanitary Landfill and the route from the Kayseri Mimarsinan OIZ are shown in Figure 7.6.

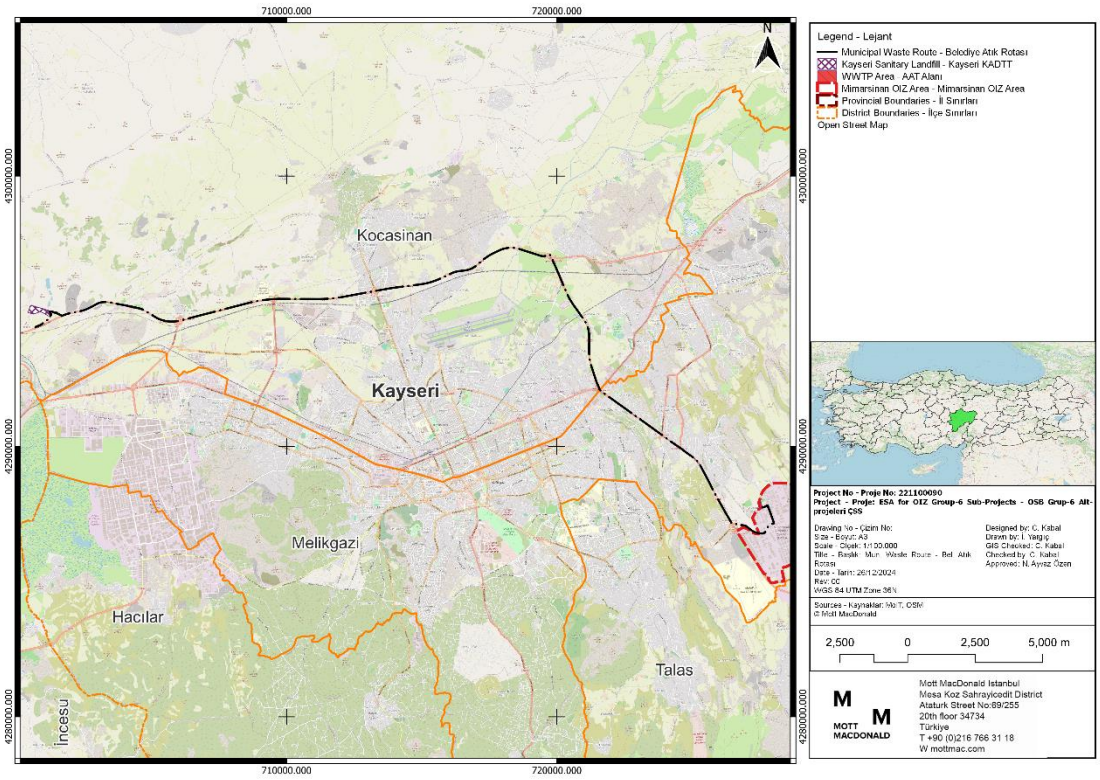


Figure 7.6. Kayseri Sanitary Landfill Location and Municipal Waste Route

Furthermore, iron, steel, concrete, and other type of waste materials including isolation materials are expected to be formed during the construction stage. All generated hazardous and non-hazardous waste will be collected separately and stored in the temporary waste storage area within the Kayseri Mimarsinan OIZ and will be sent to companies with environmental licenses within the scope of the Regulation on Environmental Permit and License.

- 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 be avoided, as tire replacements for construction machinery and other vehicles used during this stage will be performed at local facilities designated for this purpose.
- No substantial medical waste is expected to be generated on-site as part of the Project, since there is no infirmary at the Project location. Any medical interventions required during activities will be handled at hospitals or health centers in the Melikgazi District.

No waste oil will be expected to be generated during the construction stage of the Project since the oil changes of the construction machinery will be performed at licensed service centers specializing in machinery maintenance.

The impact magnitude of the waste management in construction stage can be evaluated as minor. The sensitivity of the nearby receptors which are employees, and the local stakeholders can be evaluated as medium. Therefore, the overall impact can be categorized as minor.

Types of waste that can be generated in construction stage and relevant disposal methods to be applied is given in Table 7.6.

Table 7.6. List of Possible Waste Types to be Generated during Construction Stage

Waste Code	Waste Code Definition	Disposal Method
13 02	Waste Engine, Transmission and Lubrication Oils	Municipal Sanitary Landfill
15 01	Packaging Waste (Including Packaging Waste Separately Collected by the Municipality)	Municipal Sanitary Landfill
15 02	Absorbents, Filter Materials, Cleaning Cloths and Protective Clothing	Municipal Sanitary Landfill
17 01	Concrete, Brick, Tile and Ceramic	Municipal Excavation Waste Storage Area
17 02	Wood, Glass and Plastic	Municipal Sanitary Landfill
17 04	Metals (Including Alloys)	Municipal Sanitary Landfill
17 05	Soil (Including Excavations from Contaminated Sites), Stones and Dredging Sludge	Municipal Excavation Waste Storage Area
17 09	Other Construction and Demolition Waste	Municipal Excavation Waste Storage Area
20 01	Separately Collected Fractions (Except 15 01)	Municipal Sanitary Landfill
20 03	Other Municipal Waste	Municipal Sanitary Landfill

7.1.10.3 Operation Phase

Sludge and screenings will be the main waste generated during the Project's operation period. According to the Kayseri Mimarsinan Organized Industrial Zone: Capacity Increase of Existing Wastewater Treatment Plant Environmental & Social Screening Report, the facility does not have a sludge storage area. According to the information provided by Mimarsinan OIZ, the sludge from the decanter outlet is loaded into a sealed truck and temporarily stored in this way. Once the truck is full, it is taken to the disposal company. The collected sludge is sent to the disposal company 2 times a week that Kayseri Mimarsinan OIZ has a contractual arrangement with. Therefore, the dewatered excess sludge will be delivered regularly to licensed disposal facility KRC Waste Management and Logistics Services. The sludge dewatering unit will enhance the solid content of the generated sludge. The water extracted from the sludge cake will be redirected to the inlet of the existing WWTP. It is expected that the sludge comes out of the decanter unit at 25% dryness. Approximately 2.68 m^3 of waste sludge is expected to be generated daily (Please See Annex 12.10).

In the operation stage of the facility, 3 more people will be employed on top of the existing 8 people. Therefore, total municipal waste generation will be 10.78 kg/day, following the same approach used during the pre-construction and construction stages. This amount also includes wastes such as paper, cardboard, glass, metal, plastic, and other recyclables, along with

biodegradable waste. Domestic solid waste will be collected in temporary waste containers from the Kayseri Mimarsinan OIZ and will be disposed of in the sanitary landfill of the province.

Waste will also be generated from damaged, malfunctioning, or end-of-life equipment and materials, which may be replaced or repaired during scheduled maintenance or in the event of a breakdown. Additionally, the procurement of new equipment and parts will generate packaging waste. Furthermore, personal protective equipment, clothing, and rags used during maintenance and repair activities may contribute to a small amount of waste.

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 be avoided, as tire replacements for operation machinery and other vehicles used during this stage will be performed at local facilities designated for this purpose.

No substantial medical waste is expected to be generated on-site as part of the Project, since there is no infirmary at the Project location. Any medical interventions required during activities will be handled at hospitals or health centers in the Melikgazi District.

However, there will be limited amount of waste oil generation due to the oil change requirement of the facility equipment such as blowers. All waste generated within the facility will be collected in the temporary waste storage area and will be transferred to licensed recovery or disposal facilities of Municipality.

The impact magnitude of the waste management in operation stage can be evaluated as minor. The sensitivity of the nearby receptors which are employees, and the local stakeholders can be evaluated as medium. Therefore, the overall impact can be categorized as minor.

Types of waste that can be generated in operation stage and relevant disposal methods to be applied is given in Table 7.7.

Table 7.7. List of Possible Waste Types to be Generated during Operation Stage

Waste Code	Waste Code Definition	Disposal Method
13 02	Waste Engine, Transmission and Lubrication Oils	Municipal Sanitary Landfill
13 03	Waste Insulation and Heat Conduction Oils	Municipal Sanitary Landfill
15 01	Packaging Waste (Including Packaging Waste Separately Collected by the Municipality)	Municipal Sanitary Landfill
15 02	Absorbents, Filter Materials, Cleaning Cloths and Protective Clothing	Municipal Sanitary Landfill
16 02	Electrical and Electronic Equipment Waste	Municipal Excavation Waste Storage Area
16 06	Batteries and Accumulators	Municipal Sanitary Landfill
19 08	Wastewater Treatment Plant Waste Not Described otherwise	Licenced Waste Disposal Company
20 01	Separately Collected Fractions (Except 15 01)	Municipal Sanitary Landfill
20 03	Other Municipal Waste	Municipal Sanitary Landfill

7.1.11 Natural Disaster Potential

7.1.11.1 Pre-Construction Phase

Earthquake and Seismicity

Kayseri, especially Melikgazi, is affected by active faults like the Ecemiş and Erciyes Faults. The Project meets all regulations, ensuring safety and resilience against seismic activity, so it won't significantly impact or be impacted by the region's natural disaster potential.

ESA studies show the Project 's peak ground acceleration (PGA) values range from 280 to 532, placing it in the medium to high hazard group. The Project area's PGA value is 0.185, classifying it as a 4th Degree Earthquake Zone. Thus, the significance of the impact is considered as minor.

Flood Risk

Considering the flood risk in the region, failure to effectively engage with local authorities and communities can lead to a lack of awareness and preparedness for potential flood risks. Poor drainage measures to be taken during the site preparation can result in adverse impacts. Considering the probability of the impact the magnitude was identified as moderate. Thus, this results in impact with moderate level significance.

7.1.11.2 Construction Phase

Earthquake and Seismicity

As described before, significance of the earthquake and seismicity impact was described as minor.

Flood Risk

In the construction phase, key risks and impacts related to flood potential include increased soil erosion and sedimentation in nearby waterways due to construction activities (Söğüt Stream). This can lead to potential flooding and water quality issues. Improper storage and handling of construction materials and waste can contaminate water resources, exacerbating flood risks. Inadequate monitoring of weather conditions can result in unpreparedness for sudden flood events, causing delays and damage to construction activities. Furthermore, the lack of emergency response plan can lead to ineffective management of flood events, increasing the risk of damage and safety hazards. With this regard, the significance was identified as moderate.

7.1.11.3 Operation Phase

Earthquake and Seismicity

As described before, significance of the earthquake and seismicity impact was described as minor.

Flood Risk

During the operation phase, the main risks and impacts related to flood potential include poor maintenance of the wastewater treatment plant (WWTP) and associated infrastructure, which can lead to malfunctions and leaks, increasing flood risks. Inefficient operation of the WWTP can result in inadequate treatment of wastewater, contributing to decreased water quality issues. Nevertheless, as the objective of the Project is to increase the actual capacity of the WWTP the effluent quality is expected to increase thus minor-magnitude-impact is foreseen. Thus, the impact significance is minor.

7.1.12 Biodiversity and Protected Areas

There are no protected areas declared by the Ministry of Agriculture and Forestry (General Directorate of Nature Conservation and National Parks) as national parks, wetlands, natural monuments, national conservation areas, and wildlife improvement areas in the Project area.

According to the Regulation on Identification of Sensitive Water Bodies and the Areas Affecting these Bodies and Improvement of Water Quality (Official Gazette No.29927 Date 23.12.2016), the region that includes the OIZ is defined as Nitrate Sensitive Area or Region and Urban Sensitive Area by the Regulation. Once a year, the Ministry of Agriculture and Forestry receives the results of monitoring studies conducted in sensitive water bodies. The Ministry of Agriculture and Forestry evaluates the monitoring results, reviews the status of sensitive water bodies every four years, and notifies the relevant Ministries of the evaluation results and additional measures to be taken. Activities that degrade the current state of aquatic environments considered within the scope of this Regulation are inspected by relevant institutions and organizations within the framework of applicable legislation, and sanctions are imposed when necessary.

Since the closest Protected Area around the Project area is not in the borders of the Influence area of the Project area (more than 5 km), it is anticipated that there will be no significant impact on the sensitive receptors given in Table 5.1, both during the construction and operation phases.

The existing vegetation of the Project area is landscaping grass and there are no trees or potentially sensitive vegetation to be cut/relocated. Therefore, no adverse environmental impact is expected in the sub-project area.

The Project area is situated within the boundaries of the Mimarsinan OIZ an area that has been subjected to various human-induced alterations, primarily stemming from extensive industrial activities. Consequently, the region has undergone significant anthropogenic transformation, resulting in the complete loss of its natural or semi-natural habitat characteristics. As a result, the area can now be classified as an entirely anthropogenic environment. It is important to note that there are no adjacent regions with natural habitat status near the Project area; instead, the surrounding landscape is dominated by agricultural and industrial zones.

The habitat observed within the Project area, classified as J2.3, is a modified habitat. This habitat type has undergone significant alterations due to the ongoing industrial and commercial activities in the area, leading to a considerable departure from its natural or semi-natural state. These anthropogenic influences have transformed the landscape, with the original ecological characteristics of the habitat being substantially altered to accommodate human development and industrial use.

The terrestrial fauna and flora species identified within the Project area, as well as those documented through the literature review, do not fall under the categories of threatened or protected species. According to the IUCN, the Threatened categories include Vulnerable (VU), Endangered (EN), and Critically Endangered (CR). Toros Göknar, classified as Near Threatened (NT), is not considered Threatened. Rather, the species present in the area are predominantly widespread, with extensive distributions across the region. These species are considered to have stable populations and are not currently facing significant risks or pressures that would warrant special conservation efforts. As such, the species within the Project area are categorized as common and not subject to immediate conservation concerns.

The fish species identified within the Project area and its immediate vicinity have been determined based on literature data, but their presence in the area has not been verified through field observations. Fish species classified as Critically Endangered (CR) and Endangered (EN) by the IUCN Red List are highly vulnerable and sensitive to environmental changes. However, the wastewater to be discharged from the treatment plant will comply with all legal and environmental standards, ensuring that it does not contain harmful substances. As

such, the treated effluent is not expected to significantly impact the surrounding aquatic environment or the habitats of these sensitive species, thanks to adherence to regulatory requirements and best practices in wastewater treatment.

it is important to note that the wastewater to be discharged from the treatment plant is designed to comply with all applicable legal standards and environmental regulations. The discharge will meet strict criteria regarding its chemical composition, ensuring that it does not contain harmful substances that could negatively affect the surrounding ecosystem. As a result, the treated effluent is not expected to have any major detrimental impact on the receiving aquatic environment or the freshwater habitats that support local biodiversity, including these sensitive fish species. The careful adherence to regulatory requirements and the implementation of best practices in wastewater treatment will significantly reduce the potential for any adverse effects on the ecological health of the area.

7.1.13 Pesticide Use and Management

Pesticides may be required for vegetation management, pest control, or maintaining sanitation around the Project site. However, even in non-agricultural settings like an organized industrial zone, pesticide use during the pre-construction, construction, and operation phases of a Project can pose significant environmental risks and impacts. These risks primarily stem from the potential contamination of soil and water resources, harm to non-target organisms, and long-term ecological disruptions. Therefore, their use must be carefully managed to prevent adverse environmental and social impacts.

In this context, the WB places a high value on the use and control of pesticides in Projects in compliance with ESS3. The Borrower will make sure that all pesticides are produced, formulated, packed, labelled, handled, stored, disposed of, and used in accordance with the WB General EHS Guidelines and applicable international standards and codes of conduct in accordance with the WB ESF.

7.1.13.1 Pre-Construction Phase

There will be no use of pesticides during the pre-construction phase. Vegetation control or site preparation will rely solely on non-chemical methods to eliminate any potential environmental risks associated with pesticide application. Therefore, the impact magnitude may be evaluated as minor. As a result, the magnitude of the impact can be assessed as minor. The sensitivity of nearby receptors, including employees and local stakeholders, can be considered negligible. This leads to an overall negligible impact.

7.1.13.2 Construction Phase

There will be no use of pesticides during the construction phase. Pest management for worker camps or storage areas if any will be addressed using alternative, non-chemical methods to ensure the safety of the environment and nearby communities. As a result, the magnitude of the impact can be assessed as minor. The sensitivity of nearby receptors, including employees and local stakeholders, can be considered negligible. This leads to an overall negligible impact.

7.1.13.3 Operation Phase

There will be no use of pesticides during the operation phase. Landscaping and pest control will be maintained without the use of pesticides and non-chemical methods will be employed to uphold environmental sustainability and prevent any long-term ecological impacts associated with chemical pesticide use. As a result, the magnitude of the impact can be assessed as minor. The sensitivity of nearby receptors, including employees and local stakeholders, can be considered negligible. This leads to an overall negligible impact.

7.2 Social Impacts of the Project

The field study was conducted on 26 December 2024 as part of the ESMP, with the aim of identifying the social and environmental risks and impacts. Site visit was carried out in Mimarsinan OIZ, with the participation of the OIZ authorities. In this section, all anticipated social risks or impacts resulting from the pre-construction, construction, and operation of the Project activities are assessed within considering the Project's AoI that is presented in Figure 7.7.

The assessment of social risks associated with the Project are considered "minor" since land acquisition or resettlement will not be required, and no land acquisition has occurred in the past five years. Also, there will be no major influx of labour, and the livelihoods of households, including vulnerable groups will remain unaffected. Additionally, the Project will not impact cultural heritage. Overall, the anticipated impacts will be limited, or the impacts are not directly related with the Mimarsinan OIZ.

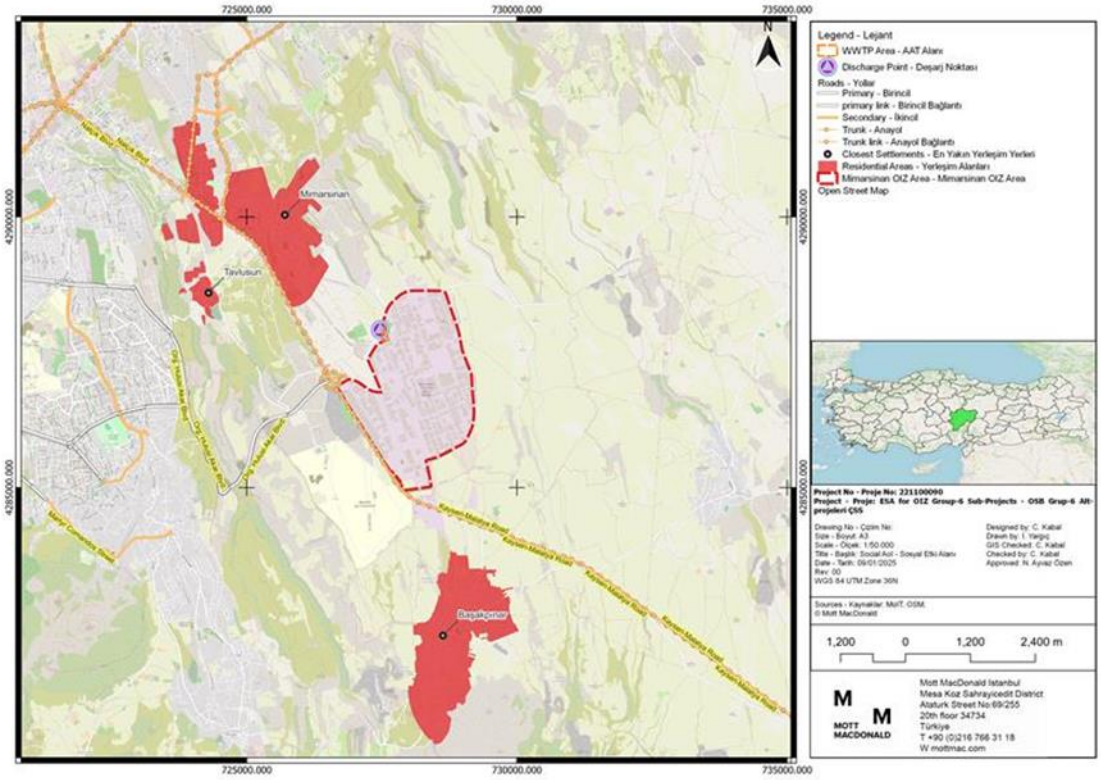


Figure 7.7. The Project's Social AoI

7.2.1 Population/Demography

The closest settlement, Mimarsinan Neighbourhood, is about 2 kilometres away from the WWTP area. Therefore, the construction activities will not cause any major disruption or inconvenience to the community living in the surrounding areas. No influx of labour is expected as a result of construction. Construction activities will not require additional labour from outside the local area.

7.2.1.1 Construction Phase

According to the Project s timetable (see Table 2.2), the planned pre-construction preparation of the Project is planned to last four months and the construction phase is planned to last nine months.

It is foreseen that the Project will create temporary employment. Approximately 50 personnel will be employed during the construction phase. Project employees do not require accommodation, and the transportation facilities to reach the OIZ are sufficient. These will be organised by the contractor. The limited number of workers is not expected to have any impact on the population and demography of the settlements.

7.2.1.2 Operation Phase

It is planned to employ approximately five or six personnel during the operation phase of the Project. As a result, there is no impact of excessive influx of labour.

7.2.2 Cultural Heritage

The activities to be conducted during all Project phases may cause direct potential impacts on the cultural heritage receptors, if not properly managed. The key Project activities that may result in impact (direct or indirect) upon cultural heritage receptors, during Project stages are summarised in Table 7.8.

Table 7.8. Sources of Impacts and Impact Types on Cultural Heritage Receptors during All Project Phases

Phase	Description of Activity	Impact Type
Pre-Construction Phase	Area selection (selection of camp sites, storage and access road etc.) Removal of vegetation Installation of fencing Traffic movements (vehicles and staff)	Physical Impact Visual Impact Impact on Conservation-Use Balance
Construction Phase	Topsoil stripping Excavation and Filling Construction traffic movement Siting of construction sites and other Project/ associated facilities Piling Landscaping/ earth-mounding Waste disposal including excess excavated materials Structures, installation features (fencing, cables etc.) Presence of workforce Leaks and spills Establishment of temporary stockpile areas. Development of access roads. Parking and maintenance areas for construction vehicle	
Operation Phase	No impact is expected after the Mitigation Measures are taken.	

In addition to direct impacts, damage due to looting and interference may occur. Sites may suffer inadvertent damage or interference.

The mitigation measures required to reduce the potential impacts which were mentioned above are described in *Section 8.2.*

It is possible to encounter new cultural assets during the construction activities to be carried out at the Project area which will require intervention in the soil. Therefore, during the construction phase of the Project, it is necessary to complete the elements for training and to implement the Chance Find Procedure in case of encountering any tangible cultural heritage assets during the construction work (see Annex 12.13).

Regardless of its degree of importance, in case of encountering any cultural heritage; Project activities in the finding area shall be stopped immediately. For tangible cultural heritage, Kayseri relevant Museum Directorate, for intangible cultural heritage, relevant Kayseri Provincial Directorates of Culture and Tourism should be notified within 3 days in line with the legislation. The procedure given in Annex 12.13 “Chance Find Procedure (CFP)” that must be followed in case of encountering a chance find is based on national legislation and provisions of international standards and best practices.

Following the completion of investigation of the Kayseri Museum Directorate, the necessary arrangements, such as the identification of the boundaries of the cultural heritage asset/site (finding), its protection by taking necessary measures, notification of workers in order to prevent any physical intervention, will be implemented.

In addition, the Chance Find Procedure, which is prepared to eliminate, minimize and prevent the effects of the Project construction phase on cultural heritage assets, will be known and implemented by all parties involved in the Project.

7.2.3 Economy/Employment

Although limited, the impact on the economy and employment is expected during the construction and operation phases of the Project.

7.2.3.1 Construction Phase

The Project does not involve any access restriction, economic or physical displacement of any households. Therefore, no loss of employment/business is expected as a result of the Project. In fact, the Project has the potential to create employment opportunities for surrounding neighbourhoods.

According to the stakeholder engagement strategy of the OIZ based on the LMP and interview on site, a contractor will be encouraged to collaborate to employ local people if needed as much as possible. Moreover, this information will be included as a binding clause in the tender document to be advertised at the stage of determining the contractors. According to the project timeline specified in Section 2.4, an eight-month construction phase is envisaged during which approximately 50 personnel will be employed. Considering the number of workers and the capacity of the work, major labour influx due to construction is not expected during the Project. The labour force will be recruited from the surrounding settlements and neighbourhoods as much as possible.

7.2.3.2 Operation Phase

A maximum of five personnel will be employed during the operation phase of the Project. Materials for periodic maintenance and construction could be supplied from the region; therefore, although limited, the impact on the regional economy is expected.

7.2.4 Vulnerable/Disadvantaged Groups

The Project does not have impacts on individuals with physical/mental disabilities, different ethnic groups, or social classes during all phases. Priority will be given to local people and especially vulnerable groups during the recruitment process for the Project as much as possible and this will be reflected in the tender document to be advertised at the stage of determining the contractors. During field visits and desk-based studies, it has been observed that the Project will not have an impact on vulnerable groups. However, these groups will be monitored through the engagement activities included in the SEP, and if any potential impacts are identified, the measures outlined in the SEP will be implemented. The impacts are expected in terms of employment opportunities, with skilled, semi-skilled and unskilled personnel from surrounding settlements directly and indirectly during all phases. Use of forced labour and child labour is prohibited by law and compliance will be enforced. Construction and operation activities do not involve forced labour and/or child labour.

The participation of vulnerable groups in the grievance mechanism and access to project information will be proactively facilitated. The OIZ will implement specific measures to ensure that vulnerable groups—particularly those whose livelihoods depend on agriculture and livestock—are adequately informed and supported. Vulnerable individuals who may face challenges in accessing information or engaging with the grievance mechanism will be identified, and the OIZ management will take necessary steps to address their needs in a sensitive and inclusive manner. These measures are already reflected in the SEP, which includes specific provisions to ensure outreach to vulnerable groups during consultations and to guarantee their access to the Grievance Mechanism.T National legislation and World Bank Environmental and Social Standards (WBs ESSs) will be applied to ensure fair employment practices, equal access, and opportunities for the stakeholders.

7.2.5 Land Acquisition

The location of the Project area is Block 7553, Parcel 31 in Kayseri Province, Melikgazi District, Mimarsinan Neighbourhood. It belongs to the Kayseri Mimarsinan Industrial Zone Directorate (Please see, *Annex 12.5 and Annex 12.6*). No land has been expropriated for the Project, as it will be implemented on property belonging to the Mimarsinan OIZ. The sub-project area is an area included in the OIZ land approximately 13 years ago. There are no legacy issues such as outstanding title deed transfer, compensation payment, property disputes. The required land width is available for constructing the units next to the existing WWTP. The Project does not necessitate a new discharge point or roadway for implementation; the existing infrastructure suffices for these needs. Consequently, there will be no involuntary resettlement or physical/economic displacement impact.

7.2.6 Working Conditions and Labour Management

The ESS2 and TOIZsP Labor Management Procedures (LMP), outlines the requirements for Labour Management in Project . These requirements aim to protect labour rights and ensure the management and control of activities that may pose risks to workers. It describes how MoIT will implement the requirements of the World Bank Environmental and Social Standard 2 (ESS 2), "Labour and Working Conditions", and national legislations on labour, employment and occupational health and safety laws.

Labour relations are regulated by the provisions of the Turkish Labour Law (No. 4857). The Turkish Occupational Health and Safety Law (No. 6331) contains provisions on occupational health and safety and applies to direct and contract workers, including foreign workers. The Social Security and General Health Insurance Law (No. 5510) regulates social insurance and general health insurance. Table 3.1 in legal framework shows the related labour and working conditions laws and standards.

The Project Owner is responsible for complying with the LMP, 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.

The Project owner's responsibilities are summarized below:

- 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 behavior rules, and Code of Conduct
- 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, Social Security Institution 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 Plan based on the LMP for review and approval of OIZ,
- Develop an OHS plan for review and approval of OIZ,
- Ensure I

  Labour Management Plan and OHS plan are in place and applied by all contract and subcontracted workers,
- Supervise subcontractors' adherence to the LMPI 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, Code of Conduct and information about workers' Grievance Mechanism
- 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, Social Security Institution and OIZ in case of severe, fatal and mass accidents

7.2.6.1 Construction Phase

The OIZ will undertake to prohibit child and forced labour by complying with LMP, Turkish laws and International Labor Organization (ILO) provisions and WB ESS 2. The construction phase includes risk possibilities such as accidents and OHS concerns that are addressed through detailed risk assessments. Adverse effects on working conditions will be managed through the LMP in line with regulations and guidelines. Although it facilitates impact management for limited workforce needs, OHS risks will always be addressed through an OHS Management Plan and Risk Assessment.Labour influx is not expected due to limited workforce, but additional mitigation measures are detailed in the *Chapter 8.*

7.2.6.2 Operation Phase

Five personnel will be employed during the operation phase of the Project. Since the employees are most probably local, the accommodation will not be required for them. Additionally, there are service and transportation options available in the Project area.

7.2.6.3 Training

After the recruitment process is completed, necessary training will be provided to the workers. This training will cover topics such as occupational safety and health (OSH), worker rights, contractual requirements, the Code of Conduct, grievance mechanisms, and communication channels. Additionally, training will address issues related to gender-based violence (GBV), sexual harassment (SH), and sexual exploitation and abuse (SEA). Compliance with the code of conduct, including policies regarding GBV, SH, and SEA, should be included in the employment contract for all personnel.

The contract will clearly outline the sanctions for non-compliance with the code of conduct and other relevant work requirements. It will be maintained records of the training process, including the training received and the functionality of a grievance mechanism, to ensure that all employees have access to these resources. This will enable date-based monitoring of compliance and training effectiveness.

7.2.7 Community Health and Safety

Public health and safety issues are related to risk factors that may arise from the construction and operation phases of the Project. It is expected that local communities will be affected by the noise and dust generated during the construction phase at a minimum level due to the distance to the Project area. Although dust and noise effects will be intense especially during excavation works, they will not directly affect the settlements. Traffic congestion is not expected during the construction phase. In the operation phase, also, possible flood events may lead odour and pollution effects are expected. Figure 5.2 presents the sensitive areas in the neighbourhoods.

7.2.7.1 Construction Phase

All necessary Occupational Health and Safety (OHS) measures will be implemented to ensure that residents and employees are not adversely affected by the Project. The Project Owner and the Contractor will adhere to the mitigation measures specified in the ESMP to protect vulnerable groups and the community near the Project area. Additionally, the Contractor will implement necessary health and safety precautions, such as using appropriate warning signs and signboards, as well as dust suppression techniques during dry seasons, throughout the site preparation and construction phases, under the supervision of the Project Owner.

There are other Project areas in the region, which increases traffic on the highway, particularly from heavy vehicles. The map, Figure 7.5 and Figure 7.6, presents that traffic activities are not anticipated to intensify during the construction phase due to routes of material supplies and location of waste storage. However, there are no sensitive areas near the road used for excavation and storage. Therefore, the route shown on the map will not increase the traffic density resulting from the Project.

During Project activities, special attention will be given to the execution of mitigation measures that prioritize life safety for people and workers in the vicinity. The Project area will be securely fenced to mitigate possible risks for the surrounding communities. The construction activities will be communicated to affected residents, businesses, and government institutions at least two days in advance. During the Project 's operational phase, all activities, including maintenance, will be conducted in a manner that poses no risk. Security personnel will be hired for the OIZ to help minimize security risks.

Training sessions about the grievance mechanism, community health, hygiene rules, and issues related to gender-based violence, sexual exploitation, harassment, and abuse will be provided to all personnel involved in the Project.

7.2.7.2 Operation Phase

Considering that the personnel employed during the operational phase will either be from the local community or will not have roles that require interaction and communication with the community, no impact is anticipated.

During operations, it will be important for the water treatment plant to implement necessary mitigation measures and comply with international standards and regulations. This is especially crucial for the community and society's health as the plant will supply water to the producers within OIZ, particularly to companies involved in food production.

7.2.8 Traffic and Transportation

7.2.8.1 Construction Phase

During the construction phase of the Project, traffic management and transportation risks primarily arise from the increased movement of construction vehicles and heavy machinery. The generated excavation waste will be transferred to the Mimarsinan OIZ Excavation Waste Storage Area for disposal by using the route shown in Figure 7.5. Based on the traffic volume of the map of Kayseri, approximately 16,918 vehicles are using the road daily designated for the excavation route for the Project (Figure 6.4). Considering 50 vehicles will be employed for 5 months during the construction phase of the Project, the traffic volume of the designated route will be increased by 0.29% compared to the daily traffic volume.

Hence, the impact magnitude may be evaluated as minor. The sensitivity of the nearby receptors which are local communities can be evaluated as low. This gives a negligible overall impact.

7.2.8.2 Operation Phase

During the operation phase of the Project, traffic and transportation will include vehicle movement primarily involve routine transport of working personnel. Considering that working personnel will use different routes to access the site, the risk of traffic congestion on any single road will be significantly reduced. Additionally, the limited frequency of vehicle trips and proper scheduling of transport activities will ensure minimal disruption to local traffic and road safety.

Hence the impact magnitude may be evaluated as minor. The sensitivity of the nearby receptors which are employees, and the local stakeholders can be evaluated as medium. This gives a minor overall impact.

7.2.9 Occupational Health and Safety

7.2.9.1 Construction Phase

The WBG EHS Guidelines for Water and Sanitation highlight that work at sanitation facilities is often physically demanding and may involve hazards such as trenches, open water, slippery surfaces, live electrical circuits, or heavy machinery. Given that the Project's construction stage includes tasks like backfilling, excavation, working at heights, and operating heavy machinery, it is essential to identify these risks and implement precautionary measures in advance. The list of potential OHS related risks that may emerge during the construction stage is given in Table 7.9.

Table 7.9. Anticipated OHS Risk and Hazards for Construction Stage

Risk/Hazard	Potential Source
Falls from Heights	Exposed edges and openings Insufficient scaffolding or ladder safety Roofs lacking proper guardrails
Slips, Trips, and Falls	Irregular or slick surfaces Inadequate housekeeping Absence of warning signs
Manual Handling and Ergonomics	Lifting heavy items without appropriate equipment Repetitive tasks and poor posture causing musculoskeletal issues
Machinery and Equipment	Absence of machine guards Faulty tools and equipment Insufficient training for equipment operators
Electrical Hazards	Uncovered wiring

	Defective electrical equipment Poor grounding Insufficient waterproofing in open areas or places prone to water accumulation
Excavation and Trenching	Cave-ins and structural collapses Absence of protective systems Presence of underground utilities
Chemical and Hazardous Substances	Exposure to hazardous substances such as lead, solvents, and petrochemicals Insufficient personal protective equipment (PPE) Inadequate ventilation
Noise and Vibration	High noise levels Absence of hearing protection
Confined Spaces	Poor ventilation Absence of proper entry and exit procedures Presence of dangerous atmospheres
Fire Hazards	Insufficient fire prevention measures Improper storage of flammable materials Absence of fire extinguishers and emergency exits
Traffic and Vehicle Hazards	Insufficient traffic control Vehicle-worker collisions Absence of proper signage
Structural Collapse	Fragile or unstable structures Insufficient bracing or shoring Overloading of structures
Weather Conditions	Extreme heat or cold Strong winds and storms Slippery surfaces from rain or snow
Biological Hazards	Exposure to mold or harmful bacteria Contaminated water supplies

Additionally, further risks may emerge from potential contamination, dust emissions, and noise generation during site preparation. Moreover, the risks of Gender-Based Violence (GBV) as well as sexual abuse, exploitation, and harassment must also be addressed .

The OHS Management under this Project will comply with the recent E&S Framework documents prepared by the MoIT within the scope of TOIZsP. Furthermore, to mitigate the potential environmental and social impacts of the OHS related risks that may arise during the construction stage, additional mitigation measures are detailed in *Chapter 8. Environmental and Social Aspects and Best Practice Mitigation Measures*. Hence the impact magnitude may be evaluated as moderate. The sensitivity of the nearby receptors which are employees, and the local stakeholders can be evaluated as medium. This gives a moderate overall impact.

7.2.9.2 Operation Phase

The WBG EHS Guidelines for Water and Sanitation highlight that work at sanitation facilities is often physically demanding and may involve hazards such as trenches, open water, slippery surfaces, live electrical circuits, or heavy machinery. Given that the Project's operation stage includes tasks like sludge handling, dewatering, storage and transferring, working in high or confined/closed places, and use of heavy-duty vehicles, machines, and equipment, it is essential to identify these risks and implement precautionary measures in advance. The list of potential OHS related risks that may emerge during the construction stage is given in Table 7.10.

Table 7.10. Anticipated OHS Risk and Hazards for Operation Stage

Risk/Hazard	Potential Source
Chemical Exposure	Managing and storing chemicals used in the treatment process Exposure to dangerous gases and fumes Insufficient personal protective equipment (PPE)
Biological Hazards	Contact with sewage and wastewater Exposure to bacteria, viruses, and other pathogens Poor hygiene practices
Confined Spaces	Entering tanks, pipes, or confined spaces Insufficient ventilation Presence of toxic gases
Noise and Vibration	Operating pumps, blowers, and other machinery Prolonged exposure to high noise levels
Mechanical Hazards	Operating and maintaining rotating machinery Getting entangled in moving parts Lack of proper machine guards
Slips, Trips, and Falls	Wet and slick surfaces Irregular walkways and platforms Poor lighting
Electrical Hazards	Using electrical equipment in wet conditions Defective wiring and connections Insufficient grounding
Heat Stress and Thermal Exposure	Exposure to high temperatures, particularly during maintenance Insufficient hydration measures Absence of shaded rest areas
Fire Hazards	Presence of combustible materials Electrical fires caused by defective equipment Insufficient fire suppression systems
Pressure and Hydraulic Hazards	Operating high-pressure systems Risk of hydraulic system malfunctions Insufficient training on pressure safety
Hazardous Waste Management	Managing and disposing of hazardous waste produced during treatment Exposure to dangerous substances during waste management Adhering to waste disposal regulations

To mitigate the potential environmental and social impacts of the OHS related risks that may arise during the operation stage, additional mitigation measures are detailed in *Chapter 8. Environmental and Social Aspects and Best Practice Mitigation Measures*. Hence the impact magnitude may be evaluated as moderate. The sensitivity of the nearby receptors which are employees, and the local stakeholders can be evaluated as medium. This gives a moderate overall impact.

8 ENVIRONMENTAL AND SOCIAL ASPECTS AND BEST PRACTICE MITIGATION MEASURES

8.1 Mitigation Plan for the Pre-Construction Phase

This section outlines cost-effective and feasible actions to reduce the Project's negative environmental and social impacts to acceptable levels during the pre-construction stage, in line with the standards specified in *Chapter 3. Legal Framework.* The mitigation measures for the pre-construction stage of the Project are given in Table 8.1. below.

These mitigation measures will be applied within the Project area, covering all associated facilities and surroundings. If multiple parties or contractors are involved, they will be notified of these requirements and required to adhere to the ESMP standards.

Table 8.1. Mitigation Measures for the Pre-Construction Phase

Issue	Potential Impact	Impact Significance Before Mitigation (Minor, Moderate, Major)	Mitigation Measure	Impact Significance After Mitigation (Low, medium, High)	Cost of Mitigation (if substantial)	Responsible Party/Parties
Permits and Pre-design	Lack of regulatory compliance and inappropriate design	Moderate	• The Project will not commence until all necessary permits have been obtained from the relevant authorities, and the Project design studies have been thoroughly completed.	Minor	Included in pre-construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)
Site Preparations	Soil erosion and sedimentation Dust generation Noise pollution Disruption of local flora and fauna	Moderate	• Erosion and sedimentation control measures will be implemented such as silt fences, sediment traps, etc. • Regular watering of exposed soil will be conducted to reduce dust. • Noise barriers will be used, and works will be scheduled during less sensitive times. • Pre-construction surveys and relocation of affected species will be conducted if necessary.	Minor	Included in pre-construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)
Natural Disaster Potential	Vulnerability to seasonal flooding leading to infrastructure damage and project delays	Moderate	• A detailed flood risk and hydrological assessment will be conducted to inform site layout, design elevation, and drainage planning during design and planning of this Project. • Flood protection requirements will be integrated into design documents and contractor specifications to ensure regulatory compliance. • Flood risk will be included in the Emergency Preparedness and Response Plan, supported by coordination with local authorities and permitting processes (Municipality and DSI).	Minor	Included in pre-construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)
Sub-management plans	Lack of information on Project implementation considering E&S issues	Major	• Project specific management plans given below will be prepared by the Contactor and reviewed by the Construction Supervision Consultant, Then, the plans will be subject to approve	Low	Included in pre-construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)

			by MoIT PIU before the construction phase: – Soil Management Plan – Air Quality and Emissions Management Plan – Water Resources Management Plan – Noise and Vibration Management Plan – Emergency Preparedness and Response Plan – Pollution Prevention Plan – Labour Management Plan – Waste Management Plan – Occupational Health and Safety Management Plan			
Occupational Health and Safety (OHS)	Accidents and resulted from unsafe conditions or improper behavior	Major	• A variety of trainings will be provided prior to the start of construction activities, including technical and basic OHS trainings, as well as social and environmental trainings for the employees. • All staff will participate in training sessions that cover topics such as the grievance mechanism, gender-based violence, sexual exploitation and abuse, and sexual harassment. • Proper use of personal protective equipment (PPE) will be ensured through supply, distribution, and enforcement; site-specific safety measures will be implemented during soil stripping and preparatory works.	Minor	Included in pre-construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)
Community Health and Safety	Unauthorized access and accidents resulted from the lack of proper security measures	Major	• The perimeter of the construction areas will be enclosed with a fence/curtain, etc. • Proper warning signs will be hanged. • Traffic management plan will be prepared and implemented.	Minor	Included in pre-construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)
Stakeholder Engagement	Inadequate stakeholder engagement activities and public consultation	Moderate	• A public/stakeholder consultation meeting will be held before the commencement of construction works. This meeting will cover the Project's details and the Project owner's information, E&S risks and impacts, relevant mitigation and monitoring activities,	Minor	Included in pre-construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)

			stakeholder engagement activities, and the Grievance Mechanism (GM). • During the Project implementation, a Stakeholder Engagement Plan[42] developed by the MoIT as a framework document will be complied with. • The GM will be implemented. • A signboard that is prominently visible to all construction workers will include information on the start and end dates of the Project, the working hours, and any permits that have been secured from the provincial/district municipality and other relevant agencies (if necessary). • Through a stakeholder consultation meeting, the Project owner will notify local residents and all pertinent internal and external stakeholders about the planned work and the steps to be followed prior to the start of construction. • The draft ESMP will be disclosed and subjected to public consultations prior to its finalization. •			
	Project Disclosure					
Cultural Heritage	Risk of Chance Find	Minor	• Training for Chance Find Procedures • Archaeological Monitoring • Ensuring CFP implementation	Minor	The monthly cost for archaeological monitoring and Awareness rising training on preservation of Cultural Heritage is calculated at around 12.000 $ (the total cost includes the expert fee, equipment cost, accommodation costs, travel costs and daily meals).	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)
Trainings	Insufficient awareness and lack of information	Moderate	• Training topics to be given to workers before construction: – Grievance mechanism, – Code of Conduct, GBV, SEA/SH. – ESMP implementation	Minor	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)

1. [42] The TOIZsP Stakeholder Engagement Plan (SEP) will be used for this project and all project parties (including the contractor, Organized Industrial Zone (OIZ) and Ministry of Industry and Technology (MoIT) PIU) will be responsible for ensuring compliance with the TOIZsP SEP.

8.2 Mitigation Plan for the Construction Phase

This section outlines cost-effective and feasible actions to reduce the Project's negative environmental and social impacts to acceptable levels during the construction stage, in line with the standards specified in *Chapter 3. Legal Framework.* The mitigation measures for the construction stage of the Project are given in Table 8.2. below.

These mitigation measures will be applied within the Project area, covering all associated facilities and surroundings. If multiple parties or contractors are involved, they will be notified of these requirements and required to adhere to the ESMP standards.

Table 8.2. Mitigation Measures for the Construction Phase

Issue	Potential Impact	Impact Significance Before Mitigation (Minor, Moderate, Major)	Mitigation Measure	Impact Significance After Mitigation (Minor, Moderate, Major)	Cost of Mitigation (if substantial)	Responsible Party/Parties
Sub-management plans	Lack of information on Project implementation considering E&S issues	Major	• Project specific management plans given below will be prepared by the Contactor and reviewed by the Construction Supervision Consultant, Then, the plans will be subject to approve by MoIT PIU to be implemented during the construction phase: – Soil Management Plan – Air Quality and Emissions Management Plan – Water Resources Management Plan – Noise and Vibration Management Plan – Emergency Preparedness and Response Plan – Pollution Prevention Plan – Waste Management Plan – Occupational Health and Safety Management Plan – Labour Management Plan	Minor	Included in construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)
Air Quality and Odor	**<u>Dust Emissions</u>** • 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.	Minor	• All staff of the contractor members will get training on the Air Quality and Emissions Management, and the contractor will be in charge of updating the training as necessary. • Control techniques including adding enclosures and covers and raising the moisture content will reduce dust from open area sources, such as storage piles. By taking these actions, the construction site's air quality will be improved and airborne dust will be reduced. • The drop height of potentially dust generating materials will be kept as low as possible. • Dust suppression techniques will be used on construction sites. This will be accomplished by keeping the top layers of materials and work places at a humidity level of roughly 10%. In order to guarantee uniform water distribution, watering will be done when needed, including on weekends, at night, and on off days. Pressurised distribution or spraying systems will be used. • If there is traffic on the roads near the work sites, dust suppression measures will be applied continuously to ensure safety. If there is no traffic on the local roads, dust suppression measures will only be applied in residential areas. • The Highway Traffic Regulation's speed limitations will be followed by all vehicles engaged in transportation-related operations. On unpaved roads, it is advised that vehicle speeds be limited to 30 km/h.	Minor	Included in construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)

Issue	Potential Impact	Impact Significance Before Mitigation (Minor, Moderate, Major)	Mitigation Measure	Impact Significance After Mitigation (Minor, Moderate, Major)	Cost of Mitigation (if substantial)	Responsible Party/Parties
			• Loading and unloading operations will be performed without throwing/scattering. • Excavated materials will be covered with nylon canvas or materials with grain sizes greater than 10 mm while being transported. • Where necessary, wind shields or barriers will be erected at work locations, such as material storage areas. • The borders of the construction site next to the field and/or crops will be marked by solid screens or barriers that are at least as high as any stockpiles on the property. • The complaints of nearby field and/or garden owners will receive special attention, and appropriate action will be taken right away. • The contractor will cover any damages brought on by inadequate or non-existent dust suppression methods (dust conveyance to a residential area, wind-borne dust deposits, etc.). • The asphalt roads will be used as much as possible. • Compliance with the air emission limit values described in *Chapter 3. Legal Framework* will be ensured. • If a complaint about dust generation is received, measurements of the dust will be taken, and mitigation strategies, like enhancing moist suppression and watering, will be improved. Speed limit will be reduced if necessary.			
	<u>Exhaust Emissions</u> Reducing air quality surrounding the Project area. Possible health hazards due to extended exposure to high emissions in the Project area. Increase in CO, SOx, PM, TOC and NOx emissions. Increase in GHG emissions.	Minor	• Vehicles that have been properly maintained will be utilised. Equipment and machinery will receive routine maintenance. • Every car utilised for transportation purposes will receive an emission control stamp. • While on-site or waiting to enter the site, construction vehicles will not be allowed to continue operating their engines. • To reduce air emissions from construction equipment and vehicles, pertinent requirements of the Regulation on Air Pollution Control Sourced from Industry, the Regulation on Exhaust Gas Emission Control, and the Regulation on the Assessment and Management of Air Quality will be adhered to. • Construction vehicles will be subject to speed limits, and equipment will be used as efficiently as possible to maximise fuel economy. • Energy uses associated with construction vehicles and equipment will be monitored. • Training will be performed for Project personnel regarding energy efficiency.	Minor	Included in construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)
Soil Quality	**<u>Erosion Potential</u>** Possibility of increased risk of erosion. Possibility of increased dust emissions caused by wind erosion.	Minor	• Surface runoff's possible effects will be reduced by installing an appropriate drainage system in the field. In this case, the construction of drainage channels will be appropriate for the site's topography. • Construction works, such as excavation, will be scheduled during dry weather conditions whenever feasible to minimize the impact of surface runoff on the excavated soil.	Minor	Included in construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)

Issue	Potential Impact	Impact Significance Before Mitigation (Minor, Moderate, Major)	Mitigation Measure	Impact Significance After Mitigation (Minor, Moderate, Major)	Cost of Mitigation (if substantial)	Responsible Party/Parties
			• Circulation of heavy machinery to In the Project area will be limited. • To prevent soil erosion by wind, the disturbed regions and soil stockpiles will be kept moist, and the pile height will not exceed 2 m. • The landscape will be restored to ensure stability as soon as construction is finished at Project area.			
	<u>Soil Contamination</u> 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.	Moderate	• To reduce the impact on the soil environment, the amount of soil exposed to compaction and contamination will be minimized by restricting construction machinery, equipment, and field personnel to designated work sites and routes. • Fuel for construction equipment and vehicles will primarily be sourced from the nearest station. If on-site storage is necessary, fuels will be stored in areas with appropriate impermeability measures, including secondary containment. • Machinery and equipment will undergo regular inspections to detect any oil or fuel leaks. • The provisions of the Regulation on the Control of Excavation Soil, Construction and Demolition Wastes will be complied with during construction phase of the Project. • Provisions of the Regulation on Soil Pollution Control and Point-Source Contaminated Sites shall be complied with within the scope of the Project. • Waste and wastewater produced during the construction phase will be managed and disposed of in a controlled manner, following the project standards outlined in this report. • In accordance with the Regulation on the Control of Soil Pollution and Sites Contaminated by Point Sources, Kayseri Mimarsinan OIZ is required to follow the prescribed process in order to notify the Ministry of Environment, Urbanisation, and Climate Change (MoEUCC) of any possible soil contamination in the Project area. Kayseri Mimarsinan OIZ is in charge of making sure the cleanup is finished if MoEUCC examinations reveal that the site is contaminated and needs to be cleaned up. Authorised companies will do the cleanup. The following steps will be taken for polluted regions throughout the construction stage: – Vehicles transporting excavated soil will be properly covered to minimize dust emissions, and truck bodies and tailgates will be sealed to prevent any spillage during transit. – Licensed waste haulers will be exclusively used to collect and transport contaminated soil to suitable treatment or disposal sites, ensuring that illegal disposal is strictly prohibited. – Speed control for the trucks carrying contaminated soil will be enforced. • The use of contaminated soil for landscaping will be prohibited.	Minor	Included in construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)

Issue	Potential Impact	Impact Significance Before Mitigation (Minor, Moderate, Major)	Mitigation Measure	Impact Significance After Mitigation (Minor, Moderate, Major)	Cost of Mitigation (if substantial)	Responsible Party/Parties
Water Resources and Use	**<u>Quality Change in Water Bodies</u>** 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.	Moderate	• Surface runoff from rain, stormwater, or wastewater generated by dust suppression activities will be prevented. • The water to be used for dust suppression will be monitored and recorded. • Wastewater, residues, and other waste will not be discharged into groundwater or surface water. Portable toilets will be provided for construction workers. The small amount of domestic wastewater generated at the construction site will be collected in impervious septic tanks and then transported to the existing WWTP of Kayseri Mimarsinan OIZ or nearest WWTP by licensed sewer trucks. • The Project units that come into contact with water, wastewater, and chemicals will be built with concrete that has the appropriate cement ratio and durability to ensure basement impermeability. • During storage, transportation, or equipment use, construction operations run the danger of unintentional releases or spills of petroleum-based goods such as fuels, hydraulic fluids, or lubricants. All chemical storage containers, including those for diesel fuel and hazardous liquid waste, will be stored in secondary containment within a temporary storage area to reduce the possibility of contamination of soil, surface water, and groundwater. • 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. • Polluted substances, solid waste, and toxic or hazardous materials will not be stored, spilled, or disposed of in water bodies for dilution or disposal. • The natural flow of water should not be blocked or redirected, as this could cause riverbeds to dry up or lead to the flooding of nearby settlements.	Minor	Included in construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)
Noise and Vibration	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.	Minor	• If at all possible, the machinery and equipment that will be utilised during the construction stage will be evenly dispersed over the site rather than operating at a single spot. • If possible, items with lower noise levels than equivalent ones shall be favoured during the Project's vehicle and equipment procurement and leasing procedure. • Regular and periodic maintenance will be performed on the construction machinery and equipment. Every shift will include daily maintenance, and the operator will record each vehicle's operating hours to adhere to the overall working hours for periodic maintenance. The frequency of periodic maintenance will be 50, 250, 500, 1000, and 2000 working hours. Regular maintenance forms will be completed. • All vehicles involved in transportation activities will comply with the speed limits specified in the Highway Traffic Regulation. • In the event of any grievances, noise measurements will be carried out by an authorized environmental labouratory.	Minor	Included in construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)

Issue	Potential Impact	Impact Significance Before Mitigation (Minor, Moderate, Major)	Mitigation Measure	Impact Significance After Mitigation (Minor, Moderate, Major)	Cost of Mitigation (if substantial)	Responsible Party/Parties
			Based on the results, mitigation measures, such as the use of noise barriers, will be enhanced accordingly. ● Construction works will be performed between 07:00 - 22:00. Unless absolutely necessary, no construction activities will be done at night. ● Every construction activity will adhere to the noise restrictions specified in the Project requirements, and the contractor will take further mitigation steps if the monitoring reveals a need. ● A grievance mechanism will be established to manage noise related grievances. ● The work schedule will be adjusted by communicating with sensitive receptors.			
Resource Management	Resources used/consumed during works.	Minor	● Mimarsinan OIZ will oversee the construction contractor through a supervision consultant to ensure the selection of the most suitable raw materials and resources by evaluating clean production options.	Minor	Included in construction cost	● Mimarsinan OIZ PMU (Supervision/Monitoring and Management) ● Contractor (Implementation)
Waste Management	Inefficient resource management and increased waste generation resulted from failing to separate, store, handle, or transfer waste properly. 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.	Minor	● 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. ● Any practices that could endanger personnel or public health will be avoided in all activities related to the collection, temporary storage, transport, and disposal of waste throughout the Project. ● Licensed companies and municipal vehicles will handle the recycling, transportation, and disposal of waste. ● On-site incineration or burial of waste, as well as dumping waste on nearby roads or into water resources, will strictly be prohibited. Waste temporarily stored on-site will be transferred to licensed transport vehicles suitable for the specific type of waste for disposal. All related operational information will be documented and maintained in the administrative building. ● Excavated material not intended for backfilling will be promptly removed from the site at regular intervals. These materials will be transported to the nearest licensed landfill facility by authorized transportation companies. ● Waste oils from machinery and vehicles will be stored in impervious tanks and containers placed on an impervious foundation, following the "Regulation on Control of Waste Oils." These tanks and containers will have overfill prevention devices and will be filled to the designated level mark. They will be colored red and labeled "waste oil." The disposal of waste oils will be managed by the Mimarsinan OIZ. ● Waste batteries from the construction site and vehicle accumulators will be disposed of according to the consumer responsibilities outlined in Article 13 of the "Regulation on Control of the Waste Batteries and Accumulators." Used batteries will be collected separately from municipal waste.	Minor	Included in construction cost	● Mimarsinan OIZ PMU (Supervision/Monitoring and Management) ● Contractor (Implementation)

Issue	Potential Impact	Impact Significance Before Mitigation (Minor, Moderate, Major)	Mitigation Measure	Impact Significance After Mitigation (Minor, Moderate, Major)	Cost of Mitigation (if substantial)	Responsible Party/Parties
			• All other hazardous materials will be disposed of in accordance with the Regulation on Waste Management. • When waste is temporarily kept, it will be categorised based on its characteristics and tagged with the information such as hazardous or non-hazardous inscription, waste code, stored waste amount, storage date, etc. The existing Temporary Storage Area will be used for temporary waste storage. • Spill kits will be accessible at the Temporary Storage Area, and appropriate firefighting equipment will be provided to mitigate potential fire risks.			
Land Use	Creation of visual pollution. Impairment of quality of life due to the overall presence of annoying construction works and activities and altered landscape	Minor	• Construction activities will take place between 07:00 - 22:00. Nighttime construction will only occur if absolutely necessary. If night operations are required, the public will be notified one week in advance. • The construction schedule will be disclosed to the public via website of Mimarsinan OIZ.	Minor	Included in construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)
Natural Disaster Potential	Vulnerability to seasonal flooding leading to system overflows, equipment failure, environmental contamination, and service disruption	Moderate	• Regular maintenance of drainage systems, flood barriers, and stormwater infrastructure will be carried out to ensure full functionality during rainy seasons. • Real-time monitoring systems (e.g., rainfall and water level sensonrs) will be implemented to provide early warnings and support timely response actions. • Flood scenarios will be included in the general Emergency Preparedness and Response Plan, with designated safe zones, communication protocols, and worker training for flood-related incidents.	Minor	Included in construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)
Biodiversity and Protected Areas	Damage or loss of habitat and flora species. Disturbing/harming populations. Damage or loss of habitat.	Minor	• The construction area will be clearly defined where construction activities will occur. • Access roads and work areas for associated facilities will be clearly marked before construction begins to avoid damaging flora outside the construction sites. • Construction works will occur gradually, especially during breeding (April-May-June), so fauna elements can leave construction sites. • Before construction begins, fauna observations will be conducted in the area. Species will be allowed to escape naturally, and those unable to do so will be relocated to similar habitats nearby. • The speed of the vehicles on site will be limited, and the use of construction vehicles at night will be avoided to minimize the risk of traffic collisions with fauna. • The construction sites will be fenced to prevent the entry of fauna species. • All natural habitats, wetlands, and areas designated as protected within the immediate vicinity of the operations will be safeguarded from any damage or misuse. Efforts will be made to ensure these sensitive environments remain undisturbed and are not adversely impacted by the activities associated with the Project. • There shall be no hunting, fishing, wildlife capture, or plant collection within the Project area or its vicinity.	Negligible	Included in construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)

Issue	Potential Impact	Impact Significance Before Mitigation (Minor, Moderate, Major)	Mitigation Measure	Impact Significance After Mitigation (Minor, Moderate, Major)	Cost of Mitigation (if substantial)	Responsible Party/Parties
			• There shall be no tree cutting or destruction of vegetation outside the designated construction site. • If Toros Göknarı individuals are observed within the construction site, they should be marked and must not be harmed during construction activities.			
Aquatic Biodiversity	Damage or loss of Habitat	Moderate	• Excavation materials and any kind of waste will not be dumped onto a riverbed. • Any wastewater discharge into the streambed should be carried out in full compliance with applicable regulations and environmental laws • The discharge should be comply with stringent legal and environmental regulatory standards concerning its chemical composition, ensuring the absence of harmful substances that could adversely impact the surrounding aquatic ecosystem. • Aquatic habitat monitoring studies will be conducted regularly on an annual basis, particularly in the area where wastewater discharge occurs.	Minor	Included in construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)
Cultural Heritage	Loss of cultural heritage.	Minor	• Any cultural assets discovered during construction will be documented as "chance finds." A "Chance Find Procedure" has been developed to describe the steps to be taken and implemented following such discoveries. • 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 or construction work will proceed at the location of the chance find while awaiting official permissions.	Minor	Included in construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)
Economy/Employment	Contribution to economy.	Minor	• Care will be taken to purchase a variety of goods and services from local suppliers and to support the local economy by using local materials. • Priority should be given to the local labour where possible and practical. • Efforts will be made to provide employment opportunities to local communities and settlements within the impact area.	Minor	Included in construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)
Community Health and Safety	Potential Community Disturbance Access from outside and accidents that may occur due to lack of security in the Project area.	Minor	• The Kayseri Mimarsinan OIZ will ensure that contractors establish a code of conduct and provide training to workers, particularly on communicating with local residents of foreign nationality. This training will be conducted before work begins to ensure that local residents are not adversely affected by external workers. • Construction operations will be conducted in a manner that does not restrict or hinder the social and economic activities of local residents. • To ensure the safety and daily life of communities are not impacted, safety and information signs will be installed on-site prior to the commencement of work. • The construction areas will be enclosed with a wire fence, and warning signs will be posted. • Availability of public GM	Minor	Included in construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)

Issue	Potential Impact	Impact Significance Before Mitigation (Minor, Moderate, Major)	Mitigation Measure	Impact Significance After Mitigation (Minor, Moderate, Major)	Cost of Mitigation (if substantial)	Responsible Party/Parties
Working Conditions and Labour Management	Improper Working Conditions, Child labour, forced labour and unregistered employment	Minor	• Contractor will prepare Labour Management Plan in accordance with the LMP of the TOIZsP The requirements of Labour Management in this ESMP will be have free access to it without repercussions. • Workers will be educated about the Grievance Mechanism and will be required to understand and acknowledge it. • All workers will receive training on discrimination and codes of conduct. This training will cover topics such as sexual harassment and abuse, sexual exploitation, gender-based violence, abuse, and how to intervene in cases of harassment. • Minimum legal labour standards, including the prevention of child and forced labour, anti-discrimination policies, working hours, and minimum wages, will be adhered to in accordance with International Labour Organization (ILO) regulations. Additionally, national laws and regulations, as well as international conventions and standards, will be adhered to regarding working conditions. • In every aspect of business, discrimination on the basis of language, colour, gender, political opinions, philosophical convictions, and religion will be avoided.	Minor	Included in construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)
	Work suspension due to legal noncompliance in Human Resources and Workforce Management	Moderate	• Written contracts will be finalized with workers upon recruitment, detailing job descriptions, working hours, wages, terms and conditions of employment, and rights, in accordance with national legislation and the Code of Conduct. • Access to workers' GM will be ensured • Personnel data files will be maintained including contracts, training records, signed codes of conduct, and health reports.	Minor	Included in construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)
Occupational Health and Safety (OHS)	Inadequate health and safety conditions for workers causing serious risks and hazards.	Major	• The Mimarsinan OZI's Project Coordinator will include a full-time OHS expert with a Class A specialization certificate. This expert will effectively oversee the Project's implementation and monitor on-site activities. • The Mimarsinan OIZ will ensure the contractor implements the following measures and will impose necessary actions or sanctions if these measures are not met on-site. In line with the Occupational Health and Safety Regulation in Construction Works, the necessary personnel, information, plans, and organization will be provided. • All workers and contractors will be expected by the Mimarsinan OIZ to follow national and international health and safety laws and regulations. All required personal protective equipment (PPE), such as hard helmets, safety harnesses, protective coveralls, glasses, gloves, and safety shoes, will be given to the workers. • Designated smoking areas will be allocated at the construction site. • Employees will have access to suitable hand and face washing stations, as well as shower facilities for tasks that generate dust. • The contractor will provide workers with technical and OHS training, which will include a code of conduct	Minor	Included in construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)

Issue	Potential Impact	Impact Significance Before Mitigation (Minor, Moderate, Major)	Mitigation Measure	Impact Significance After Mitigation (Minor, Moderate, Major)	Cost of Mitigation (if substantial)	Responsible Party/Parties
			outlining potential risks associated with the work site and the tasks to be performed. • Worker will have access to workers' GM			
	Work suspension due to work accident (lack of appropriate OHS measures/ unsafe work environment).	Major	• In charge of occupational health and safety, the contractor will have a full-time expert with the necessary training and experience who will oversee and manage site implementations. • Placing safety barriers and warning signs around work areas. • Daily occupational safety meetings or toolbox talks will be held with workers before they begin their tasks. • An authorized expert will conduct regular legal inspections of work equipment at the construction site. • Operators will perform daily checks on work equipment. Each work team will have a first aid box available for immediate response. • Workers will receive certified first aid training to ensure they are prepared to respond to emergencies. • A first aid team will be established for each work zone, consisting of trained workers ready to respond to emergencies. • Workers will be supplied with task-specific PPE to ensure their safety while performing their duties. • Ensure a safe and healthy work environment for all workers. Equip them with tools and machinery that comply with international performance and safety standards. • All workers will be informed about the necessary safety rules, potential risks, and relevant regulations that must be adhered to at the construction site during the entire construction period. • Emergency teams will be formed, and they will undergo training and drills based on various emergency scenarios to ensure preparedness. • All accidents and incidents, including fatalities, lost time incidents, significant events (such as spills, fires, pandemic outbreaks, infectious diseases, social unrest, etc.), and near misses, will be documented. The Project owner will ensure the contractor implements all Occupational Health and Safety (OHS) measures and will enforce necessary actions or sanctions if these measures are not adhered to on-site. • In the event of any incident or accident related to the Project that significantly impacts the environment, affected communities, the public, or workers (such as OHS accidents or threats to community health and safety), the Contractor will promptly notify the Mimarsinan OIZ. The OIZ will then inform the MoIT within 48 hours, and MoIT will notify the WB. The Mimarsinan OIZ will provide detailed information about the incident, including findings from the Root Cause Analysis (RCA), immediate and planned measures to address the issue, compensation paid, and any relevant information from contractors and consultants. The OIZ will submit an incident report, including RCA, precautions, and compensation measures,	Minor	Included in construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)

Issue	Potential Impact	Impact Significance Before Mitigation (Minor, Moderate, Major)	Mitigation Measure	Impact Significance After Mitigation (Minor, Moderate, Major)	Cost of Mitigation (if substantial)	Responsible Party/Parties
			to MoIT within three business days. MoIT will forward this report to the WB immediately upon receipt. ● Only authorized and competent personnel will perform tasks related to electrical safety. ● Workers will receive regular training on OHS topics, including emergency response procedures like firefighting. All training sessions will be documented. ● Each work area will be equipped with the appropriate type and number of fire extinguishers to ensure safety and preparedness in case of a fire emergency. ● Machinery and equipment for land preparation and construction activities will be operated at different locations across the site to ensure even distribution and avoid congestion. ● Access to workers' GM			
Traffic and Transportation	Increase in vehicle traffic during the construction phase. Direct and indirect threats posed by construction activities against traffic and pedestrians	Minor	● Before work begins, Mimarsinan OIZ will make sure the contractor is following the requirements of Traffic Management in this ESMP. Every employee will receive training on the Traffic Management Plan which was prepared by the contractor, and if required, the contractor will update the training. ● Signage will be selected according to the Regulation on Traffic Signs. Before construction begins, the Contractor will set up all necessary signs, barriers, and control devices to ensure the safe use of roads by both traffic and pedestrians. ● Traffic must be managed to ensure safety and minimize disruptions. When road closures or diversions are needed, official permits will be secured from the Kayseri Provincial Police Department Traffic Control Branch Office. The route and duration of the disruption will be determined, and local residents affected by the blockages and diversions will be notified at least three days in advance. ● Alternative routes will be identified, and transportation will be scheduled based on traffic density. ● All vehicles involved in transportation activities will adhere to the speed limits specified in the Regulation on Highway Traffic. ● Safe driving by Project personnel will be ensured through training. ● Where feasible, buses will be arranged for worker transportation to reduce additional traffic congestion. ● Construction materials, equipment, and machinery will not be stored on traffic lanes to avoid obstructing traffic flow. ● Traffic activities will be planned to avoid peak hours on local roads whenever possible.	Minor	Included in construction cost	● Mimarsinan OIZ PMU (Supervision/Monitoring and Management) ● Contractor (Implementation)
Stakeholder Engagement	Possibility of damage / health hazards to community members at Area of Influence. Lack of communication with the stakeholders.	Moderate	● The TOIZsP Stakeholder Engagement Plan (SEP) will be used for this project and all project parties (including the contractor, supervision consultant, Organized Industrial Zone (OIZ) and Ministry of Industry and Technology (MoIT) PIU) will be responsible for ensuring compliance with the TOIZsP SEP	Minor	Included in construction cost	● Mimarsinan OIZ PMU (Supervision/Monitoring and Management) ● Contractor (Implementation)

Issue	Potential Impact	Impact Significance Before Mitigation (Minor, Moderate, Major)	Mitigation Measure	Impact Significance After Mitigation (Minor, Moderate, Major)	Cost of Mitigation (if substantial)	Responsible Party/Parties
	Insufficient stakeholder engagement activities and public consultation		• Conducting stakeholder consultation meetings and receiving feedback of stakeholders. • Managing disclosure process of the E&S documents smoothly. • Providing information about public GM and mnaging an effective and responsive GM process.			
Grievance mechanism	Grievance Issues. Insufficient and/or ineffective grievance mechanism for the internal and external stakeholders.	Minor	• An efficient Grievance mechanism (described in SEP) 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 workers' grievance mechanism working in coordination with the Project Owner.	Minor	Included in construction cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)
Cultural Heritage	Risk of Chance Find Loss of cultural heritage	Minor	• Chance Find procedure Trraining Archaeological Monitoring • Ensuring CFP implementation	Minor	The monthly cost for archaeological monitoring and Awareness rising training on preservation of Cultural Heritage is calculated at around 12.000 $ (the total cost includes the expert fee, equipment cost, accommodation costs, travel costs and daily meals).	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)

8.3 Mitigation Plan for the Operation Phase

This section outlines cost-effective and feasible actions to reduce the Project's negative environmental and social impacts to acceptable levels during the operation stage, in line with the standards specified in *Chapter 3. Legal Framework.* The mitigation measures for the operation stage of the Project are given in Table 8.3. below.

These mitigation measures will be applied within the Project area, covering all associated facilities and surroundings. If multiple parties or contractors are involved, they will be notified of these requirements and required to adhere to the ESMP standards.

Table 8.3. Mitigation Measures for the Operation Phase

Issue	Potential Impact	Impact Significance Before Mitigation (Minor, Moderate, Major)	Mitigation Measure	Impact Significance After Mitigation (Minor, Moderate, Major)	Cost of Mitigation (if substantial)	Responsible Party/Parties
Sub-management plans	Lack of information on Project implementation considering E&S issues	Major	• Project specific management plans given below will be prepared by the Contactor and reviewed by the Construction Supervision Consultant, Then, the plans will be subject to approve by MoIT PIU to be implemented during the operation phase: – Odor Management Plan – Water Resources and Effluent Management Plan – Waste Management Plan – Sludge Management Plan – Occupational Health and Safety Management Plan	Minor	Included in operation cost	• Mimarsinan OIZ PMU (Performance and Management)
Air Quality and Odor	**<u>Odorous Gas Emissions</u>** Odor problems due to the operation of WWTP.	Moderate	• Mimarsinan OIZ will comply with the requirements of Air Quality and Odor in this ESMP that adheres to Project standards as well as applicable national and international regulations. Additionally, employees will receive training on this plan. • The initial measures to address the odor issue are as follows: – Preventing wastewater influents from exceeding the treatment plant's capacity. – Reducing the amounts of solid waste and activated sludge. – Increasing the frequency of screenings disposal. – Proper and timely disposal of sludge to prevent flies and odors. – Increasing the aeration rate in the biological treatment process. – Adding lime to activated sludge. – Controlling water levels to prevent turbulence from sudden decreases. • If the odor issue persists despite the proper implementation of the initial measures, secondary measures will be enacted as follow: – Adding oxidizing agents like hydrogen peroxide or sodium hypochlorite to prevent the formation of hydrogen sulfide. Sodium hydroxide can also be used to dissolve hydrogen sulfide gas in water. – Controlling pH levels or using disinfectants to inhibit anaerobic bacteria. – Using chemicals to oxidize odorous compounds. – Planting trees in the Project area and buffer zone around the treatment plant to prevent odor dispersion. • If the odor nuisance continues despite the implementation of the first and second measures, the final step will be to enclose the Preliminary Treatment Units. • As a general measure, an operational grievance mechanism will be set up to handle complaints related to odors.	Minor	Included in operation cost	• Mimarsinan OIZ PMU (Performance and Management)
	<u>Exhaust Emissions</u> 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, NOx emissions. Increase in GHG emissions (CO_2, CH_4, N_2O).	Minor	• Vehicles that have been properly maintained will be utilised. Equipment and machinery will receive routine maintenance. • Every car utilised for transportation purposes will receive an emission control stamp. • While on-site or waiting to enter the site, operation vehicles will not be allowed to continue operating their engines. • To reduce air emissions from operation stage vehicles and equipment, pertinent requirements of the Regulation on Air Pollution Control Sourced from Industry, the	Minor	Included in operation cost	• Mimarsinan OIZ PMU (Performance and Management)

Issue	Potential Impact	Impact Significance Before Mitigation (Minor, Moderate, Major)	Mitigation Measure	Impact Significance After Mitigation (Minor, Moderate, Major)	Cost of Mitigation (if substantial)	Responsible Party/Parties
			Regulation on Exhaust Gas Emission Control, and the Regulation on the Assessment and Management of Air Quality will be adhered to. ● Operation stage vehicles will be subject to speed limits, and equipment will be used as efficiently as possible to maximise fuel economy. ● Energy uses associated with operation stage vehicles and equipment will be monitored. ● Regular maintenance of WWTP machinery and equipment will be conducted. ● Energy consumption related to WWTP units and utility facilities will be monitored. ● Training will be performed for Project personnel regarding energy efficiency.			
Soil Quality	**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.	Minor	● To reduce the impact on the soil environment, the amount of soil exposed to compaction and contamination will be minimized by restricting operation stage machinery, equipment, and field personnel to designated work sites and routes. ● Fuel for operation stage vehicles and equipment will primarily be sourced from the nearest station. If on-site storage is necessary, fuels will be stored in areas with appropriate impermeability measures, including secondary containment. ● Machinery and equipment will undergo regular inspections to detect any oil or fuel leaks. ● The staff will be trained in proper management of liquid waste to avoid soil contamination during maintenance and repair works. ● Provisions of the Regulation on Soil Pollution Control and Point-Source Contaminated Sites shall be complied with within the scope of the Project. ● After dewatering, the sludge cake will be placed in a covered and suitable container. Subsequently, the excess sludge will be transported to a licensed facility.	Negligible	Included in operation cost	● Mimarsinan OIZ PMU (Performance and Management)
Water Resources and Use	**Quality Change in Water Bodies** Improving water quality of Söğüt Stream.	Positive	● The effluent water quality of the planned WWTP will meet, at a minimum, the limit values specified in Table 19 of the Regulation on Water Pollution Control. ● The flushed water will be sent into the municipal sewerage system if the water lines are routinely cleaned to get rid of accumulated sediments or other contaminants. ● WWTP activities should not affect the availability of water for drinking and hygienic purposes. ● There will be no storage, spilling, or disposal of toxic or hazardous materials, solid waste, or polluted materials in water bodies for disposal or dilution. ● The natural flow of water should not be blocked or redirected, as this could cause riverbeds to dry up or lead to flooding in nearby settlements.	Positive	Included in operation cost	● Mimarsinan OIZ PMU (Performance and Management)
Noise and Vibration	Increase in the background noise due to the operation of WWTP.	Minor	● When procuring operation stage equipment and machinery, the sound levels specified in the technical specifications or data sheets will be considered. ● During the operation stage, compliance with the relevant provisions and limit values of the Regulation on Environmental Noise Emissions Generated by the Outdoor Equipment Used at Site, the Regulation on Environmental Noise Control, and the WBG General EHS Guidelines and Sectorial Guidelines will be ensured. ● Fences, obstacles, or deflectors will be used as noise control measures if needed. Equipment generating noise during the plant's operation will be placed in isolated, enclosed buildings, and some may be submerged in wastewater if required. A grievance procedure will also be set up to address complaints about loudness. ● The work schedule will be coordinated by communicating with sensitive receptors.	Minor	Included in operation cost	● Mimarsinan OIZ PMU (Performance and Management)
Resource Management	Resources used/consumed during operation activities.	Minor	● Starting from the operation stage, Mimarsinan OIZ will consult with technical experts to optimize the following areas to reduce energy consumption and associated costs: ○ Energy conservation ○ Process efficiency. ○ Aeration devices and oxygen transfer	Negligible	Included in operation cost	● Mimarsinan OIZ PMU (Performance and Management)

Issue	Potential Impact	Impact Significance Before Mitigation (Minor, Moderate, Major)	Mitigation Measure	Impact Significance After Mitigation (Minor, Moderate, Major)	Cost of Mitigation (if substantial)	Responsible Party/Parties
			○ Process flow configuration. ○ Biogas quantities. ○ Biogas utilization. ○ Time of day consumption of energy.			
Waste Management	Inefficient resource management and increased waste generation resulted from failing to separate, store, handle, or transfer waste properly. 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.	Minor	● Mimarsinan OIZ will implement the requirements of Waste Management to reflect the conditions of the operation stage before it begins. The relevant measures defined for the construction stage will also apply to the operation stage. The updated plan will include procedures for managing waste other than sludge. ● Waste to be generated within the scope of the operation stage 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. ● Any practices that could endanger personnel or public health will be avoided in all activities related to the collection, temporary storage, transport, and disposal of waste throughout the Project. ● Licensed companies and municipal vehicles will handle the recycling, transportation, and disposal of waste. ● On-site incineration or burial of waste, as well as dumping waste on nearby roads or into water resources, will strictly be prohibited. Waste temporarily stored on-site will be transferred to licensed transport vehicles suitable for the specific type of waste for disposal. All related operational information will be documented and maintained in the administrative building. ● All other hazardous materials will be disposed of in accordance with the Regulation on Waste Management. ● Hazardous waste temporarily stored on-site will be transferred to licensed transport vehicles suitable for the specific type of waste for disposal. All operational details will be documented and the records maintained in the administrative building. ● When waste is temporarily kept, it will be categorised based on its characteristics and tagged with the information such as hazardous or non-hazardous inscription, waste code, stored waste amount, storage date, etc. The Temporary Storage Area's precautions, which include impermeable ground, appropriate drainage for unintentional leaks or spills, a top cover, and rooms specifically designated for distinct types of garbage, will prevent trash from reacting with one another. ● Spill kits will be accessible at the Temporary Storage Area, and appropriate firefighting equipment will be provided to mitigate potential fire risks.	Minor	Included in operation cost	● Mimarsinan OIZ PMU (Performance and Management)
	Generation of sludge at the end of the water treatment process.	Moderate	● The requirements of the waste management in this ESMP will be executed by Mimarsinan OIZ, following the requirements of WB ESS1 and the WBG General EHS Guidelines (including both general and sector-specific guidelines). Additionally, training on the plan will be provided to employees. ● More environmentally friendly alternatives to landfilling will be found in the Sludge Management Plan. In situations where final disposal is the only viable alternative, the management plan will specify the disposal process. ● Final sludge will be stored in special containers designated for this purpose only. ● The dried sludge will be transported to the nearest licensed facility, after its waste classification status is determined by an accredited laboratory, using licensed trucks.	Minor	Included in operation cost	● Mimarsinan OIZ PMU (Performance and Management)
Wastewater Management	Wastewater generation in the WWTP. Degradation of water quality in nearby bodies due to waste dispersion or improper storage, handling, and transfer of solid waste.	Minor	● Mimarsinan OIZ will implement the requirements of the Water Resources and Use in this ESMP in accordance with WB ESSs and WBG EHS Guidelines (both general and sector-specific). Employees will be trained on this plan before the operation stage to ensure that: ● The WWTP's effluent water quality will fulfil the Regulation on Water Pollution Control or adhere to internationally recognised standards. ● In order to minimise system overflows, level meters will be used.	Minor	Included in operation cost	● Mimarsinan OIZ PMU (Performance and Management)

Issue	Potential Impact	Impact Significance Before Mitigation (Minor, Moderate, Major)	Mitigation Measure	Impact Significance After Mitigation (Minor, Moderate, Major)	Cost of Mitigation (if substantial)	Responsible Party/Parties

			• Since water system leaks and pressure loss are significant concerns during the operation stage of the WWTP,
			  ○ It is essential to confirm that the operation complies with relevant industry standards and norms.
			  ○ Regular inspections and maintenance should also be conducted.
			  ○ A leak detection and repair program should be established, which includes maintaining records of previous leaks and unaccounted-for water to identify potential problem areas.
			  ○ Mains with a higher risk of leaks due to their location, pressure stresses, and other contributing factors should be replaced.
			• Machinery and equipment will be regularly inspected for oil and fuel leaks to prevent contamination of nearby surface water and groundwater resources during operation and maintenance activities.
			• Safe delivery, storage, and handling procedures will be established in accordance with the material safety data sheets (MSDSs).
			• Any spilled material will be immediately contained and cleaned up.			

Land Use	Creation of visual pollution.	Minor	• Along the wastewater treatment plant's perimeter, trees will be planted. • The structures that are visible should be painted with background-appropriate colours by Mimarsinan OIZ.	Minor	Included in operation cost	• Mimarsinan OIZ PMU (Performance and Management)
Natural Disaster Potential	Vulnerability to seasonal flooding leading to malfunction of treatment processes, damage to critical equipment, discharge of untreated wastewater, and regulatory non-compliance	Minor	• Drainage systems, flood barriers, and pumping stations will regularly be inspected and maintained to prevent water accumulation and equipment damage. • Critical equipment and control panels will be elevated or flood-proofed to protect against water ingress during heavy rainfall events. • Flood risk will be addressed as part of the facility's Emergency Preparedness and Response Plan, including early warning systems, backup power supply, and periodic staff training.	Minor	Included in operation cost	• Mimarsinan OIZ PMU (Performance and Management)
Biodiversity and Protected Areas	Damage or loss of habitat and species.	Minor	• There shall be no hunting, fishing, wildlife capture, or plant collection within the Project area or its vicinity	Negligible	Included in operation cost	• Mimarsinan OIZ PMU (Performance and Management)
Aquatic Biodiversity	Damage or loss of habitat	Moderate	• No kind of waste will be dumped onto a riverbed. • Mitigation measures regarding the "Water Resources and Use will be complied with. • Any wastewater discharge into the streambed should be carried out in full compliance with applicable regulations and environmental laws. • The discharge should be comply with stringent legal and environmental regulatory standards concerning its chemical composition, ensuring the absence of harmful substances that could adversely impact the surrounding aquatic ecosystem.	Minor	Included in operation cost	• Mimarsinan OIZ PMU (Performance and Management)
Community Health and Safety	Community health and safety risks.	Minor	• Operations of the WWTP will be conducted in a manner that does not restrict or hinder the social and economic activities of local residents. • To ensure the safety and daily life of communities are not impacted, safety and information signs will be installed on-site prior to the commencement of work. • The construction areas will be enclosed with a wire fence, and warning signs will be posted. • At least two days before beginning any repair or maintenance work that might cause disruptions, notifications will be sent to the public, nearby institutions and organizations, as well as hospitals and schools. • The grievance mechanism will continue functioning and be accessible for the local community, and updated information about the grievance mechanism will be continuously provided. If there are any updates to the documents, the new information will be communicated to the local people through the relevant headman's office.	Minor	Included in operation cost	• Mimarsinan OIZ PMU (Performance and Management)

Issue	Potential Impact	Impact Significance Before Mitigation (Minor, Moderate, Major)	Mitigation Measure	Impact Significance After Mitigation (Minor, Moderate, Major)	Cost of Mitigation (if substantial)	Responsible Party/Parties
Working Conditions and Labour Management	Potential for workers to face unfair or illegal treatment. Potential for workers to be denied access to job training, grievance mechanisms, and/or union organizations.	Minor	• Immediately after their recruitment, new hires will undergo induction training provided by Mimarsinan OIZ. This training will cover several important topics, including: ○ Fair treatment and non-discrimination. ○ Equal opportunity for all employees. ○ Development of a positive worker-management relationship. ○ Compliance with national labour laws and labour management policies (LMP). ○ Adherence to the organization's code of conduct. ○ Promotion of safe working conditions to ensure the health and safety of workers. ○ Prevention of child labour and forced labour, in accordance with Turkish laws and WB standards and Health, Safety, and Environment (HSE) requirements. ○ Overview of the Grievance Mechanism (GM) available to workers. • The existing Human Resources Policy, which aligns with the European Convention on Human Rights and the Turkish Constitution, will continue to be enforced. This policy guarantees workers' rights to collective bargaining as outlined in Law on Trade Union and Collective Bargaining (6356) and the Labour Law (4857) on Collective Bargaining. Additionally, discrimination in labour relations based on language, race, gender, political opinion, philosophical belief, and religion will be systematically eradicated. • In order to avoid a labour inflow and to provide employment possibilities for locals, local hiring will be given priority wherever it is practical. • Employees will be given written contracts upon recruitment with information on their rights under national labour law that is straightforward to read and comprehend. This contains information about collective bargaining agreements, job description, wages, perks, overtime, and working hours. At the beginning of their job and at any time when there are major changes, this information will be shared. • Employees won't be discouraged from choosing representatives, starting or joining organisations, or participating in collective bargaining. Those who engage in or want to engage in such activities will not face discrimination or reprisal. • Minimum legal labour standards will be met (child/forced labour, anti-discrimination, working hours, minimum wages) as per ILO regulations. • Workers will be introduced to the grievance mechanism officer and will have free access to and be informed about the grievance mechanism.	Minor	Included in operation cost	• Mimarsinan OIZ PMU (Performance and Management)
	Possibility of gender based violence occurrence. Possibility of sexual exploitation abuse and/or sexual harassment occurrence.	Moderate	• The developed Code of Conduct will be included in workers' contracts, and employees will receive training and orientation on it. • Before contractors start work, the GM) shall be set up to properly handle SEA/SH risks. There will be several secure and private ways to report GBV and SH/SEA issues. The Community Liaison Officer (CLO) and GM operators will receive training on how to manage SEA/SH cases in a judgment-free, compassionate, and private manner. • Workers will receive mandatory and regular training on the required lawful conduct within the local community, as well as the legal consequences for failing to comply with these laws. • There will be a firm commitment to cooperate with law enforcement agencies in investigating and addressing cases of gender-based violence. This policy ensures full support and collaboration with authorities to hold perpetrators accountable. • A teamwork will be established with workers to facilitate the reporting of workers' misconduct and complaints related to gender-based violence or harassment through the GM. This collaboration will ensure that such issues are addressed promptly and effectively.	Minor	Included in operation cost	• Mimarsinan OIZ PMU (Performance and Management)

Issue	Potential Impact	Impact Significance Before Mitigation (Minor, Moderate, Major)	Mitigation Measure	Impact Significance After Mitigation (Minor, Moderate, Major)	Cost of Mitigation (if substantial)	Responsible Party/Parties
	Possibility of unfair and/or illegal treatment of third-party workers.	Minor	• Any subcontractors will be respectable and genuine companies, such as those offering maintenance, security, or food services. To guarantee that businesses function in accordance with the regulations pertaining to labour conditions, they will comply with the Environmental and Social Management requirements in this ESMP. • Subcontractors' performance will be closely monitored to make sure that labour laws and human rights regulations are respected for all employees. Contracts will have clauses addressing any non-compliance problems. • Subcontractor workers will have access to the Project's overall grievance mechanism, ensuring they can report any issues or concerns effectively.	Minor	Included in operation cost	• Mimarsinan OIZ PMU (Performance and Management)
Occupational Health and Safety (OHS)	Inadequate health and safety conditions for workers.	Moderate	• Employees will get information about their job descriptions, duties, community relations, and any hazards that may affect their occupational health and safety prior to starting work. • Workers will receive proper induction, health and safety training, and relevant information to ensure they are well-prepared and aware of all necessary safety protocols and procedures. • Every piece of equipment utilised during the operation stage will be maintained in optimal functioning condition. • Emergency Plan requirements will be determined to address potential accidents or emergencies. Emergency teams will be established, and drills and training programs will be conducted based on these emergency scenarios. • Employees will be well-informed in emergency plans, ensuring they know how to respond effectively. Any grievances requiring urgent action will be promptly reported to the authorized teams and resolved swiftly. • In the event of an accident-causing injury during the operation phase, first aid equipment will be readily available at the rehabilitation center. • Mimarsinan OIZ commits to ensuring that all work is conducted safely and in an orderly manner, with the aim of minimizing risks to neighboring residents and the environment. • All activities will be implemented in line with both the Occupational Health and Safety Law (6331) and its relevant regulations, and also the WBG's EHS Guidelines. • Training sessions and incidents (e.g., deaths, lost time, pandemic or infectious disease outbreaks, social disturbances, etc.) will be recorded. • In the event of any incident or accident related to the Project, the Kayseri Mimarsinian OIZ will promptly inform the MoIT within 3 business days, and MoIT will notify the WB. The Mimarsinan OIZ will provide detailed information about the incident. The Mimarsinan OIZ will submit an incident report, including RCA, precautions, and compensation measures, to MoIT within three business days. MoIT will forward this report to the WB immediately upon receipt. • The Project will utilize equipment that adheres to international performance and safety standards. • Chemicals will be kept indoors with careful sealing. They will only be handled by experienced workers, guaranteeing that workers have little to no interaction in terms of both quantity and length. • Proper ventilation systems will be installed in all areas where chemicals are stored or used. • Where work is done at heights, the appropriate safety precautions will be put in place. This entails setting up lifelines, compliant handrail systems, working/maintenance platforms, and ground-mounted safety rails. • Access to workers' GM	Minor	Included in operation cost	• Mimarsinan OIZ PMU (Performance and Management)
Traffic and Transportation	Increase in vehicle traffic during the operation phase.	Minor	• All vehicles involved in transportation activities will adhere to the speed limits specified in the Regulation on Highway Traffic.	Minor	Included in operation cost	• Mimarsinan OIZ PMU (Performance and Management)

Issue	Potential Impact	Impact Significance Before Mitigation (Minor, Moderate, Major)	Mitigation Measure	Impact Significance After Mitigation (Minor, Moderate, Major)	Cost of Mitigation (if substantial)	Responsible Party/Parties
			• All types of waste will be transported by licensed waste transportation companies in accordance with relevant waste and traffic regulations.			
Stakeholder Engagement	Possibility of damage / health hazards to community members at Area of Impact.	Minor	• Communication and interaction with communities will continue, and engagement activities will be scheduled at appropriate times. Furthermore, frequent discussions about Project management will be held with communities and authorities.	Minor	Included in operation cost	• Mimarsinan OIZ PMU (Performance and Management)

9 ENVIRONMENTAL AND SOCIAL MONITORING PLAN

Monitoring is required to ensure the established mitigation management solutions' consistent effectiveness and functionality. The Monitoring Plan's primary goal is to evaluate the degree to which the requirements and mitigation strategies pointed out in this ESMP are being carried out. In this section, monitoring plan of the Project is established by considering the proper implementation of prescribed mitigation measures and requirements of this ESMP. In addition, key monitoring activities and key performance indicators related to pollution prevention are given to ensure compliance with the legal requirements and Project standards.

9.1 Monitoring Plan for the Pre-Construction Phase

Table 9.1. Monitoring Plan for the Pre-Construction Phase

Issue	Parameters to be monitored	Target/Threshold Value	Monitoring location	Monitoring Method	Time/Frequency of Monitoring	Cost of Monitoring	Responsible Party/Parties	Supervision observation and comments
Monitoring Legal Compliance	• Permits/approvals/certifications/official letters.	Having no non-compliance with the relevant standards	• Project Owner's Administrative Building • Contractor's Office	Checking the relevant permits/approvals/certifications/official letters	Before construction/Monthly	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	
Monitoring of the Sub-Management Plans	• Preparation and approval of sub-management plans	Having all required sub-management plans developed, approved, and readily available.	• Project Owner's Administrative Building • Contractor's Office	Site Inspection Document Review	Whole Pre-Construction Phase	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	
Occupational Health and Safety (OHS)	• OHS Plan, OHS Risk Assessment, LM Plan, etc. • Initial E&S and OHS trainings	Having zero grievances in during the pre-construction activities from public and workforce. Any grievances received addressed and resolved within the stipulated time and to the satisfaction of the complainant	• Project Owner's Administrative Building • Contractor's Office	Checking availability of the relevant documents and controlling their approvals. Reviewing training records.	Before construction/Monthly	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	
Site Preparations	• Topsoil management • Erosion control • Waste collection setup • Traffic management	Having no non-compliance with the relevant standards	• Project Area	Visual observation Site inspection	Before construction/Monthly	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	
Community Health and Safety (CHS)	• Traffic control measures (monthly and as needed) and Safe driving and traffic management training for drivers (daily and as required) • Interaction with local communities regarding Project traffic impact (monthly) • Emergency response plan training (once a year) and Potential/actual emergencies (monthly) • Life and Fire Safety (monthly)	Having zero grievances in during the pre-construction activities from public and workforce. Any grievances received addressed and resolved within the stipulated time and to the satisfaction of the complainant	• Project Area	Visual observation Site inspection	Before construction/Monthly	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	
Protecting the Workforce	• Trainings on ESMP	Ensuring that all required staff take the training	• Project Owner's Administrative Building • Contractor's Office • Project Area	Site Inspection Document Review	Before construction/Monthly	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	

Working Conditions and Gender Based Violence (GBV), Sexual Exploitation Abuse / Sexual Harassment (SEA/SH)	• Trainings on grievance mechanism, GBV, and SEA/SH.	Having zero grievances in during the pre-construction activities from public and workforce. Any grievances received addressed and resolved within the stipulated time and to the satisfaction of the complainant	• Project Owner's Administrative Building • Contractor's Office • Project Area	Document Review Review of grievance records and logs	In case of any complaint	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	

9.2 Monitoring Plan for the Construction Phase

Table 9.2. Monitoring Plan for the Construction Phase

Issue	Parameters to be monitored	Target/Threshold Value	Monitoring location	Monitoring Method	Timing/Frequency of Monitoring	Cost of Monitoring	Responsible Party/Parties	Supervision observation and comments
Environmental								
Land use	Visual pollution	Any grievances received addressed and resolved within the stipulated time and to the satisfaction of the complainant.	All construction sites at determined locations	Checking whether there is a grievance regarding visual pollution.	Monthly	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	
Geology	Geological conditions, including visual observation and controlling the Disaster and Emergency Management Authority's earthquakes list, to detect changes in soil conditions, subsurface stability, and seismic activity, and to adjust mitigation measures accordingly.	Taking precautions before construction activities have an impact on geological conditions or vice-versa.	All construction sites at determined locations	Regular track and conformity evaluation.	Monthly	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	
Hydrogeology	Hydrogeological conditions, regarding groundwater and surface water levels and pollution.	Taking precautions before construction activities have an impact on hydrogeological conditions or vice-versa.	All construction sites at determined locations	Regular track and conformity evaluation.	Monthly	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	
Climate	NA	NA	All construction sites at determined locations	NA	Monthly	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	
Soil quality	Regular soil monitoring on soil quality parameters (*Please See Chapter 3 for Project Standards)* and adaptive management strategies will be employed, allowing for adjustments to mitigation measures based on monitoring results.	Having no non-compliance with the Project Standards (Please See Chapter 3 for Project Standards)	All construction sites at determined locations	Visual observation and analyses	When soil contamination resulting from project activities is observed/after each incident	1000 Dollars if analysis by third party needed	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	
Air quality and odour	Air Quality (Please See Chapter 3 for Project Standards)	Having no non-compliance with the Project Standards (Please See Chapter 3 for Project Standards)	All construction sites at determined locations	Measurement test results will be checked with the Project standards	Monthly	1000 Dollars if analysis by third party needed	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	
	Grievances	Any grievances received addressed and resolved within the stipulated time and to the satisfaction of the complainant.	All construction sites at determined locations	Checking whether there is a grievance regarding air and odour. If any grievance detected, measurements will be conducted and test results will be checked with the Project standards.	Monthly	1000 Dollars if analysis by third party needed		
Noise	Grievances	Any grievances received addressed and resolved within the stipulated time and to the satisfaction of the complainant.	All construction sites at determined locations	Checking whether there is a grievance regarding noise. If any grievance detected, measurements will be conducted and test results will be checked with the Project standards.	Monthly	1000 Dollars if analysis by third party needed	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	
Water resources	Record the quantity of water used during construction phase	Having no non-compliance with the Project Standards (Please See Chapter 3 for Project Standards)	All construction sites at determined locations	Maintain all necessary documentation to record the quantity of water used	Monthly	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management)	

Issue	Parameters to be monitored	Target/Threshold Value	Monitoring location	Monitoring Method	Timing/Frequency of Monitoring	Cost of Monitoring	Responsible Party/Parties	Supervision observation and comments
	Acquire the permits related to water use	Acquiring and maintaining the permits regarding the water use from the related municipality.	All construction sites at determined locations	Maintain all necessary documentation and permits related to water use	Continuous	No additional cost	• Contractor (Implementation)	
	Water Pollution Prevention Training	100% of personnel will be trained regarding water quality management requirements prior to start in construction of the Project.	All construction sites at determined locations	Personnel who work in the construction phase will receive pollution prevention training to mitigate adverse effect on environment, human and animal health	As needed	No additional cost		
	Groundwater Level Measurement	Having zero grievances in a month from the public regarding groundwater level and quality	All construction sites at determined locations	Groundwater level will be measured.	In case of any grievance	No additional cost		
Wastewater management	Wastewater Discharge:	Maintaining compliance with the legislation Limiting risks to the environment regarding wastewater discharge	All construction sites at determined locations	Regular checks for effluent analysis, monitoring the septic tank's fulfillment and requesting proper wastewater disposal if it reaches 80%, maintaining documentation of the vacuum truck's transfer, and collaborating with the existing WWTP for the disposal of generated wastewater.	Continuous	1000 Dollars if analysis by third party needed	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	
Waste management	Waste Identification and Quantification	Maintain all necessary documentation to record the waste types and amounts and ensuring proper waste segregation practices	All construction sites at determined locations	Regular check for MoTAT Waste disposal records (amount, date, disposal authority, disposing party)	Monthly	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	
	Periodic site inspections to the waste collection points and waste storage areas	Limiting risks regarding waste management activities Decreasing the waste management expenses	All construction sites at determined locations	Provide proper protocols and agreements with competent licensed waste management firms.	Monthly	No additional cost		
Natural disaster	Geological conditions, including visual observation and controlling the Disaster and Emergency Management Authority's earthquakes list, to detect changes in soil conditions, subsurface stability, and seismic activity, and to adjust mitigation measures accordingly.	Taking precautions before the natural disasters have an impact on construction activities.	All construction sites at determined locations	Regular consultation with national disaster monitoring agencies (AFAD, meteorological services) Site inspections after extreme events Review of structural monitoring system data		No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	
Biodiversity	Changes or Modifications to the Habitat Mortality of terrestrial fauna Mortality of fishes	Complete prohibition of hunting, wildlife capture, and plant collection. No harm to natural habitats, wetlands, or areas designated as protected or ecologically sensitive. Prevention of mortality in endangered species	All construction sites at determined locations	Regular on-site inspections will be conducted to ensure that no harm is caused to the habitat, fauna, or flora in the Project area and its immediate surroundings.	Continuous	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	
Pesticide	Pesticide and TPH sampling and analysis, comparing results with national legislation's threshold values for groundwater pollution transport and drinking	National regulatory limits WHO and FAO Guidelines	All construction sites at determined locations	Laboratory testing of soil and water samples, inventory checks, site inspections, and interviews with workers	As needed	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	
Social								
Cultural heritage	Archaeological monitoring	Compliance with national legislative requirements: Reporting 100% of the	All construction sites at	Archaeologists or cultural heritage monitoring consultants will be employed	Continuous	1000 Dolar if an expert by third party needed		

Issue	Parameters to be monitored	Target/Threshold Value	Monitoring location	Monitoring Method	Timing/Frequency of Monitoring	Cost of Monitoring	Responsible Party/Parties	Supervision observation and comments
		number of cultural heritage findings throughout construction period.	determined locations	for daily archaeological monitoring during construction. The experts will work with equipment operators and have authority to stop work. They will accompany all ground disturbance activities. They will instruct operators to stop work in case of a chance find. The experts will train employees about the Cultural Heritage			• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	
		No grievances within six months regarding cultural heritage	All construction sites at determined locations	A complaint mechanism to be established, which complaints related to cultural heritage can be submitted and the complaints and producing solutions are periodically monitored	Every 6 months	No additional cost		
Economy/ Employment	Sub-contractors and economic facilities Recruitment documentations	Number of Sub-contractors	All construction sites at determined locations	Documents of agreements between cub-contractor and employee recruitment	Monthly	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	
Vulnerable Groups	Grievance mechanism	No grievances remain unresolved beyond the target timeframe	All construction sites at determined locations	Grievance records, which detail the number and nature of grievances	Monthly	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	
Stakeholder Engagement	Prescribed consultations conducted Public GM functioning with all grievances responded to in an adequate and timely manner	No grievances remain unresolved beyond the target timeframe	All construction sites at determined locations	Documents of grievance mechanism and stakeholder activities	Monthly	No additional cost	• the OIZ • Contractor	
Labour and Working conditions	Workers' Grievances Mechanism Training records Recruitment documentations Number of employees based on local, non-local, gender, immigrants	No grievances remain unresolved beyond the target timeframe. All employees will receive training on OHS, GM, GBV, and SEA/SH issues, along with other environmental and social concerns. All recruitment documentation will comply with national and international standards.	All construction sites at determined locations	The following documents are essential for effective management and compliance: internal and external audits; grievance records, which detail the number and nature of grievances; accident and incident records; and training records. Human Resources Policy, the number of local employees is also crucial, along with ensuring that all legal work permits are in order.	Monthly	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	
Training	Induction Training OHS and Accident Investigation and Community Health and Safety Root Cause Training ESMP Training Environmental Management System Awareness Training Training on GM	All employees receive training on topics determined according to their training programs.	All construction sites at determined locations	Documents and records of training topics, participation list, and traineer list	Monthly	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) •	
Community health and Safety	Traffic control measures (monthly and as needed) Safe driving and traffic management training for drivers (daily and as required)	Having zero grievances during the construction activities from public and workforce.	All construction sites at determined locations	Regular Accident monitoring Accident inspection of specific locations	Monthly	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management)	

Issue	Parameters to be monitored	Target/Threshold Value	Monitoring location	Monitoring Method	Timing/Frequency of Monitoring	Cost of Monitoring	Responsible Party/Parties	Supervision observation and comments
	Emergency response plan and its training	Having zero CHS incidents resulting in loss of time or damage of Project material.	All construction sites at determined locations	Emergency Response Audit Reports	Monthly	No additional cost	• Contractor (Implementation)	
	Life and Fire Safety	Having zero CHS incidents resulting in loss of time or damage.	All construction sites at determined locations	Regular track of records regarding accidents	Monthly	No additional cost		
Occupational health and safety	OHS accident/incident/near misses	Having zero accident recorded and reasonable number of recorded near misses.	All construction sites at determined locations	Reporting accident/incident/near misses	Monthly	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	
	Internal Complaints	Having zero number of grievances	All construction sites at determined locations	Investigation of received complaints	Monthly	No additional cost		
	Non-compliances	Zero number of non-compliances	All construction sites at determined locations	Identification of non-compliances via site inspections	Monthly	No additional cost		
	Risk Assessments	Zero number of risk assessment Taking swift and adequate remedial action in case of grievances	All construction sites at determined locations	Analysing the risk assessments of Project Company, Subcontractors and Suppliers	Annual	No additional cost		
	Health and safety of workers	Having zero accident recorded and reasonable number of recorded near misses.	All construction sites at determined locations	Investigating recorded health, safety and security incidents involving by workers	Monthly	No additional cost		
	Drills	Completed Drills	All construction sites at determined locations	Implementation and reporting of drills determined in the Annual Drill Plan	Annual	No additional cost		
Traffic and Transportation	Traffic control measures	Having zero fatal and serious injury accidents throughout the construction period	All construction sites at determined locations	Accident monitoring Accident inspection of specific locations Site inspection in accordance with TMP	Monthly	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	
	Driver competency	Having zero driver-related accidents throughout the construction period	All construction sites at determined locations	Tracking of training records.	Monthly	No additional cost		
	Grievance	Having zero justified complaints from the public on traffic and transport safety throughout the construction period	All construction sites at determined locations	Tracking of grievances/complaints	Monthly	No additional cost		
Cultural Heritage	Cultural Heritage Assets	Chance Findings	All Construction Area	Visual observation in case of any chance find	Whole Construction Phase	No additional cost	• Mimarsinan OIZ PMU (Supervision/Monitoring and Management) • Contractor (Implementation)	

9.3 Monitoring Plan for the Operation Phase

Table 9.3. Monitoring Plan for the Operation Phase

Issue	Parameters to be monitored	Target/Threshold Value	Monitoring location	Monitoring Method	Timing/Frequency of Monitoring	Cost of Monitoring	Responsible Party/Parties	Supervision observation and comments
Environmental								
Land use	Visual pollution	Having zero grievances in during the operation activities from public and workforce.	Project site	Checking whether there is a grievance regarding visual pollution.	Monthly	No additional cost	• Mimarsinan OIZ PMU (Performance and Management	
Geology	Geological conditions, including visual observation and controlling the Disaster and Emergency Management Authority's earthquakes list, to detect changes in soil conditions, subsurface stability, and seismic activity, and to adjust mitigation measures accordingly.	Taking precautions before geological changes have an impact on operations.	Project site	Regular track and conformity evaluation.	Monthly	No additional cost	• Mimarsinan OIZ PMU (Performance and Management)	
Hydrogeology	Hydrogeological conditions, regarding groundwater and surface water levels and pollution.	Taking precautions before operation activities have an impact on hydrogeological conditions or vice-versa.	Project site	Regular track and conformity evaluation.	Monthly	No additional cost	• Mimarsinan OIZ PMU (Performance and Management)	
Climate	NA	NA	Project site	NA	Monthly	No additional cost	• Mimarsinan OIZ PMU (Performance and Management)	
Soil quality	Regular soil monitoring on soil quality parameters (*Please See Chapter 3 for Project Standards)* and adaptive management strategies will be employed, allowing for adjustments to mitigation measures based on monitoring results.	Having no non-compliance with the Project Standards (Please See Chapter 3 for Project Standards)	Project site	Visual observation and analyses	When soil contamination resulting from project activities is observed/after each incident	1000 Dolar if analysis by third party needed	• Mimarsinan OIZ PMU (Performance and Management)	
Air quality and odour	Air Quality (Please See Chapter 3 for Project Standards)	Having no non-compliance with the Project Standards (Please See Chapter 3 for Project Standards)	Project site	Measurement test results will be checked with the Project standards	Monthly	1000 Dolar if analysis by third party needed	• Mimarsinan OIZ PMU (Performance and Management)	
	Grievances	Having zero grievances in during the operation activities from public and workforce.	Project site	Checking whether there is a grievance regarding noise.	Monthly	No additional cost		
Noise	Grievances	Having zero grievances in during the operation activities from public and workforce.	Project site	Checking whether there is a grievance regarding noise.	Monthly	No additional cost	• Mimarsinan OIZ PMU (Performance and Management)	
Water resources	Record the quantity of water used during operation phase	Having no non-compliance with the Project Standards (Please See Chapter 3 for Project Standards)	Project site	Maintain all necessary documentation to record the quantity of water used	Monthly	No additional cost	• Mimarsinan OIZ PMU (Performance and Management)	
	Acquire the permits related to water use	Acquiring and maintaining the permits regarding the water use from the related municipality.	Project site	Maintain all necessary documentation and permits related to water use	Continuous	No additional cost		
	Water Pollution Prevention Training	100% of personnel will be trained regarding water quality management requirements prior to start in operation of the Project.	Project site	Personnel who work in the operation phase will receive pollution prevention training to mitigate adverse effect on environment, human and animal health	As needed	No additional cost		
	Groundwater Level Measurement	Having zero grievances in a month from the public regarding groundwater level and quality	Project site	Groundwater level will be measured.	In case of any grievance	No additional cost		

Issue	Parameters to be monitored	Target/Threshold Value	Monitoring location	Monitoring Method	Timing/Frequency of Monitoring	Cost of Monitoring	Responsible Party/Parties	Supervision observation and comments
Wastewater management	Wastewater Discharge	Maintaining compliance with the legislation Limiting risks to the environment regarding wastewater discharge	Project site (Discharge point to Söğüt Stream)	Regular checks for effluent analysis, monitoring the septic tank's fulfillment and requesting proper wastewater disposal if it reaches 80%, maintaining documentation of the vacuum truck's transfer, and collaborating with the existing WWTP for the disposal of generated wastewater.	Continuous	1000 Dolar if analysis by third party needed	• Mimarsinan OIZ PMU (Performance and Management)	
Waste management	Waste Identification and Quantification	Maintain all necessary documentation to record the waste types and amounts and ensuring proper waste segregation practices	Project site	Regular check for MoTAT Waste disposal records (amount, date, disposal authority, disposing party)	Monthly	No additional cost	• Mimarsinan OIZ PMU (Performance and Management)	
	Periodic site inspections to the waste collection points and waste storage areas:	Limiting risks regarding waste management activities Decreasing the waste management expenses	Project site	Provide proper protocols and agreements with competent licensed waste management firms.	Monthly	No additional cost		
Natural disaster	geological conditions, including visual observation and controlling the Disaster and Emergency Management Authority's earthquakes list, to detect changes in soil conditions, subsurface stability, and seismic activity, and to adjust mitigation measures accordingly.	Taking precautions before the natural disasters have an impact on operations.	Project site	Reporting: Provide waste records to track progress, with 100% of reports submitted on time (amount, date, disposal authority, disposal facility).		No additional cost	• Mimarsinan OIZ PMU (Performance and Management)	
Biodiversity	Mortality of terrestrial fauna	Complete prohibition of hunting, wildlife capture, and plant collection. Prevention of mortality in endangered species	Project site	Regular on-site inspections will be conducted to ensure that no harm is caused to, fauna, or flora individuals.	Continuous	No additional cost	• Mimarsinan OIZ PMU (Performance and Management)	
Aquatic Biodiversity	Mortality of fishes	Prevention of mortality in endangered species	Project site (Discharge point to Söğüt Stream	Aquatic habitat monitoring studies will be conducted regularly on an annual basis, particularly in the area where wastewater discharge occurs. Regular inspections will be carried out at the discharge point to Söğüt Stream to ensure that no harm is inflicted on fishes.	Annualy	No additional cost	• Mimarsinan OIZ PMU (Performance and Management)	
Pesticide	Pesticide and TPH sampling and analysis, comparing results with national legislation's threshold values for groundwater pollution transport and drinking	National regulatory limits WHO and FAO Guidelines	All construction sites at determined locations	Laboratory testing of soil and water samples, inventory checks, site inspections, and interviews with workers	As needed	No additional cost	• Mimarsinan OIZ PMU (Performance and Management)	
Social								
Cultural heritage	Archaeological monitoring	No grievances within six months regarding cultural heritage	Project site	A complaint mechanism to be established, which complaints related to cultural heritage can be submitted and the complaints and producing solutions are periodically monitored	Every 6 months	No additional cost	• Mimarsinan OIZ PMU (Performance and Management)	

Issue	Parameters to be monitored	Target/Threshold Value	Monitoring location	Monitoring Method	Timing/Frequency of Monitoring	Cost of Monitoring	Responsible Party/Parties	Supervision observation and comments
Economy/ Employment	Sub-contractors and economic facilities Recruitment documentations	Number of Sub-contractors	Project site	Documents of agreements between sub-contractor and employee recruitment	Monthly	No additional cost	• Mimarsinan OIZ PMU (Performance and Management)	
Vulnerable Groups	Grievance mechanism	No grievances remain unresolved beyond the target timeframe	Project site	Grievance records, which detail the number and nature of grievances	Monthly	No additional cost	• Mimarsinan OIZ PMU (Performance and Management)	
Stakeholder Engagement	Recordings of grievance mechanism and stakeholder activities	No grievances remain unresolved beyond the target timeframe	Project site	Documents of grievance mechanism and stakeholder activities, which is detailed the number and nature of grievances and activities	Monthly	No additional cost	• the OIZ Contractor	
Labour and Working conditions	Workers' Grievances Mechanism Training records Recruitment documentations Number of employees based on local, non-local, gender, immigrants	No grievances remain unresolved beyond the target timeframe. All employees will receive training on OHS, GM, GBV, and SEA/SH issues, along with other environmental and social concerns. All recruitment documentation will comply with national and international standards.	Project site	Internal and external audits Grievance records, which detail the number and nature of grievances; accident and incident records; and training records. Human Resources Policy The number of local employees with ensuring that all legal work permits are in order.	Monthly	No additional cost	• Mimarsinan OIZ PMU (Performance and Management)	
Community health and Safety	Traffic control measures (monthly and as needed) Safe driving and traffic management training for drivers (daily and as required)	Having zero grievances in during the operation activities from public and workforce.	Project site	Regular Accident monitoring Accident inspection of specific locations	Monthly	No additional cost	• Mimarsinan OIZ PMU (Performance and Management)	
	Emergency response plan and its training	Having zero CHS incidents resulting in loss of time or damage of Project material.	Project site	Emergency Response Audit Reports	Monthly	No additional cost		
	Life and Fire Safety	Having zero CHS incidents resulting in loss of time or damage.	Project site	Regular track of records regarding accidents	Monthly	No additional cost		
Occupational health and safety	OHS accident/incident/near misses	Having zero accident recorded and reasonable number of recorded near misses.	Project site	Reporting accident/incident/near misses	Monthly	No additional cost		
	Internal Complaints	Having zero number of grievances	Project site	Investigation of received complaints	Monthly	No additional cost		
	Non-compliances	Zero number of non-compliances	Project site	Identification of non-compliances via site inspections	Monthly	No additional cost		
	Risk Assessments	Taking swift and adequate remedial action in case of grievances Zero number of risk assessment	Project site	Analysing the risk assessments of Project Company, Subcontractors and Suppliers	Annual	No additional cost	• Mimarsinan OIZ PMU (Performance and Management)	
	Health and safety of workers	Having zero accident recorded and reasonable number of recorded near misses.	Project site	Investigating recorded health, safety and security incidents involving by workers	Monthly	No additional cost		
	Drills	Completed Drills	Project site	Implementation and reporting of drills determined in the Annual Drill Plan	Annual	No additional cost		
Traffic and Transportation	Traffic control measures	Having zero fatal and serious injury accidents throughout the operation period	Project site	Accident monitoring Accident inspection of specific locations Operation site inspection in accordance with TMP	Monthly	No additional cost	• Mimarsinan OIZ PMU (Performance and Management)	

Issue	Parameters to be monitored	Target/Threshold Value	Monitoring location	Monitoring Method	Timing/Frequency of Monitoring	Cost of Monitoring	Responsible Party/Parties	Supervision observation and comments
	Driver competency	Having zero driver-related accidents throughout the operation period	Project site	Tracking of training records.	Monthly	No additional cost		
	Grievance	Having zero justified complaints from the public on traffic and transport safety throughout the operation period	Project site	Tracking of grievances/complaints	Monthly	No additional cost		
Cultural Heritage	Cultural Heritage Assets	Chance Findings	All Construction Area	Daily Monitoring by an Archaeologist	Whole Construction Phase	The monthly cost for archaeological monitoring and Awareness rising training on preservation of Cultural Heritage is calculated at around 12.000 $ (the total cost includes the expert fee, equipment cost, accommodation costs, travel costs and daily meals).	• Mimarsinan OIZ PMU (Performance and Management)	

10 INSTITUTIONAL ARRANGEMENT AND TRAINING

10.1 Roles and Responsibilities

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.

Mimarsinan OIZ's Project Coordinator

- Overall responsibility for the ESMP implementation,

Mimarsinan OIZ's Project Manager

- Ensure that ESMP provisions are implemented to mitigate environmental (including OHS) and social impacts, and contractor's Labour Management Plan is in accordance with the LMP,
- 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 Expert

- 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.
- Oversee implementation and compliance of environmental mitigation and monitoring measures.
- Conduct and supervise periodic environmental monitoring and site inspections.
- Analyze monitoring results and recommend corrective actions for non-compliance.
- Support the Health, Safety, and Environment (HSE) team in training workers on environmental awareness and emergency response related to environmental risks.
- Prepare and submit environmental monitoring reports to relevant stakeholders.
- Coordinate with authorities and ensure adherence to environmental permit conditions.

Social Expert

- Adopt and implement Stakeholder Engagement Plan (SEP),
- Establish an easily accessible public 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 Expert

- Ensure that implementation and supervision of Occupational Health and Safety Management Plan.
- Preparedness and response to emergency situation according to Emergency Response Plan

- Notify MoIT PIU immediately if 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 three business days.
- Ensure monitoring of the LMP implementation.
- Organize and deliver OHS trainings, including induction, emergency response, and PPE usage.
- Collaborate with the Environmental Expert and Contractor to ensure integrated HSE performance.

Technical Expert

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

Contractor

- Any party responsible for the construction or implementation of the Project in compliance with the design specifications, contractual requirements, and Project standards.

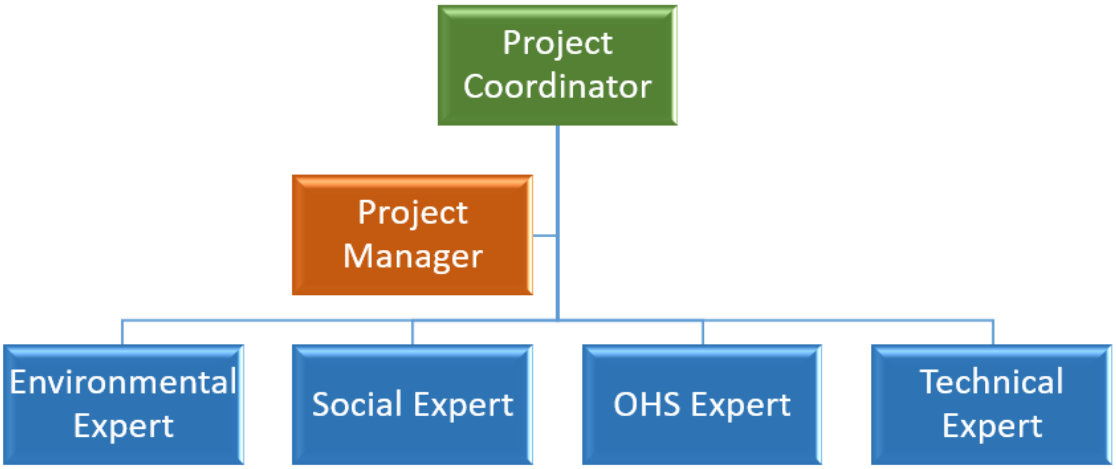


Figure 10.1. Organizational Chart of Project Management Unit (PMU)

A table defining the responsibilities for the MoIT PIU, OIZ PMU, E&S 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 table below.

Table 10.1. National and WB ESF requirements

Institution	Responsibilities
MoIT Project Implementation Unit (PIU)	• Providing guidance to OIZ that is responsible for preparation of this ESMP 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 OIZ in order to develop (performing overall quality assurance) the E&S documents, • Guiding OIZ 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 Labour 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 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 CoC, GM, GBV, SEA/SH, OHS training to the contractor and PMU specialists before the construction activities
OIZ Project Management Unit (PMU)	• Assigning/hiring one environmental, one social expert and one OHS specialist with sufficient qualifications and skills • Identification and management of risks and impacts related to environmental, social and OHS issues during construction activities on site • 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 • The E&S Team will also 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, • Sharing the ESMP with the Contractor, • Guiding the Contractor in preparing the sub-management plans, (also including Contractor's Labour Management Plan) and sharing them with MoIT PIU after review and approval • 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 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 contractor, • Monitoring and evaluating the performance of the contractor activities in line with ESMP requirements, • 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 CoC, GM, GBV, SEA/SH, OHS training to the project personnel before construction activities and repeat annually. Training records will be kept. • Any non-conformities found during the inspections will be managed by a process adapted to the severity of the case, Provide training to the project personnel of the Contractor and their own personnel on ESMP implementations, CoC, OHS, 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 • Preparing the bidding documents during the implementation, conducting bidding processes. The requirements of the WB and the Construction Contract including this ESMP and LMP will be enforced and cooperating with the MoIT PIU for the supervision of construction activities • Supervision of construction and/or rehabilitation works and installation of equipment, • Suspending work in any situation that threatens environment and community and occupational health and safety and informing MoIT PIU, • Analyzing and following-up on 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 48 hours after the occurrence of the incident or accident, • Notifying MoIT PIU immediately about any contingencies such as environmental, social and labour 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 three business days, • 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 MoIT PIU in a timely manner if necessary Receiving and processing public workers' grievances.
E&S Consultant (Mott MacDonald)	• Preparation and finalizing this ESMP 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, Organizing and delivering a training to the respective OIZ 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.
Contractor	• Fulfilment 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 before construction, as part of their method statement and submit to the OIZ and MoIT PIU for reviewing and approval, • 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, • To provide CoC, GM, GBV, SEA/SH, OHS training to the project personnel before construction activities and repeat annually. Training records will be kept. • Employment of competent Environmental, Social 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 OIZ, • Submission of Environmental and Social Progress Reports (ESPRs) on environmental and social issues, mitigation, results and findings throughout the construction period to the OIZ PMU, • Notifying immediately of the contingencies such as environmental, social and labour issues or accidents, incidents or loss of time to OIZ 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 OIZ within 48 hours, • On the basis of the project's Labour Management Procedures, the Labour Management Plan which will be prepared by the contractor will also comply with the Labour Legislation (4857 Labour Law), Occupational Health and Safety Plan and Procedures (6331 Occupational Health and Safety Law) and 5510 Social Insurance Law.

	Implementing TOIZsP Labour Management Procedures to the project including working conditions, fair treatment, non-discrimination, equal opportunity, vulnerable/disadvantaged workers, GBV, SEA/SH, prevention of child labour and forced labour issues under the project's Labour and Employment Policy for construction phase.

10.2 Reporting

Reporting process that should be put into action 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 below.

Table 10.2. Process Requirements

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. Ensure that the Contractor adheres to proper accident reporting procedures, conducts timely reviews, and submits incident reports to the PMU. Additionally, assist in implementing corrective measures where necessary. 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 visit will be included in the quarterly ESRs.
OIZ Project Management Unit (PMU)	Review and submit monthly ESMRs to MoIT PIU The OIZ experts will prepare and submit a monthly compliance report to the MoIT PIU to document construction and compliance activities carried out during the reporting period and to monitor the resolution of any outstanding issues. The report will include: (i) a summary of completed construction activities; (ii) an estimate of remaining construction work and schedule; (iii) a summary of compliance activities; (iv) an updated list of all EHS accidents and incidents that occurred during the reporting period; (v) follow-up information on any unresolved past issues; (vi) photographs of project activities relevant to the implementation of ESMP mitigation measures; and (vii) a daily compliance checklist for each day fieldwork was conducted. Submitting the monthly GMR to cover both Consultant's GMR and Contractor GMR to MoIT PIU
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 Responsible for the immediate reporting, documentation, and internal notification of all accidents, incidents, and near-misses in accordance with the Environmental and Social Commitment Plan (ESCP) and ESMF. Prepare initial and follow up reports, including corrective and preventive actions.

10.3 Training

Please describe training activities for effective implementation of the ESMP. These activities should be detailed in table below:

Table 10.3. Training Program

Training Topics	Responsible Party (Trainer Party)	Target Group	Duration	Time	Cost
Induction Training	Contractor OIZ PMU	Newly recruited Personnel	1 day	-	No additional Cost
OHS and Accident Investigation and Community Health and Safety	Contractor OIZ PMU	Newly recruited Personnel	1 day	Monthly	No additional Cost
Root Cause Training	Contractor OIZ PMU	All personnel	1 day	Monthly	No additional Cost
ESMP Training	Environmental and Social Consultants	All personnel	1 day	Once before implementation repeated on a yearly basis and/or repeated depending on needs.	No additional Cost
Environmental Management System Awareness Training	OIZ PMU	All personnel	1 day	Once before implementation	No additional Cost
Training on GM, SEA/SH, GBV and CoC	MoIT PIU	E&S teams of OIZ PMU	1 day	Once before implementation repeated on a yearly basis and/or repeated depending on needs.	No additional Cost
Training on GM, SEA/SH, GBV and CoC	OIZ PMU	All personnel	1 day	Once before implementation repeated on a yearly basis	No additional Cost

Training Topics	Responsible Party (Trainer Party)	Target Group	Duration	Time	Cost
				and/or repeated depending on needs.	

11 STAKEHOLDER MANAGEMENT UNDER ESMP

This chapter contains a brief description of stakeholder engagement. As mentioned above, the TOIZsP Stakeholder Engagement Plan (SEP) will be used for this Project and all project parties (including contractor, Organized Industrial Zone (OIZ) and Ministry of Industry and Technology (MoIT) PIU) will be responsible for ensuring compliance with the TOIZsP SEP.

A stakeholder is defined as any individual, organization or group who is potentially affected by the Project or who has an interest in the Project and its impacts. The objective of stakeholder identification is to establish which stakeholders may be directly or indirectly affected – either positively or negatively - (“affected parties”) or have an interest in the Project (“other interested parties”).

The term “project affected parties” includes those likely to be affected by the project because of actual impacts or potential risks to their physical environment, health, security, cultural practices, well-being, or livelihoods. These stakeholders may include individuals or groups, including local communities (Please, see Table 11.1: Project Affected Parties).

The term “other interested parties” refers to individuals, groups, or organizations with an interest in the project, which may be because of the project location, its characteristics, its impacts, or matters related to public interest. For example, these parties may include regulators, government officials, the private sector, the scientific community, academics, unions, women’s organizations, other civil society organizations, and cultural groups (Please see, Table 11.2 and Table 11.3)

Table 11.1: Project Affected Parties

Level	Group	Relation to the Project
Mukhtars/ Residents/ Local Communities	The mukhtars and residents at Mimarsinan (Population: 3,399 Distance: 1.5 km), Başakpınar (Population: 3,928 Distance: 4.1 km), Tavlusun (Population: 5,402 Distance: 3 km) Neighbourhoods	Neighbourhoods are key stakeholders considering potential impacts of the Project. The map of the setlements, local businesses and enterprises in the Project AoI are presented in the Figure 6.3.
	Local Businesses and Enterprises (Local shops, income-generating agricultural lands, etc.) are listed, but not limited to: Mimarsinan Eczanesi Reyyan Eczanesi Şirintepe Eczanesi Serkan Eczanesi Toprak Eczanesi Bera Eczanesi Basakpinar Yapi Market Efe market Halisoğlu Market File Market Kahraman Yapı Market Seda Market Kaygisizlar Market Şok Park Market Akıncı Market	

	Çitil Besi Çiftliği Yıldız Restaurant Maraşlı Restaurant Ananın Sofrası Hakikat Market Şahmar Pide Fırın Seher Pastanesi Şirin Aquapark Başyazıcı Center Mimsin BİM A101	
Vulnerable/ Disadvantaged Groups	Individuals over 65 years of age living alone (number of people identified: 26)	Vulnerable groups are key stakeholders considering potential impacts of the Project.
	Low-income families (number of people identified: 179)	
	Physically/Mentally disabled (number of people identified: 19)	
	Refugee(number of people identified: 23)	
Internal Stakeholders	Project staff	These groups are one of the key stakeholders in terms of continuation of the Project activities in compliance with the international standards.
	Contractors and subcontractors and their employees	
	Suppliers and their workers	
	All the industries (current number of establishment: 437) and their workers (number of worker: 7,255) within the OIZ.	

Table 11.2. Other Interested Parties / Governmental Bodies

Level	Organization	Relation to the Project
National	Ministry of Industry and Technology	Ministry of Industry and Technology and its relevant departments have regulatory functions relation to the Project and its components.
	General Directorate of Industrial Zones (GDoIZ)	GDoIZ is one of the key stakeholders of the Project in relation to the Project scope and components in general.
	Directorate of State Hydraulic Works (DSI)	DSI is a key stakeholder when the WWT of the Project is considered.
	Ministry of National Defence	Ministry of National Defence is a significant stakeholder since securing the Project area is crucial.
	Ministry of Agriculture and Forestry (MoAF)	MoAF may have specific views about the design, construction and operation activities of the Project.
	MoAF, General Directorate of Food and Control	
	MoAF, General Directorate of Livestock	
	MoAF, General Directorate of Fisheries and Aquaculture	
	MoAF, General Directorate of Nature Conservation and National Parks	
	MoAF, General Directorate of Energy and Natural Resources	
	MoAF, General Directorate of Water Management	
	Ministry of Environment, Urbanization and Climate Change (MoEUCC)	MoEUCC has regulatory functions in relation to the Project such as environmental impact assessment permits and environmental permitting.
	MoEUCC, General Directorate of EIA, Permit and Audit	
	MoEUCC, General Directorate of Environmental Management	
	MoEUCC, General Directorate of Infrastructure and Urban Transformation	
	MoEUCC, General Directorate of Spatial Planning	

	MoEUCC, General Directorate of Protection of Natural Assets	
	Ministry of Transport and Infrastructure (MoTI)	MoTI may have specific views regarding evaluation of the Project.
	MoTI General Directorate of Infrastructure Investments	
	MoTI General Directorate of Highways	
	Ministry of Labour and Social Security (MoLSS)	MoLSS may have specific views on labour and working conditions, and health and safety of the Project personnel.
	MoLSS, General Directorate of Labor	
	MoLSS, General Directorate of Occupational Health and Safety	
	Ministry of Culture and Tourism (MoCT)	MoCT may have views in terms of legislation.
	MoCT General Directorate of Cultural Heritage and Museums	
	12nd Regional Directorate of State Hydraulic Works (DSI)	This organization may have specific views about water courses running close to the Project area.
	6th Regional Directorate of General Directorate of Highways	The organization may provide opinion regarding road crossing within the Project area.
Regional	Kayseri Regional Council for the Conservation of Cultural Property	This organization is an important stakeholder to identify and clarify the archaeological potential of the Project area.
Provincial	The Governorship of Kayseri	The governorship representing the national government is the highest authority in the province.
	Kayseri Investment and Coordination Committee Directorate	This organization coordinates all kinds of investment and construction works to be carried out by ministries and other central government organizations in the provinces.
	Kayseri Metropolitan Municipality	The metropolitan municipality and its relevant departments will have responsibilities in relation to the Project.
	Kayseri Metropolitan Municipality, Directorate of Environmental Protection and Control	
	Kayseri Metropolitan Municipality, Directorate of Zoning and City Planning	
	Kayseri Metropolitan Municipality, Directorate of Transportation	
	Kayseri Governorship Provincial Directorate of Social Security Institution	This organization may provide specific views on labour and working conditions, and health and safety of facility personnel.
	Kayseri Governorship Provincial Directorate of Environment, Urbanization and Climate Change (PDoEUCC)	PDoEUCC has regulatory functions related to the Project such as environmental impact assessment permits and environmental permitting.
	Kayseri Provincial Directorate of Environment and Urbanization	This organization has regulatory functions in relation to the Project such as environmental impact assessment permits and environmental permitting.
	Kayseri Cultural Heritage Preservation Regional Board Directorate	This organization is an important stakeholder to identify and clarify the archaeological potential of the Project area.
	Kayseri Provincial Directorate of Agriculture and Forestry	These organizations may provide provincial-specific and/or site-specific views on the Project.
	Kayseri Provincial Command of Gendarmerie	
	Kayseri Water and Sewer Administration (KASKİ)	This organization may provide an opinion related to water/wastewater infrastructure of the Project area.
District	The Local Governorship of Melikgazi, The Municipality of Melikgazi	The Project area is located in Melikgazi district and the local governorship, the central municipality and their related departments are stakeholders regarding obtaining relevant permits, approvals during planning, and construction and operation phases of the Project.
	Directorate of Zoning and Urbanisation	
	Directorate of Civil Works	
	Directorate of Plan and Project	
	Directorate of Cleaning Works	
	Directorate of Municipal Police	
	Melikgazi District Directorate of Agriculture and Forestry	
	Melikgazi District Directorate of Health	
	Melikgazi District Gendarmerie Command	
	Melikgazi District Directorate of National Education	

Table 11.3. Other Interested Parties / Non-governmental Bodies

Level	Organization	Relation to the Project
Provincial and District	Organized Industrial Zones Association (OBSDER)	These foundations, associations, and chambers may provide their specific views related to the Project.
	Türkiye Foundation for Combating Erosion, Afforestation and Protection of Natural Assets (TEMA)	
	Environmental Protection and Research Foundation (ÇEV-KOR)	
	Turkish Environmental Protection Foundation (TUÇEV)	
	Turkish Nature Conservation Association	
	Foundation for the Protection and Promotion of Environmental and Cultural Values (ÇEKÜL)	
	World Wide Fund for Nature (WWF) Türkiye	
	Bird Life International Türkiye Partner- Doğa Association	
	The Nature Conservation Centre	
	Resource, Environment and Climate Association (REC)	
	Ecological Research Society (EKAD)	
	Greenpeace Türkiye	
	Association for Sustainable Economics and Finance Research (SEFIA)	
	Education Labor Union Kayseri Branch	
	Kayseri Environment Friends Association (KÇDD)	
	Central Anatolian Industrialists and Businesspeople Associations	
	Kayseri Women's Association	
	Women's Cooperation Development Association (KİGDER)	
	Kayseri Women's Solidarity Association	
	Afghan Refugees Solidarity and Aid Association	
	Altı Nokta Association for the Blind	
	Kayseri Disabled Association	
	Kayseri Foundation for The Raising and Protection of Mentally Disabled Children (KAYZÖV)	
	Anatolian Disabled Association	
	Independent Industrialists and Businessmen Association Kayseri Branch	
	Melikgazi Education and Employment Center	
	Kayseri Erosion Control and Afforestation Foundation (KAYEMA)	
Media	Local, regional, and social media (including but not limited to the following newspapers, TV stations, social media channels)	It is important to engage with local and regional media organizations for effective public disclosure and consultation.
Universities	Erciyes University	Universities are key stakeholders when research needs to be conducted within the scope of the Project.
	Kayseri University	
	Abdullah Gül University	
Other potentially affected local social institutes	Local schools (i.e., Hasan-Nuriye Ünlen Primary School, Mimarsinan Town Sinan Primary School)	It is essential to ensure that the social environments that pose a significant place for community health, safety and security issues (i.e., hospitals, fire stations) and/or where key stakeholders utilize/ spend their time are operating properly at every stage of the Project.
	Mosques	

11.1 Previous Stakeholder Engagement Activities

During the preparation of this ESMP report, stakeholder engagement activities were conducted on-site to inform stakeholders about the proposed Project and to gather primary data for the report. As part of the Project screening report, a meeting was held with representatives from

Kayseri Mimarsinan OIZ and OIZ authorities as part of the TOIZP initiative on July 27, 2023. In addition, interviews were conducted with mukhtars in Mimarsinan, Tavlusun, and Başakpınar on September 27, 2023. The study conducted during the screening report found that the level of information about the process of the Project was sufficient for OIZ authorities and related stakeholders at the national, provincial, and district levels. However, although previous stakeholder meetings increased the level of knowledge in the neighbourhoods in the Project AoI, the individuals changed with the repeated mukhtar elections, and knowledge transfer was not conducted for the new mukhtars. As a result, the field study provides an increased level of information about the Project in the neighbourhoods.

On December 26, 2024, a field study was conducted in Kayseri as part of the ESMP to assess the environmental and social aspects of the Project. The study involved interviews with residents from the Mimarsinan, Tavlusun, and Başakpınar neighbourhoods to evaluate potential environmental and social risks, impacts, and to identify vulnerable groups and stakeholders. It was observed that the level of knowledge of the local people about the stakeholder participation process is not yet sufficient, and their complaints and suggestions regarding the OIZ are made through direct communication or official institutions. A project-specific complaint mechanism will be established, which is based on the main Project's GM, and all stakeholders will be informed about the Project and GM during the stakeholder engagement process. Additionally, meetings with OIZ authorities, field observations, and data collection contributed to a comprehensive analysis of the Project and the stakeholder engagement process. The findings and outcomes of the field study are detailed in Chapter 6 Social Baseline of The Project and *Section 7.2*.

11.2 Disclosure and Consultation of the ESMP

Public disclosure of the ESMP and SEP throughout the Project lifecycle is essential for ensuring transparency regarding the environmental and social risks and impacts of the Project, as well as the proposed mitigation measures and monitoring activities. The OIZ has assisted key stakeholders, particularly vulnerable and disadvantaged groups, and individuals, in accessing the ESMP and SEP documents. The draft ESMP will be disclosed for consultation purposes to gather comments, questions, and concerns from the project stakeholders. Announcements regarding the consultation meeting will be communicated through various channels, such as local media, website posts, posters, and letters. The updated and final ESMP, incorporating the outcomes of the consultations, will be submitted to the World Bank and disclosed following the Bank's approval.

The Stakeholder Consultation Meeting (SCM) in the scope of ESMP will be announced in public locations like mosques and schools, with invitation letters sent to companies in and out of the OIZ, public institutions, and local mukhtars. Announcements will be provided to the local community and relevant organizations at least seven (7) days in advance. Representatives from Mimarsinan OIZ, the Ministry of Industry and Technology (MoIT), public authorities, and local communities will be invited to the meeting. Key findings and participant issues will be documented and included in the ESMP. During the consultation phase, all comments and opinions received will be incorporated into the documents. In addition, a list of participants will also be maintained by the PIU and OIZ for Project purposes.

To comply with the WB ESF and ESSs, the Project Implementation Unit (PIU) or Project Owner is responsible for publicly disclosing this ESMP. The approved version of the ESMP will be accessible locally and provided in printed form at the Mimarsinan Organized Industrial Zone offices, as well as in areas reachable to affected communities via the Mukhtar's offices. Moreover, the ESMP will also be available on the Mimarsinan OIZ website and the Project page of the Ministry of Industry and Technology (MoIT).

Websites:

- http://www.mimarsinanosb.org.tr/
- https://www.yesilosb.com/

11.3 Grievance Mechanism

The primary goal of the grievance mechanism is to help resolve complaints and issues in a timely, effective, and efficient manner that satisfies all parties involved, remaining active throughout the Project's duration. It is designed to allow for the identification and impartial, timely, and sustainable resolution of issues affecting the Project, strengthen accountability among beneficiaries—including Project-affected stakeholders—provide channels for stakeholders to offer feedback and express concerns. Establishing a consultation process must be transparent, sensitive, equal, and easily accessible for all stakeholders.

11.3.1 GM at National Level

The Presidential Communication Center (CIMER) is responsible for receiving and processing requests and grievances related to public institutions and their activities. For issues concerning Mimarsinan OIZ, CIMER forwards the complaint to the OIZ, which is tasked with handling the matter. The OIZ will assign the complaint to the appropriate parties, monitor the progress, and oversee the staff involved in resolving the issue.

If the MoIT PIU receives a complaint from CIMER about the OIZ activities, the designated unit will collaborate with the grievance mechanism focal point at the MoIT PIU to take the necessary actions to address and close the complaint.

In addition to CIMER, there is the Foreigners Communication Center (YIMER), which offers a centralized grievance system specifically for foreigners.

CİMER

- Website: https://www.cimer.gov.tr/
- Postal Address: T.C Cumhurbaşkanlığı Külliyesi Beştepe/ANKARA
- Phone: +90 312 590 20 00

YIMER

- Website: www.yimer.gov.tr
- Postal Address: T.C Cumhurbaşkanlığı Külliyesi Beştepe/ANKARA
- Phone: +90 312 5157 11 22

MoIT Level GM

All stakeholders can submit individual applications to the MoIT grievance mechanism established specifically for the Main Project via ways given below.

- Website: www.sanayi.gov.tr
- Postal Address: Mustafa Kemal Mahallesi Dumlupınar Bulvarı (Eskişehir Yolu 7.km) 2151. Cadde No:154/A 06530 Çankaya/ANKARA
- E-posta: info@sanayi.gov.tr / dboneri@sanayi.gov.tr
- Phone: 444 6 100
- Fax: +90 (312) 201 58 23

11.3.2 Project Level Grievance Mechanism

Currently, the employees/employers of the firms in the Mimarsinan OIZ and the citizens can send any request, suggestion, or grievances through:

- Telephone
  - +90 (352) 294 20 21
  - +90 (533) 923 13 11
- 'Recommendations and Review Section' of its institutional website
  - http://www.mimarsinanosb.org.tr/formlar/195/oneri-ve-elestiri-bolumu.html

11.3.3 Procedural Steps of Grievance Mechanism

As per the World Bank's ESS10 requirement, a proper grievance mechanism (GM) will be established for the Project and will be operational before starting construction. For this mechanism to function in a proper and timely manner, a GM focal point who will oversee the entire process has been assigned as a part of the project team of the MoIT. The GM focal point will also be responsible for reporting the grievance process of the project for monitoring purposes. This person will also be responsible for coordinating the grievance mechanism to ensure its smooth functioning within the scope of the project.

As per the GM procedure prepared for the MoIT's project-specific GM, grievances will be reviewed and closed in 15 days. Regardless of general response and resolution timeframes,

some grievances may require immediate attention, for example, an urgent safety issue or where it concerns the livelihood of locals.

There are steps that complete the grievance mechanism. This process has been detailed in the Table 11.4 below.

Table 11.4. Steps of Grievance Mechanism

Step	Description of Process	Time Frame	Responsibility
GM implementation structure	Grievances Mechanism Project Level: - GM at MoIT level -A Project Level GM will also be established.		MoIT PIU OIZ PMU
Grievance uptake	Grievances can be submitted via telephone, e-mail, letter to Grievance focal points at local facilities, complaint form lodged via any of the above channels or walk-ins may register a complaint in a grievance logbook at a facility or grievance box. Telephone : +90 (352) 294 20 21 Gsm: +90 533 923 13 11 - +90 554 935 82 80 Webpage:http://www.mimarsinanosb.org.tr/formlar/195/oneri-ve-elestiri-bolumu.html Grievance box: Various parts of the buildings will be placed		MoIT PIU OIZ PMU
Sorting, processing	Complaints are forwarded to PMU, logged in the Grievance Log. If out of scope, the grievant is notified and an alternative solution is suggested.		OIZ PMU
Acknowledgement and follow-up	Receipt of the grievance is acknowledged by PMU/Social Expert or GM focal point within 2 working days through a personal meeting, phone call, or letter. Clarifications are sought if necessary.	2 working days	OIZ PMU/Social Expert or GM focal point
Verification, investigation, action	Investigation of the grievant is led by the Project Manager and/or by the relevant unit/section etc. The Project Manager is notified by grievances. The PMU, as appropriate, supports the Project Manager in deciding who will deal with the grievance and determines whether additional support for the response is necessary. If the complaint is the subject to the Workers' GM a workers representative will be participated in this process		Project Manager OIZ PMU Workers' representative
Provision of feedback	**A response will be prepared by the delegated team within 15 days. The response will identify an appropriate resolution to the complaint and will include further information to clarify a situation, take action to mitigate problems or compensate for any damage caused during the Project activities.**	**Within 15 days**	**OIZ PMU**

In addition to the project's GM for stakeholders of project affected parties and other parties, ESS 2 requires the establishment of a Workers' Grievance Mechanism (WGM) for the project

workers. Worker GRM is defined as complaints from project employees (including both direct and indirect employees). This mechanism is structured with an intention of it being an effective approach for early identification, assessment, and resolution of grievances throughout the project's lifespan. If a complainant is not satisfied with the outcome of a grievance mechanism, recommend several steps within the mechanism: allowing appeals or escalation to a higher level, involving neutral third-party mediators, and ensuring access to independent accountability bodies.These mechanisms should also guarantee transparency, protect complainants from retaliation, and not restrict access to legal remedies.

There is a reporting line via WhatsApp within the OIZ for the Worker Grievance Mechanism (WGM), especially for emergency situations that have been taken into consideration. During the field study, it was stated that every employee has access to and information about the system. However, the GM and the WGM were not implemented effectively according to WB ESS 2. The the Worker GM has to be implemented more thoroughly. Additionally, a mechanism should be developed to allow for the anonymous submission of grievances. The Worker GM is explained in detail in the Labour Management Procedures prepared by MoIT[43].

The Labor Management Procedures from the MoIT detail the Worker Grievance Mechanism. The PIU requires contractors to create a grievance mechanism for all workers accordingly, including subcontractors, before work begins.

This mechanism involves:

- Methods for submitting grievances, such as forms, grievances boxes, email, or a telephone helpline.
- Defined timelines for responses and resolutions.
- A tracking table to monitor grievance resolution.
- A dedicated unit to manage the grievance process.

The scope of the Worker GM can be summarized as follows, but not limited to; occupational health and safety, labour conditions, wages, problems with the local community or co-workers, hygiene problems in common areas, insufficient food and/or worker safety, etc. Grievance related to OHS would be addressed and managed immediately, where feasible. Procedural steps of Worker GM is same as described in the Table 11.4.

The World Bank and the Borrower do not tolerate reprisals and retaliation against project stakeholders who share their views about Bank-financed projects.

11.4 Grievances Related GBV/SH/SEA

To properly address SEA/SH risks, the GM will be in place prior to contractors mobilizing. For GBV—and particularly SEA/SH—complaints, there are risks of stigmatization, rejection and reprisals against complainant. This creates and reinforces a culture of silence so complainant may be reticent to approach the project directly. To enable survivors of GBV, SH/SEA to safely access the GM, multiple channels will be made available through which complaints can be registered in a safe and confidential manner. These channels are The Presidency's Communication Centre (CİMER), The Foreigners Communication Center (YİMER), MoIT communication channels at National Level and the Contact page on the website of Mimarsinan OIZ at Project Level. Additionally, the project-specific Grievance Mechanism (GM) will be enhanced with procedures to address allegations of Sexual Exploitation, Abuse, and Sexual Harassment (SEA/SH). The GM focal point personnel or Social Expert / Public Relations will to be trained in how to collect SEA/SH cases confidentially and empathetically.

[43] Documents and Procedures prepared by MoIT

Projects will have multiple complaint channels. No identifiable information about the survivor will be stored in the GM. The GM will not request, or record, information on more than the following information in relation to the SEA/SH allegation:

- The nature of the complaint (what the complainant says in her/his own words without direct questioning);
- If, to the best of the survivor's knowledge, the perpetrator was associated with the Project;
- If possible, the age and sex of the survivor; and
- If possible, information on whether the survivor was referred to services.

The information in the GM will be confidential especially when related to the identity of the complainant/ survivor.

12 List of Annex

12.1 OIZ Management System Certificates

ENERJİ YÖNETİM SİSTEMİ BELGESİ
ENERGY MANAGEMENT SYSTEM CERTIFICATE

TÜRK STANDARDLARI ENSTİTÜSÜ
bu belge ile
KAYSERİ MİMARSİNAN ORGANİZE SANAYİ
BÖLGE MÜDÜRLÜĞÜ
MİMARSİNAN OSB MAH. 9. CAD. NO:18
MELİKGAZİ -
KAYSERİ / TÜRKİYE

kuruluşunun TS EN ISO 50001:2018 şartlarına uygun bir ENERJİ YÖNETİM SİSTEMİ'ne sahip olduğunu onaylar.

Belge kapsamı Ek'te verilmiştir

TSE
TS - EN - ISO
50001

TÜRK STANDARDLARI ENSTİTÜSÜ
TURKISH STANDARDS INSTITUTION

Kayseri Belgelendirme Müdürü
Kayseri Certification Manager

Ahmedi Mahmut ULAŞ

Türk Standardları Enstitüsü Türk Akreditasyon Kurumu TÜRKAK tarafından akredite edilmiştir.
Turkish Standards Institution, has been accredited by the Turkish Accreditation Agency TÜRKAK.

TURKISH STANDARDS INSTITUTION
hereby certifies that the organization
KAYSERİ MİMARSİNAN ORGANİZE SANAYİ
BÖLGE MÜDÜRLÜĞÜ
MİMARSİNAN OSB MAH. 9. CAD. NO:18
MELİKGAZİ -
KAYSERİ / TÜRKİYE

has a ENERGY MANAGEMENT SYSTEM CERTIFICATE which fulfills the requirements of the TS EN ISO 50001:2018

Scope of the certificate is given in annex

Belge No / Certificate No EYB-177/21
Belge Tarihi / Date of Certificate 15.11.2024
Geçerlilik Tarihi / Valid Until 08.12.2027
Revizyon Tarihi / Date of Revision 15.11.2024
İlk Belge Tarihi / Initial Certification Date 08.12.2021

This certificate is valid provided that compliance with the certification requirement is maintained.

38201120240434Si-032

ENERJİ YÖNETİM SİSTEMİ BELGESİ
ENERGY MANAGEMENT SYSTEM CERTIFICATE
EK / APPENDIX

Belge No / Certificate No: EYB-177/21
Belgeli Kuruluş Adı, Adresi:
Name and Address of the Certified Organization:

Belge Kapsamı:
TS EN ISO 50001:2018

ORGANİZE SANAYİ BÖLGE HİZMETLERİ

SUNUMU

TSE
TS - EN - ISO
50001

Belge Tarihi / Date of Certificate: 15.11.2024

KAYSERİ MİMARSİNAN ORGANİZE SANAYİ
BÖLGE MÜDÜRLÜĞÜ
MİMARSİNAN OSB MAH. 9. CAD. NO:18
MELİKGAZİ -
KAYSERİ / TÜRKİYE

Scope of the Certificate:
TS EN ISO 50001:2018

DELIVERY OF

ORGANIZED INDUSTRIAL ZONE SERVICES

38201120240434Si-032

ÇEVRE YÖNETİM SİSTEMİ BELGESİ
ENVIRONMENTAL MANAGEMENT SYSTEM CERTIFICATE

TÜRK STANDARDLARI ENSTİTÜSÜ
bu belge ile

KAYSERİ MİMARSİNAN ORGANİZE SANAYİ
BÖLGE MÜDÜRLÜĞÜ
MİMARSİNAN OSB MAH. 9. CAD. NO:18
MELİKGAZİ -
KAYSERİ / TÜRKİYE

kuruluşunun TS EN ISO 14001:2015 şartlarına uygun bir ÇEVRE YÖNETİM SİSTEMİNE sahip olduğunu onaylar.

Belge kapsamı Ek'te verilmiştir

TURKISH STANDARDS INSTITUTION
hereby certifies that the organization

KAYSERİ MİMARSİNAN ORGANİZE SANAYİ
BÖLGE MÜDÜRLÜĞÜ
MİMARSİNAN OSB MAH. 9. CAD. NO:18
MELİKGAZİ -
KAYSERİ / TÜRKİYE

has an ENVIRONMENTAL MANAGEMENT SYSTEM which fulfills the requirements of the TS EN ISO 14001:2015

Scope of the certificate is given in annex

Ç - E
TSE-İSO-EN
14001

TÜRK STANDARDLARI ENSTİTÜSÜ
TURKISH STANDARDS INSTITUTION

Kayseri Belgelendirme Müdürü
Kayseri Certification Manager

Ahmedi Mahmut ULAŞ

Türk Standardları Enstitüsü Türk Akreditasyon Kurumu TÜRKAK tarafından akredite edilmiştir.
Turkish Standards Institution, has been accredited by the Turkish Accreditation Agency TÜRKAK.

Belge No / Certificate No
ÇY-1123/21
Belge Tarihi / Date of Certificate
13.11.2024
Geçerlilik Tarihi / Valid Until
10.12.2027
Revizyon Tarihi / Date of Revision
13.11.2024
İlk Belge Tarihi / Initial Certification Date
10.12.2021

Bu belge belgelendirme şartlarına uygunluk sağlandığı sürece geçerlidir.
This certificate is valid provided that compliance with the certification requirement is maintained.

382011202404295i-032

ÇEVRE YÖNETİM SİSTEMİ BELGESİ
ENVIRONMENTAL MANAGEMENT SYSTEM CERTIFICATE
EK / APPENDIX

Belge No / Certificate No: **ÇY-1123/21**

Belgeli Kuruluş Adı, Adresi:

Name and Address of the Certified Organization:

Belge Kapsamı:
TS EN ISO 14001:2015

ORGANİZE SANAYİ BÖLGE HİZMETLERİ

SUNUMU

Belge Tarihi / Date of Certificate: **13.11.2024**

KAYSERİ MİMARSİNAN ORGANİZE SANAYİ
BÖLGE MÜDÜRLÜĞÜ
MİMARSİNAN OSB MAH. 9. CAD. NO:18
MELİKGAZİ -
KAYSERİ / TÜRKİYE

Ç - E
TSE-İSO-EN
14001

Scope of the Certificate:
TS EN ISO 14001:2015

DELIVERY OF

ORGANIZED INDUSTRIAL ZONE SERVICES

382011202404295i-032

KALİTE YÖNETİM SİSTEMİ BELGESİ
QUALITY MANAGEMENT SYSTEM CERTIFICATE

TÜRK STANDARDLARI ENSTİTÜSÜ
bu belge ile

KAYSERİ MİMARSİNAN ORGANİZE SANAYİ
BÖLGE MÜDÜRLÜĞÜ
MİMARSİNAN OSB MAH. 9. CAD. NO:18
MELİKGAZİ -
KAYSERİ / TÜRKİYE

kuruluşunun TS EN ISO 9001:2015 şartlarına uygun bir KALİTE YÖNETİM SİSTEMİNE sahip olduğunu onaylar.

Belge kapsamı Ek'te verilmiştir

K - Q
TSE-ISO-EN
9001

TÜRK STANDARDLARI ENSTİTÜSÜ
TURKISH STANDARDS INSTITUTION

Kayseri Belgelendirme Müdürü
Kayseri Certification Manager

Ahmedi Mahmut ULAŞ

Bu belge belgelendirme şartlarına uygunluk sağlandığı sürece geçerlidir.

Türk Standardları Enstitüsü Türk Akreditasyon Kurumu TÜRKAK tarafından akredite edilmiştir.
Turkish Standards Institution, has been accredited by the Turkish Accreditation Agency TÜRKAK.

TURKISH STANDARDS INSTITUTION
hereby certifies that the organization

KAYSERİ MİMARSİNAN ORGANİZE SANAYİ
BÖLGE MÜDÜRLÜĞÜ
MİMARSİNAN OSB MAH. 9. CAD. NO:18
MELİKGAZİ -
KAYSERİ / TÜRKİYE

has a QUALITY MANAGEMENT SYSTEM which fulfills the requirements of the TS EN ISO 9001:2015

Scope of the certificate is given in annex

Belge No / Certificate No KY-5733-09/10-R15
Belge Tarihi / Date of Certificate 14.11.2024
Geçerlilik Tarihi / Valid Until 09.12.2027
Revizyon Tarihi / Date of Revision 14.11.2024
İlk Belge Tarihi / Initial Certification Date 12.02.2009

This certificate is valid provided that compliance with the certification requirement is maintained.

382011202404 25Si-032

KALİTE YÖNETİM SİSTEMİ BELGESİ
QUALITY MANAGEMENT SYSTEM CERTIFICATE
EK / APPENDIX

Belge No / Certificate No: **KY-5733-09/10-R15**

Belgeli Kuruluş Adı, Adresi:

Name and Address of the Certified Organization:

Belge Kapsamı:

TS EN ISO 9001:2015

ORGANİZE SANAYİ BÖLGE HİZMETLERİ

SUNUMU

K - Q
TSE-ISO-EN
9001

Belge Tarihi / Date of Certificate: **14.11.2024**

KAYSERİ MİMARSİNAN ORGANİZE SANAYİ
BÖLGE MÜDÜRLÜĞÜ
MİMARSİNAN OSB MAH. 9. CAD. NO:18
MELİKGAZİ -
KAYSERİ / TÜRKİYE

Scope of the Certificate:

TS EN ISO 9001:2015

DELIVERY OF

ORGANIZED INDUSTRIAL ZONE SERVICES

382011202404 25Si-032

T.C.
KAYSERİ VALİLİĞİ
Çevre ve Şehircilik İl Müdürlüğü

Belge No: TS/38/C/8/2

Tarih: 15/12/2020

SIFIR ATIK BELGESİ
(Temel Seviye)

Adı : **KAYSERİ MİMARSİNAN ORGANİZE SAN.BÖL. MÜTEŞ.TEŞ.BAŞKANLIĞI**
Adresi : **KAYSERİ,MİMARSİNAN OSB Mahallesi, 9 CADDE, No: 18 /1-, MELİKGAZİ,Türkiye**
Vergi No : **5400084558**

12/07/2019 tarihli ve 30829 sayılı Resmi Gazete'de yayımlanarak yürürlüğe giren Sıfır Atık Yönetmeliği'nce Sıfır Atık Yönetim Sistemi'ni kurarak **Sıfır Atık Belgesi**'ni almaya hak kazanmıştır.

e-imzalıdır
Sibel LİVDUMLU
Çevre ve Şehircilik İl Müdürü

Belge Son Geçerlilik Tarihi: 15/12/2025

Bu belge, güvenli elektronik imza ile imzalanmıştır.
Belge Doğrulama Adresi: https://www.turkiye.gov.tr/cevre-ve-sehircilik-bakanligiBelge Doğrulama Kodu : TLVONRTY

12.2 The EIA Exempt Letters

T.C.
ÇEVRE VE ŞEHİRCİLİK
BAKANLIĞI

T.C.
KAYSERİ VALİLİĞİ
Çevre ve Şehircilik İl Müdürlüğü

Sayı :27332451-220.03-E.1505
Konu :Muafiyet

15.02.2018

MİMARSİNAN ORGANİZE SANAYİ BÖLGESİ MÜTEŞEBBİS TEŞEKKÜL BAŞKANLIĞI
Mimarsinan Organize Sanayi Bölgesi 9.Cadde No:18 Melikgazi/KAYSERİ

İlgi : 15/02/2018 tarihli ve "86459" Geçici Referans No'lu Başvuru.

Kayseri İli, Melikgazi İlçesi, Mimarsinan Organize Sanayi Bölgesi 7553 Ada 21 Parselde Mimarsinan Organize Sanayi Bölgesi Müteşebbis Teşekkül Başkanlığı tarafından yapılması planlanan Kanalizasyon Şebeke Hattı, Yağmursuyu Şebeke Hattı, İçme ve Kullanma Suyu Şebeke Hattı, Doğalgaz Dağıtım Şebeke Hattı ve Atıksu Arıtma Tesisi 2.kademe (2000m3/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.

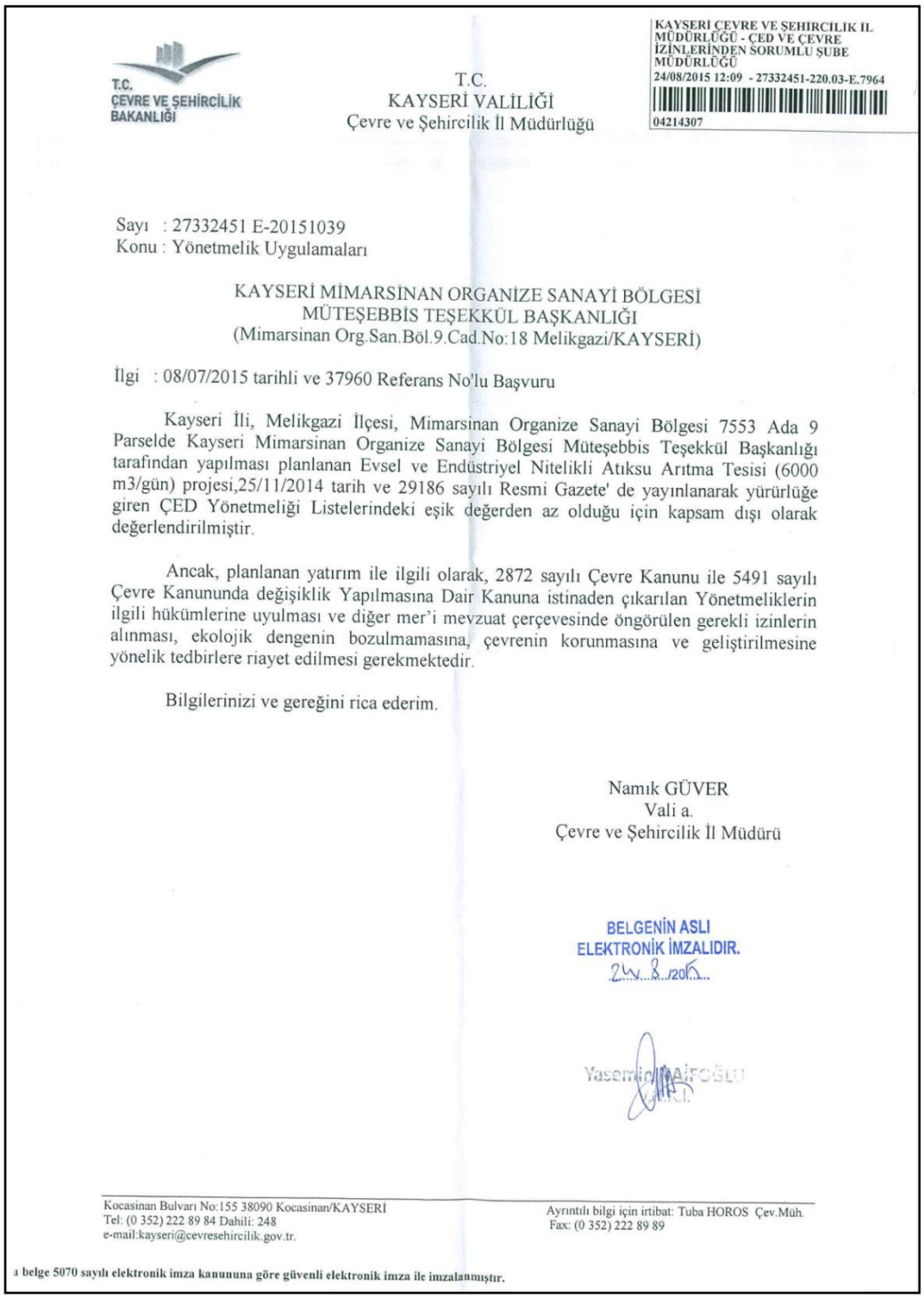
e-imzalıdır
Sibel LİVDUMLU
Vali a.
Çevre ve Şehircilik İl Müdürü

Fatime ZEREN TOMAR

BELGENİN ASLI
ELEKTRONİK İMZALIDIR.
15/02/2018

Not: 5070 sayılı Elektronik İmza Kanunu gereği bu belge elektronik imza ile imzalanmıştır.
Evrak Doğrulama Kodu : XYENCDMVJEKNQRTTWCEW Evrak Takip Adresi https://www.turkiye.gov.tr/cevre-ve-sehircilik-bakanligi
Kocasinan Bulvarı No:155 38090 Kocasinan/KAYSERİ Tel: (0 352) 222 89 84 Fax: (0 352) 222 89 89
e-mail:kayseri@csb.gov.tr
KEP: kaysericevreveschircilik@hs01.kep.tr

Bilgi için:Tuba Horos
Mühendis (Özelleştirme)



T.C.
ÇEVRE VE ŞEHİRCİLİK
BAKANLIĞI

T.C.
KAYSERİ VALİLİĞİ
Çevre ve Şehircilik İl Müdürlüğü

KAYSERİ ÇEVRE VE ŞEHİRCİLİK İL MÜDÜRLÜĞÜ - ÇED VE ÇEVRE İZİNLERİNDEN SORUMLU ŞUBE MÜDÜRLÜĞÜ
24/08/2015 12:09 - 27332451-220.03-E.7964
04214307

Sayı : 27332451 E-20151039
Konu : Yönetmelik Uygulamaları

KAYSERİ MİMARSİNAN ORGANİZE SANAYİ BÖLGESİ
MÜTEŞEBBİS TEŞEKKÜL BAŞKANLIĞI
(Mimarsinan Org.San.Böl.9.Cad.No:18 Melikgazi/KAYSERİ)

İlgi : 08/07/2015 tarihli ve 37960 Referans No'lu Başvuru

Kayseri İli, Melikgazi İlçesi, Mimarsinan Organize Sanayi Bölgesi 7553 Ada 9 Parselde Kayseri Mimarsinan Organize Sanayi Bölgesi Müteşebbis Teşekkül Başkanlığı tarafından yapılması planlanan Evsel ve Endüstriyel Nitelikli Atıksu Arıtma Tesisi (6000 m3/gün) projesi,25/11/2014 tarih ve 29186 sayılı Resmi Gazete' de yayınlanarak yürürlüğe giren ÇED Yönetmeliği Listelerindeki eşik değerden az olduğu için kapsam dışı olarak değerlendirilmiştir.

Ancak, planlanan yatırım ile ilgili olarak, 2872 sayılı Çevre Kanunu ile 5491 sayılı Çevre Kanununda değişiklik Yapılmasına Dair 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.

Namık GÜVER
Vali a.
Çevre ve Şehircilik İl Müdürü

BELGENİN ASLI
ELEKTRONİK İMZALIDIR.
24.8.2015

Yasemin [illegible]

Kocasinan Bulvarı No:155 38090 Kocasinan/KAYSERİ
Tel: (0 352) 222 89 84 Dahili: 248
e-mail:kayseri@cevresehircilik.gov.tr.

Ayrıntılı bilgi için irtibat: Tuba HOROS Çev.Müh.
Fax: (0 352) 222 89 89

Bu belge 5070 sayılı elektronik imza kanununa göre güvenli elektronik imza ile imzalanmıştır.

12.3 WWTP Environmental Permit

T.C.
ÇEVRE VE ŞEHİRCİLİK BAKANLIĞI
ÇED İzin ve Denetim Genel Müdürlüğü

Sayı : 62159566-150/E.8423 09.11.2021
Konu : Çevre İzin Belgesi

KAYSERİ MİMARSİNAN ORGANİZE SAN.BÖL. MÜT.TEŞ.BAŞKANLIĞI
MİMARSİNAN OSB Mahallesi, 9 CADDE, No: 18 /1-, MELİKGAZİ / KAYSERİ

İlgi : a) 04.11.2016 tarihli Çevre İzin Belgesi.
b) 07.05.2021 tarih ve 525985 no'lu başvurunuz.

10/09/2014 tarihli ve 29115 sayılı Resmi Gazete'de yayımlanan Çevre İzin ve Lisans Yönetmeliği kapsamında gerçekleştirilen ilgi (a)' da kayıtlı Geçici Faaliyet Belgesi başvurusu uygun bulunmuş ve bu Yönetmeliğin 8 nci maddesi gereğince ilgi (b) yazımız ile Geçici Faaliyet Belgesi verilmiştir.

Bu Yönetmeliğin 9 ncu maddesi gereğince ilgi (c)' de kayıtlı Çevre İzin Belgesi başvurusu yapılmıştır. Söz konusu başvuru Yönetmeliğin 9 ncu maddesi ve ilgili diğer yönetmelikler kapsamında incelenmiş ve MİMARSİNAN OSB Mahallesi, 9 CADDE, No: 18 /1-, MELİKGAZİ / KAYSERİ adresinde bulunan işletmeniz için 04.11.2026 tarihine kadar geçerli olmak üzere ÇEVRE İZİN ve LİSANS BELGESİ verilmesi uygun bulunmuştur.

ÇEVRE İZİN ve LİSANS BELGESİ süresi içinde ekte yer alan çalışma şartlarına uygun faaliyet gösterilmesi, aksi durumda ise söz konusu belgenin iptal edileceği ve 2872 sayılı Çevre Kanunu'nun ilgili maddeleri uyarınca idari yaptırım uygulanacağı hususunda;

Bilgilerinizi ve gereğini rica ederim.

e-imzalıdır
Mehrali ECER
Bakan a.
ÇED, İzin ve Denetim
Genel Müdürü

EKLER:
1) Atık ve DR Kodları
2)Çevre İzin Koşulları

5070 sayılı Elektronik İmza Kanunu gereği bu belge elektronik imza ile imzalanmıştır.

T.C.
ÇEVRE VE ŞEHİRCİLİK BAKANLIĞI
ÇED İzin ve Denetim Genel Müdürlüğü

ÇEVRE İZİN BELGESİ

Belge No	:	223569658.0.1
Başlangıç Tarihi	:	04.11.2021
Bitiş Tarihi	:	04.11.2026
Tesis Adı	:	KAYSERİ MİMARSİNAN ORGANİZE SAN.BÖL. MÜT.TEŞ.BAŞKANLIĞI
Tesis Adresi	:	MİMARSİNAN OSB Mahallesi, 9 CADDE, No: 18 /1-, MELİKGAZİ / KAYSERİ
İşletme Vergi No	:	5400084558
Çevre İzin ve Lisans Konusu	:	Atıksu Deşarjı

Yukarıda adı ve açık adresi belirtilen tesise Çevre İzin ve Lisans Yönetmeliği kapsamında ÇEVRE İZİN BELGESİ verilmiş olup 09.11.2021 tarihli ve 62159566-150/E.8423 sayılı yazı ile birlikte geçerlidir. Ayrı kullanılmaz.

e-imzalıdır
Mehrali ECER
Bakan a.
ÇED, İzin ve Denetim
Genel Müdürü

5070 sayılı Elektronik İmza Kanunu gereği bu belge elektronik imza ile imzalanmıştır.

12.4 Environmental Permit on Air Quality- Noise Control

T.C.
KAYSERİ VALİLİĞİ
Çevre ve Şehircilik İl Müdürlüğü

Sayı : 62159566-150/E.8423 05.05.2021
Konu : İl Müdürlüğü Uygunluk Yazısı

KAYSERİ MİMARSİNAN ORGANİZE SAN.BÖL. MÜTEŞ.TEŞ.BAŞKANLIĞI
KAYSERİ,MİMARSİNAN OSB Mahallesi, 9 CADDE, No: 18 /1-, MELİKGAZİ,Türkiye

İlgi : 18.04.2021 Tarihli 522687 no'lu başvurunuz.

KAYSERİ MİMARSİNAN ORGANİZE SAN.BÖL. MÜTEŞ.TEŞ.BAŞKANLIĞI olarak KAYSERİ,MİMARSİNAN OSB Mahallesi, 9 CADDE, No: 18 /1-, MELİKGAZİ,Türkiye adresinde Evsel ve Endüstriyel Atıksu Arıtım faaliyeti yaptığınız, Çevre İzin ve Lisans Yönetmeliği (ÇİLY) Ek-1 listesi 10.1 de yer alan faaliyetiniz için çevre izin/çevre lisans başvurusuna esas olmak üzere "İl Müdürlüğü Uygunluk Yazısı" nın tarafınıza verilmesi talep edilmektedir.

Bu kapsamda işletmenizde yerinde yapılan incelemede;
- Atıksu Deşarjı konulu çevre izni ve konulu çevre lisansına tabi olduğu,
- - Su Kirliliği Kontrolü Yönetmeliğinde belirtilen esaslara uygun olduğu; belirtilen fiziksel şartların sağlandığı;
- Çevresel Etki Değerlendirmesi Yönetmeliği kapsamında yapılan değerlendirme sonucunda, ÇED Kapsamı Dışında olduğu, verilen karar/belge çerçevesinde herhangi bir değişikliğe ya da kapasite artışına gidilmediği,
- Mali Sorumluluk Sigortası Yükümlülüğüne Tabi Olduğu ve Uygun Bulunduğu,
- Ayrıca, Hava Emisyon,Gürültü Kontrolü konulu çevre izni/izinlerinden muaf olduğu tespit edilmiştir.

Bu belge, **çevre mevzuatı açısından nihai bir izin niteliği taşımamakta olup**, yalnızca ÇİLY gereğince gerçekleştirilecek Geçici Faaliyet Belgesi (GFB) başvurusunda sunulmak üzere verilmiştir.

Bu kapsamda, bu belgenin alınmasına müteakip Yönetmeliğin Ek-3A ve Ek-3B'sinde yer alan diğer belgeler ile birlikte **ivedilikle** GFB başvurusunda bulunulması gerekmekte olup, bu yükümlülüğünü yerine getirmeyen işletmeler hakkında **2872 sayılı Çevre Kanunun** ilgili maddeleri uyarınca **idari yaptırım uygulanacaktır.**

Bilgilerinizi ve gereğini rica ederim.

JjJ e-imzalidir
Sibel LİVDUMLU
Çevre ve Şehircilik İl Müdürü

5070 sayılı Elektronik İmza Kanunu gereği bu belge elektronik imza ile imzalanmıştır.

12.5 Title Deed

P.1098

TÜRKİYE CUMHURİYETİ
TAPU SENEDİ

TAŞINMAZ BİLGİLERİ

İl:	KAYSERİ
İlçe:	MELİKGAZİ
Mahalle/Köy:	MİMARSİNAN
Mevki:	
Ada: 7553	Parsel: 31
Yüz Ölçümü: 18.809,24 m2	Cilt/Sayfa No: 185 - 18338
Niteliği:	ARITMA TESİS ALANI

MALİK BİLGİLERİ

Adı Soyadı/Baba Adı:	Hissesi:	Hisseye düşen m²:
KAYSERİ MİMARSİNAN ORGANİZE SANAYİ BÖLGESİ TÜZEL KİŞİLİĞİ	Tam	18.809,24

TESCİLE İLİŞKİN BİLGİLER

Taşınmaz No: 126922813	Edinme Nedeni: İfraz İşlemi (TSM)	İşlem Bedeli:
Konum Bilgisi:	Tescil Tarihi/Yevmiye No: 17/01/2023 - 3660	Siciline uygundur Veriliş Tarihi: 17/01/2023 Metin EVLİK Yetkili Müdür Yardımcısı

Mülkiyetin dışındaki ayni ve şahsi haklar ile şerh ve belirtmeler için tapu siciline müracaat edilmesi gerekmektedir.

12.6 Zoning Plan

12.7 WWTP Layout

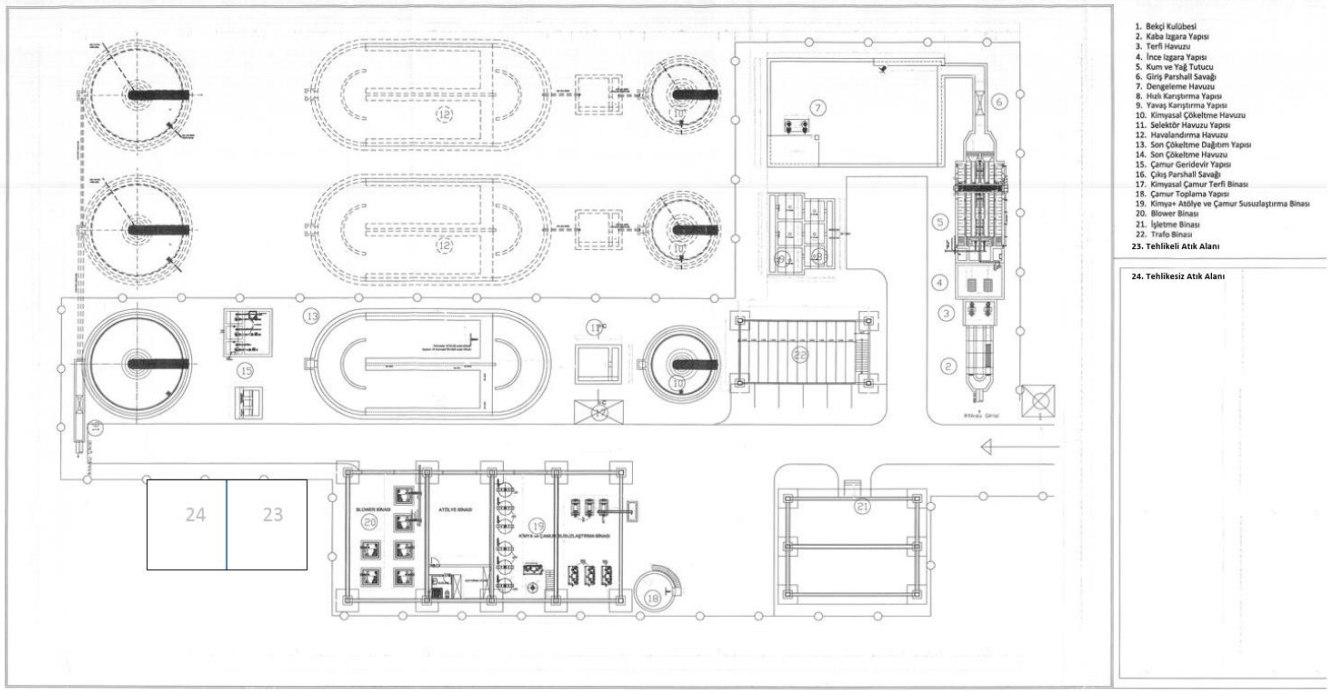


Figure 12.1. General Layout of Mimarsinan OIZ WWTP

Source: Detailed Design Studies (Annex 6)

12.8 Air Quality Impact Calculations

Pre-Construction Phase

During the pre-construction phase of the Project, topsoil stripping will be carried out from an area of approximately 2,715 m^2 at a depth of 0.3 m. The Table **12.1** below shows the dust emission factors to calculate the dust emissions resulting from the topsoil stripping process.

Table 12.1: Dust Emission Factor

Sources	Emission Factors		Unit
	Uncontrolled	Controlled	
Dismantling/Excavation	0.025	0.0125	kg/ton
Loading	0.010	0.005	
Unloading	0.010	0.005	
Storage	5.80	2.90	kg/ha-day
Transportation (total distance of round trip)	0.70	0.35	kg/km-vehicle

**Regulation on Industrial Air Pollution Control, Appendix-12 Table12.6*

The following assumptions and calculations were made before calculating the uncontrolled and controlled dust emissions in pre-construction phase:

- Topsoil strip depth = **30 cm** (Given in the Kayseri Mimarsinan Organized Industrial Zone: Capacity Increase of Existing Wastewater Treatment Plant Environmental & Social Screening Report)
- Volume of topsoil to be stripped: Topsoil stripping area x Topsoil strip depth = 2,715 m^2 x 0.3 m = **814.5 m^3**
- Density of topsoil = **1.60 ton/m^3** (average soil density, assumed)
- Amount of topsoil to be stripped: Volume of topsoil to be stripped x Density of topsoil = 814.5 m^3 x 1.6 ton/m^3 = **1303.2 ton**
- Duration of pre-construction phase of the Project = **90 day**
- Daily amount of topsoil to be stripped: Amount of topsoil to be stripped / Duration of pre-construction phase of the Project = 1303.2 ton / 90 days **= 14.48 ton/day**
- One working day = **8 h** (assumed)
- Hourly amount of topsoil to be stripped: Daily amount of topsoil to be stripped / One working day = 14.48 ton/day / 8 h/day = **1.81 ton/h**
- Topsoil pile = 2.5 m (Given in the Kayseri Mimarsinan Organized Industrial Zone: Capacity Increase of Existing Wastewater Treatment Plant Environmental & Social Screening Report)
- Storage area = Volume of topsoil to be stripped / Topsoil pile = (814.5 m^3 / 2.5 m)/(10000 m^2/ha) = **0.0326 ha**

Uncontrolled Emissions

- Amount of PM_{10} emissions from Dismantling/Excavation: Hourly amount of topsoil to be stripped x Emission factor = 1.81 ton/h x 0.025 kg/ton = **0.0453 kg/h**
- Amount of PM_{10} emissions from Storage: Storage area x Emission factor = 0.0326 ha x 5.80 kg/ha.day x day/8 h = **0.024 kg/h**

Controlled Emissions

- Amount of PM_{10} emissions from Dismantling/Excavation emission factor (uncontrolled): Hourly amount of topsoil to be stripped x Emission factor = 1.81 ton/h x 0.0125 kg/ton = **0.0226 kg/h**
- Amount of PM_{10} emissions from Storage: Storage area x Emission factor = 0.0326 ha x 2.9 kg/ha.day x day/8 h= **0.012 kg/h**

In addition to the dust emissions, there will be exhaust emissions of heavy construction machinery. Primary emissions from exhaust gases of vehicles are NO_2, CO, HC, SO_2 and PM. A total of 2 vehicles is assumed to be used during the pre-construction activities. In this regard, the emission factors for the pollutants are given in Table **12.2** below.

Table 12.2: Emission Factors for 1 L Diesel Consumption (assuming density of diesel is 0.85 kg/L)

Pollutant	Emissions Factor (kg/ton)*	Emission Factor (g/L)
CO	0.017	0.01445
NO_X	0.081	0.06885
PM	0.006	0.0051
SO_X	0.005	0.00425
TOC	0.006	0.0051

** Environmental Protection Agency (EPA), 2023*

Total diesel consumption by the pre-construction vehicles is assumed as 50 L/h.

The emission calculation results are given below:

- CO = 50 L/h x 0.01445 g/L = 0.7225 g/h
- NO_x = 50 L/h x 0.06885 g/L = 3.4425 g/h
- PM_{10} = 50 L/h x 0.0051 g/L = 0.255 g/h
- SO_x = 50 L/h x 0.00425 g/L = 0.2125 g/h
- TOC = 50 L/h x 0.0051 g/L = 0.255 g/h
- $PM_{2.5}$ = PM_{10} x 0.10 (Assumed based on the EMEP/EEA air pollutant emission inventory guidebook 2019) = 0.0255 g/h

Table 12.3: Emissions for 1 L Diesel Consumption

Pollutant	Emissions (g/h)	Project Standards (kg/h)
CO	0.7225	50
NOX	3.4425	4
PM_{10}	0.255	1
SOX	0.2125	6
TOC	0.255	3

Construction Phase

The following assumptions and calculations were made before calculating the uncontrolled and controlled dust emissions in construction phase:

- Net excavation depth: Excavation depth – Topsoil stripped = 3 m – 0.3 m = **2.7 m**

- Total volume of excavation: Area of excavation x Net excavation depth = 3000 m^2 x 2.7 m = **8100 m^3**
- Density of excavation material = **1.60 ton/m^3** (average soil density, assumed)
- Total mass of excavation material: Density of excavation material x Total volume of excavation = 1.60 ton/m^3 x 8100 m^3 = **12960 ton**
- Duration of excavation works = **180 day**
- One excavation day = **12 h** (assumed)
- Hourly Excavated Material Mass: Total mass of excavation material / Time of excavation = 12960 ton / (180 day x 12 h/day) = **6 ton/h**
- Ratio of excavation to be used as filling material: **50%** (assumed)
- Volume of excavation to be disposed of: Disposal ratio x Total volume of excavation = 0.5 x 8100 m^3 = **4050 m^3**
- Total mass of excavation to be disposed of: Disposal ratio x Total mass of excavation material = 0.5 x 12960 ton = **6480 ton**
- Volume of excavation to be used as filling material: Filling ratio x Total volume of excavation = 0.5 x 8100 m^3 = **4050 m^3**
- Volume of hourly excavation to be used as filling material: Volume of excavation to be disposed of / Total time = 4050 m^3 / (180 day x 12 h/day) = **1.875 m^3/h**
- Temporary storage duration of excavated materials = **7 day** (assumed)
- Total excavated volume for temporary storage: Volume of hourly excavation to be used as filling material x Temporary storage duration of excavated materials x One excavation day = 1.875 m^3/h x 7 day x 12 h/day = **157.5 m^3**
- Storage area of excavation to be used as filling material: Total excavated volume for temporary storage / Excavation depth = (157.5 m^3/3 m) x (ha/10000 m^2) = **0.0052 ha**

Uncontrolled Emissions

Assumptions:

- Average travel distance = 3 km (based on the location of the Mimarsinan OIZ Landfill)
- Average truck load capacity = 40 ton
- Total travel number = Total mass of excavation to be disposed of / Average truck load capacity = 6480 ton/40 ton = 162
- Number of construction vehicles = 5
- Travels per vehicle = Total travel number / number of construction vehicles = 162 / 5 = 32.4 = 32
- Total work time = 180 day x 8h/day = 1440 h
- One excavation day = 12 h
- Amount of PM_{10} emissions from excavation: Hourly excavated material mass x Emission factor = 6 ton/h x 0.025 kg/ton = **0.15 kg/h**
- Amount of PM_{10} emissions from loading: Hourly excavated material mass x Emission factor = 6 ton/h x 0.010 kg/ton = **0.06 kg/h**
- Amount of PM_{10} emissions from transportation: (Average travel distance x Emission factor x Number of construction vehicles x Travels per vehicle)/Total work time = (3 km x 0.700 kg/km.vehicle x 5 vehicle x 32)/1440 h = **0.2333 kg/h**
- Amount of PM_{10} emissions from storage: Storage area of excavation to be used as filling material x Emission factor = 0.0052 ha x 5.8 kg/ha.day x day/12 h= **0.002 kg/h**

Controlled Emissions

- Amount of PM_{10} emissions from excavation: Hourly excavated material mass x Emission factor = 6 ton/h x 0.0125 kg/ton = **0.075 kg/h**
- Amount of PM_{10} emissions from loading: Hourly excavated material mass x Emission factor = 6 ton/h x 0.005 kg/ton = **0.03 kg/h**
- Amount of PM_{10} emissions from transportation: (Average travel distance x Emission factor x Number of construction vehicles x Travels per vehicle)/Total work time = (3 km x 0.350 kg/km.vehicle x 5 vehicle x 32)/1440 h = **0.1166 kg/h**
- Amount of PM_{10} emissions from storage: Storage area of excavation to be used as filling material x Emission factor = 0.0052 ha x 2.9 kg/ha.day x day/12 h= **0.0012 kg/h**

In addition to the dust emissions, there will be exhaust emissions of heavy construction machinery. Primary emissions from exhaust gases of vehicles are NO_2, CO, HC, SO_2 and PM. A total of 5 vehicles is assumed to be used during the construction activities. In this regard, the emission factors for the pollutants are given in Table 12.4 below.

Table 12.4: Emission Factors for 1 L Diesel Consumption (assuming density of diesel is 0.85 kg/L)

Pollutant	Emissions Factor (kg/ton)*	Emission Factor (g/L)
CO	0.017	0.01445
NO_X	0.081	0.06885
PM	0.006	0.0051
SO_X	0.005	0.00425
TOC	0.006	0.0051

** Environmental Protection Agency (EPA), 2023*

Total diesel consumption by the construction vehicles is assumed as 125 L/h.

The emission calculation results are given below:

- CO = 125 L/h x 0.01445 g/L = 1.8062 g/h
- NO_x = 125 L/h x 0.06885 g/L = 8.6062 g/h
-
- SO_x = 125 L/h x 0.00425 g/L = 0.5313 g/h
- TOC = 125 L/h x 0.0051 g/L = 0.06375 g/h
- $PM_{2.5}$ = PM_{10} x 0.10 (Assumed based on the EMEP/EEA air pollutant emission inventory guidebook 2019) = 0.0255 g/h

Table 12.5: Emissions for 1 L Diesel Consumption

Pollutant	Emissions (g/h)	Project Standards (kg/h)
CO	1.8062	50
NO_X	8.6062	4
PM_{10}	0.6375	1
SO_X	0.5313	6
TOC	0.06375	3

12.9 Noise Impact Calculations

The total equivalent noise level created by noise sources is calculated with the help of the formula given below[44].

$$L_{wT} = 10\ x\ \log \sum_{i=1}^{n} 10^{\frac{L_{wi}}{10}}$$

Where

n: Number of noise sources

L_{wi}: Noise level (dBA) of each source

L_{wT}: Total equivalent noise level

The noise level originating from the machine/equipment and reaching a certain distance is calculated by the formula below[45].

$$L_p = L_{wT} + 10\ x\ \log \frac{Q}{4\pi r^2}$$

Where

Q: 1 (Unit square meter)

R : Distance

L_p: Noise level (dBA)

Pre-Construction Phase

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

Table 12.6. Noise Levels of Machinery/Equipment

Equipment	Number	Lwi
Excavator	1	104
Truck	1	108

**Lwi values for the relevant equipment are assumed.*

By using the first formula given above and the information in Table 12.6, total equivalent noise level (L_{wT}) is calculated as 109.45.

Furthermore, by using the second formula given above and considering the buffer zone for noise impact is 500 m, the noise levels depending on distance for pre-construction phase are calculated and given in table below.

[44] Sound power - Wikipedia
[45] Sound power - Wikipedia

Table 12.7. Noise Levels Based on Distance

Distance (m)	Lp (dBA)	Project Standard - Day Time (07:00-22:00) (dBA)	Project Standard - Night Time (22:00-07:00) (dBA)
15	74.9414	55	45
50	64.4839	55	45
100	58.4633	55	45
149	54.9995	55	45
200	52.4427	55	45
300	48.9208	55	45
400	46.4221	55	45
500	**44.4839**	**55**	**45**

Construction Phase

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

Table 12.8. Noise Levels Based on Distance

Equipment	Number	Lwi
Excavator	1	104
Loader	1	115
Truck	3	108

By using the first formula given above and the information in Table 12.8, total equivalent noise level (L_{wT}) is calculated as 117.25.

Furthermore, by using the second formula given above and considering the buffer for noise impact is 500 m, the noise levels depending on distance for pre-construction phase are calculated and given in table below.

Table 12.9. Noise Levels Based on Distance

Distance (m)	Lp (dBA)	Project Standard - Day Time (07:00-22:00) (dBA)	Project Standard - Night Time (22:00-07:00) (dBA)
15	82.7340	55	45
50	72.2764	55	45
100	66.2558	55	45
149	62.7921	55	45
200	60.2352	55	45
300	56.7134	55	45
365.42	55	55	45
400	**54.2146**	**55**	**45**

12.10 Waste Sludge Generation Calculations

Plant Parameters:

- Influent Flow Rate (Q): 6,000 m³/day
- Influent Suspended Solids Concentration (SS_{in}): 127 mg/L (According to the Table 5.8)
- (Note: 1 mg/L ≈ 1 g/m³, so 127 mg/L = 127 g/m³)
- Treatment Efficiency (η): 87.8% (or 0.878) (Based on the information provided in the Pre-Feasibility Report)
- Final Sludge Water Content (WC): 75% (Dewatering will extract %25 of water)
- Sludge Density (ρ): 1,000 kg/m³ (Assumed)

Calculation of Daily Suspended Solids Load

$$TSS_d = Q\ x\ SS_{in} = 6{,}000\frac{m^3}{\text{day}} \text{x}\ 127\frac{\text{g}}{m^3}\ x\frac{kg}{1{,}000\ g} = 762\frac{kg}{day}$$

Calculation of Daily Dry Solids in Sludge

Dry Solids (kg/day) = 762 kg/day × 0.878 = 669.4 kg/day

Calculation of Daily Final Sludge Volume

The final sludge volume can be estimated using the formula:

$$Sludge\ Volume\ \left(\frac{m^3}{day}\right) = Dry\ Solids\ /\ [(1 - WC) \times \rho]$$

Given:

- (1 - WC) = 1 – 0.75 = 0.25
- ρ = 1000 kg/m³

Thus:

$$Sludge\ Volume\ \left(\frac{m^3}{day}\right) = 669.4\frac{kg}{day}\ /\ (0.25\ \times\ 1000\frac{\text{kg}}{m^3}) \approx\ 2.68\ \text{m}^3/\text{day}$$

12.11 Groundwater Use Permit

T.C.
DSİ Genel Müdürlüğü
12. Bölge Müdürlüğü

Form No : 2.7.4.
Belge No : 12-K-KAY-01-15855
Belge Tarihi : 16.04.2015

YERALTISUYU KULLANMA BELGESİ

1. Belge Sahibi : KAYSERİ MİMARSİNAN ORGANİZE SANAYİ BÖLGE MÜDÜRLÜĞÜ
T.C. Kimlik Numarası : 5400084558
Adresi : KAYSERİ-MALATYA KARAYOLU 12.KM. MİMARSİNAN MELİKGAZİ/KAYSERİ

2. Teknik Sorumlu

a) Adı Soyadı : HANİFE KADIOĞLU
b) Mesleği : JEOLOJİ MÜHENDİSİ
c) Diploma-oda Sicil No : J-0098 - 10938
d) Adresi : AREM MÜHENDİSLİK - SAHABİYE MAH. AHMETPAŞA CAD. İKİZLER İŞ MERKEZİ B - BLOK KAT: 4 NO: 402 KOCASİNAN/KAYSERİ

3. Sondör, Kuyucu, Galerici

a) Adı Soyadı : HANİFE KADIOĞLU
b) Mesleği : SONDÖR
c) Diploma-Oda Sicil No : IIR-3968
d) Adresi : AREM MÜHENDİSLİK - SAHABİYE MAH. AHMETPAŞA CAD. İKİZLER İŞ MERKEZİ B - BLOK KAT: 4 NO: 402 KOCASİNAN/KAYSERİ

4. Kuyu/Galeri Yeri

İli	: KAYSERİ	Kuyunun DSİ No.su	:
İlçesi	: MELİKGAZİ	Koordinatı	: 729237 - D 4286402 - K
Beldesi	:	Havza Adı	: SARIMSAKLI1-D
Köy veya Mh	: MİMARSİNAN	Ova Adı	: SARIMSAKLI1-D

5. Kuyu/Galeri Verimi

Pompajla	: 5	l/sn		
Artezyen	: 0	l/sn		
Statik Seviye	: 150	m		
Dinamik Seviye(pompajda)	: 152	m		
Çekilecek su miktarı	: 1499,38	Ton/günde ve	449816	Ton/yılda
Çekilecek suyu temine yetecek enerji miktarı:		461561,24	kWh	
Sayaç Numarası	: ELEKTROMED-DN-100-52247542			
Kullanma amacı	: SANAYİ KULLANIMI			

24.03.2015 tarihli dilekçe ile yukarıda yeri belirtilen kuyudaki suyu kullanmak istediğini bildiren KAYSERİ MİMARSİNAN ORGANİZE SANAYİ BÖLGE MÜDÜRLÜĞÜ 'ın müracaatı üzerine yapılan inceleme sonucu, isteğin kanun, tüzük ve yönetmelik hükümlerine uygun olduğu anlaşıldığından, suyun yalnız SANAYİ KULLANIMI amacıyla kullanılması şartıyla bu kullanma belgesi verilmiştir.

DSİ
12. Bölge Müdürü

Eki: 1) Kuyu Kütüğü (1 adet)
2) Pompaj Programı (1 adet)
3) Analiz raporu (1 adet)
(kullanma amacına uygun)
4) Kuyu açılan arazinin onaylı tapu fotokopisi

Not:
--BU BELGEDEKİ KUYU 7555 ADA 29 NOLU PARSELDE AÇILMIŞTIR.
-KAYSERİ MİMARSİNAN ORGANİZE SANAYİ BÖLGE MÜDÜRLÜĞÜNÜN DOSYA İÇERİSİNDEKİ 10,02,2015-341 TARİH VE SAYILI YAZILARINDA BELİRTİLDİĞİ ÜZERE TALEP EDİLEN TOPLAM TAHSİSTEN BELGENİN DÜZENLENDİĞİ TARİH İTİBARIYLA BELGELİ BEŞ ADET ŞİRKETE VERİLEN SU TAHSİSİ DÜŞÜLEREK KALAN TAHSİS BU BELGEYE VERİLMİŞTİR.
-KULLANILAN SU ARITILDIKTAN SONRA KANALİZASYON ŞEBEKESİNE VERİLECEKTİR.

- Belgede belirtilen enerji miktarı EPDK tarafından hazırlanan "Elektrik Piyasası Müşteri Hizmetleri Yönetmeliğinde Değişiklik Yapılmasına Dair Yönetmeliğin" 3. Maddesi gereği yer almakta olup bu belgede belirtilen tahsis miktarının kullanılması kuyuya monte edilen *sayaç ile takip* edilecektir.

Güvenli Elektronik İmzalı
Aslı ile Aynıdır.
17 Nisan 2015
Suzan GÜRSOY
Evrak Kayıt Memuru

12.12 National Legal Framework

Table 12.10. Key Applicable National Legislation

Law/Regulation	Official gazette (OG) date	OG number	Implication for the Project
Environmental Management, Permit and Licence			
Environmental Law (2872)	11.08.1983	18132	Ensuring that the primary environmental regulations are followed throughout every stages of the Project.
Regulation on Environmental Impact Assessment	29.07.2022	31907	Establishing the administrative and technical guidelines and principles to be adhered to during the Environmental Impact Assessment process before construction begins.
Regulation on Environmental Permit and License	10.09.2014	29115	Obtaining the necessary environmental permits and licenses for both the construction and operation stages.
Regulation on Environmental Audit	12.06.2021	31509	Overseeing the operation of the facilities to ensure compliance with environmental laws and regulations.
Waste Management			
Regulation on Waste Management	02.04.2015	29314	Management and disposal of wastes generated during the construction and operation stages. Management of hazardous wastes.
The Regulation on Regular Storage of Wastes	26.03.2010	27533	Preventing environmental pollution in the process of disposal of wastes that may occur during the construction and operation stages of the facility by landfill method. Disposal of wastewater treatment sludges.
Regulation on Zero Waste	12.07.2019	30829	Implementing a zero-waste management system designed to safeguard the environment and human health while efficiently managing all resources related to the waste generated during the construction and operation stages.
Regulation on Control of Waste Oils	21.12.2019	30985	Management of waste oils generated at construction and operation stages.
Regulation on Control of Packaging Waste	26.06.2021	31523	Management of packaging wastes generated at construction and operation stages.
Regulation on the Control of End-of-life Tires	25.11.2006	26357	Management of end-of-life tires generated at construction and operation stages.
Regulation on Control of End-of-Life Vehicles	30.12.2009	27448	Management of end-of-life vehicles generated at construction and operation stages.
Regulation on Control of Waste Vegetable Oils	06.06.2015	29378	Management of waste vegetable oils generated at construction and operation stages.
Regulation on Control of the Waste Batteries and Accumulators	31.08.2004	25569	Management of waste batteries and accumulators generated at the construction and operation stages.

Regulation on Control of Waste Electrical and Electronic Appliances	26.12.2022	32055	Management of electrical and electronical waste generated at the construction and operation stages.
Regulation on Control of Medical Waste	25.01.2017	29959	Management of medical wastes generated at construction and operation stages.
Management of Chemicals and Other Hazardous Substances			
Regulation on Safety Data Sheets for Hazardous Substances and Mixtures	13.12.2014	29204	Governing the preparation and distribution of safety data sheets to ensure effective monitoring and control of the adverse effects of hazardous substances and mixtures on human health and the environment throughout the Project's lifespan.
Regulation on the Classification, Labelling and Packaging of Substances and Mixtures	11.12.2013	28848	Management of chemicals and mixtures to be used during lifetime of the Project.
Regulation on Road Transportation of Hazardous Goods	18.06.2022	31870	Ensuring safe and organised transportation of hazardous materials that may occur during construction and operation stages without harming human health, other living things and the environment during transportation by road.
Regulation on Prevention and Mitigation of Major Industrial Accidents	02.03.2019	30702	Preventing major industrial accidents in facilities containing hazardous substances and minimizing the damage of possible accidents to people and the environment.
Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals	23.06.2017	30105	Ensuring robust protection of human health and the environment throughout both the construction and operational stages, including the assessment of potential harmful effects of substances used, and obtaining relevant information on their registration, evaluation, authorization, and restriction under applicable chemical regulations.
Water Quality Control and Management			
Regulation on Water Pollution Control	31.12.2004	25687	Management and discharge of wastewater generated during construction and operation stages. Establishing discharge standards and obtaining discharge permits for the operation of wastewater treatment facilities.
Regulation on Water Efficiency	27.12.2024	32765	Determining the current status of water use, to identify, implement, monitor and report measures to ensure efficient use of water.
Regulation on Surface Water Quality	30.11.2012	28483	Overseeing and monitoring the quality of effluent water at the receiving body during the operational stage.
Law on Groundwaters (167)	23.12.1960	10688	Regulating the possible processes in case of exploration, use, protection and registration of groundwater during construction and operation stages.
Regulation on State Hydraulic Works (DSI) Groundwater Technical	23.06.1972	14224	
Regulation on Control of Pollution Caused by Hazardous Substances in Aquatic Environment	26.11.2005	26005	Addressing the impacts of hazardous substances on water and its surroundings throughout the Project's duration.

Regulation on the Quality and Treatment of Drinking Water Supply	06.07.2019	30823	Determining the quality criteria of the waters supplied or planned to be supplied with drinking water during the construction and operation stages of the Project and to determine the treatment classes and treatment efficiency required for the use of these waters as drinking and utility water.
Regulation on the Protection of Drinking Water Basins	28.10.2017	30224	Regulating the procedures and principles regarding the protection and improvement of the quality and quantity of surface and groundwater resources from which drinking and utility water is supplied or planned to be supplied.
Regulation on Water for Human Consumption	17.02.2005	25730	Monitoring suitability of water for human consumption through pre-construction, construction, and operation stages of the Project.
Regulation on the Protection of Groundwater against Pollution and Deterioration	07.04.2012	28257	Determining the principles necessary for the protection of the current status of groundwater in good condition and prevention of groundwater pollution, and degradation and improvement of these waters.
Regulation on Monitoring Surface and Groundwaters	11.02.2014	28910	Throughout pre-construction, construction, and operation stages of the Project, monitoring the status of surface and groundwater in terms of quantity, quality, and hydromorphological elements based on ecosystem integrity. Standardizing monitoring practices and ensuring coordination among institutions to minimize environmental impacts.
Regulation on Identification of Sensitive Water Bodies and Areas Affecting These Bodies and Improvement of Water Quality	23.12.2016	29927	Determination of the receiving body sensitivity during pre-construction stage and discharge of effluent water during operation stage.
Communiqué on Technical Procedures in Wastewater Treatment Plants	20.03.2010	27527	Technical principles that will form the basis for wastewater treatment facility Project design during pre-construction stage.
Communiqué on Technical Personnel Working in Wastewater Treatment Plants	23.05.2019	30782	Establishing procedures and principles for the qualifications, certification, duties, authorities, and responsibilities of technical personnel. Ensuring that wastewater treatment plants are operated effectively, efficiently, and in compliance with legislation during the operation stages.
Regulation on Wastewater Collection and Disposal Systems	06.01.2017	29940	Establishing the procedures and principles for planning, designing, constructing, and operating wastewater collection and disposal systems throughout all stages of the Project.
Soil Quality Control and Management			
Regulation on Control of Excavated Soil, Construction and Demolition Waste	18.03.2004	25406	Transportation and disposal of excavation waste and construction debris at the construction phase.
Regulation on Soil Pollution Control and Point-Source Contaminated Sites	08.06.2010	27605	Risks of soil contamination at construction and operation stages. Remediation of contaminated sites.
Law on Soil Conservation and Land Use	19.07.2005	25880	Required permission(s) for land use.
Noise Control and Management			
Regulation on Environmental Noise Control	30.11.2022	32029	Management of environmental noise during construction and operation stages.
Regulation on Environmental Noise Emission Generated by the Outdoor Equipment Used at Site	30.12.2006	26392	Management of noise sources used during construction and operation stages.

Air Quality Control and Management			
Regulation on Control of Industrial Air Pollution	03.07.2009	27277	Management of air emission sources during construction and operation stages. Dust emission control at the construction and operations stages and SO_x, NO_x emission control at the operation stage.
Regulation on Assessment and Management of Air Quality	06.06.2008	26898	Management of ambient air quality during construction and operation stages.
Regulation on the Control of Odor Forming Emissions	19.07.2013	28712	Management of odorous emissions during the operation stage.
Exhaust Gas Emission Control Regulation	11.03.2017	30004	Overseeing emissions from Project vehicles, machinery, and equipment throughout pre-construction, construction, and operation stages of the Project
Regulation on Monitoring of Greenhouse Gas Emissions	17.05.2014	29003	Monitoring greenhouse gas emissions through pre-construction, construction, and operation stages of the Project.
Regulation on the Control of Dust Emissions	05.11.2013	28812	Controlling soot, smoke, dust, gas, vapor and aerosol emissions into the atmosphere as a result of construction and operation activities of the facility.
Energy Efficiency and Management			
Regulation on Energy Efficiency in Buildings	05.12.2008	27075	Ensuring the effective and efficient use of energy and energy resources in buildings, to prevent energy waste and to contribute to the protection of the environment.
Regulation on Increasing Efficiency in the Use of Energy Sources and Energy	27.10.2011	28097	Managing the procedures and principles for the efficient use of energy, preventing energy waste, and enhancing energy resource efficiency to protect the environment throughout the Project's lifespan.
Community Health and Safety			
Motorway Traffic Law	18.10.1983	18195	Ensuring traffic order on the highways during pre-construction, construction, and operation stages of the Project.
Regulation on Highway Traffic	18.07.1997	23053	
Regulation on Traffic Signs	19.06.1985	18789	
Regulation on Road Transport	08.01.2018	30295	
Labour and Working Conditions			
Labour Law (4857)	10.06.2003	25134	Governing the rights and responsibilities of workers employed under labour contracts with employers, focusing on working conditions and the working environment throughout the Project's duration.
Occupational Health and Safety Law (6331)	30.06.2012	28339	Taking health and safety measures during construction and operation stages.
Occupational Health and Safety Services Regulation	29.12.2012	28512	Preparing the occupational health and safety risk assessments and outlining the principles to be followed throughout the Project's duration.

First Aid Regulation	29.07.2015	29429	Covering the procedures and principles to be followed in the event of a first aid requirement during the construction and operational stages of the Project.
Regulation on Use of Personal Protective Equipment in Workplaces	02.07.2013	28695	Governing the use of personal protective equipment (PPE) throughout the entire duration of the Project. Ensuring that all necessary PPE is provided and used correctly to protect workers' health and safety.
Regulation on the Procedures and Principles of the Employee's Health and Safety Trainings	15.05.2013	28648	Governing the health and safety training that must be conducted throughout the entire duration of the Project. Ensuring that all workers are adequately trained to maintain a safe working environment.
Regulation on Occupational Health and Safety Committees	18.01.2013	28532	Determining in which workplaces occupational health and safety committees will be established to carry out activities related to occupational health and safety, the formation, duties and powers, working procedures and principles of these committees.
Regulation on Occupational Health and Safety Risk Assessment	29.12.2012	28512	Preparing occupational health and safety risk assessments and outlining the principles to be followed throughout the Project's duration.
Regulation on Duties, Authority, Responsibilities and Trainings of Occupational Health and Safety Specialists	29.12.2012	28512	Establishing the qualifications, training, certification, duties, powers, responsibilities, working procedures, and principles for occupational safety experts. These experts are responsible for providing occupational health and safety services throughout all stages of the Project.
Regulation on Duties, Authority, Responsibilities and Trainings of Workplace Doctor and Other Health Personnel	20.07.2013	28713	
Regulation on the Health and Safety Measures to be taken in Workplace Buildings and Additions	17.07.2013	28710	Determining the minimum health and safety requirements for workplace buildings and annexes.
Regulation on Occupational Health and Safety in Temporary or Fixed Term Employment	23.08.2013	28744	Covering the health and safety measures that must be implemented for temporary workers throughout the entire duration of the Project. Ensuring that temporary workers receive the same level of protection and safety as permanent employees.
Regulation on Safety and Health Signs	11.09.2013	28762	Mandating the placement of health and safety signs throughout the entire duration of the Project.
Regulation on Manual Handling	24.07.2013	28717	Implementation of health and safety measures during manual handling activities at all stages of the Project
Regulation on the Protection of Workers from the Dangers of the Explosive Media	30.04.2013	28633	Taking measures in case of explosive use during the preconstruction and construction stages of the Project.
Regulation on Health and Safety Measures in Working with Chemical Substances	12.08.2013	28733	Managing precautions for chemical handling in workplaces throughout the Project duration.
Regulation on the Protection of the Workers against Risks Relevant to Noise	28.07.2013	28721	Taking health and safety measures to mitigate noise impacts throughout the Project duration.
Regulation on the Protection of the Workers against Vibration Risks	22.08.2013	28743	Taking health and safety measures to mitigate vibration impacts throughout the Project duration.

The Regulation on Health and Safety for the use of Work Equipment	25.04.2013	28628	Determining the minimum requirements for the use of work equipment in the workplace in terms of health and safety.
Regulation on Occupational Health and Safety in Construction Works	05.10.2013	28786	Taking constructional health and safety measures during the construction stage of the Project.
Regulation on the Emergency Situations in Workplaces	18.06.2013	28681	Taking measures during emergency situations in workplaces throughout the Project duration.
Regulation on Protection of Buildings from Fire	19.12.2007	26735	Taking measures for fire protection during the construction and operation stages of the Project.
Regulation on Personal Protective Equipment	01.05.2019	30761	Use of personal protection equipment during the construction and operation stages.
Law on Trade Union and Collective Bargaining (6356)	18.10.2012	28460	Regulating the establishment, management, functioning, supervision, and working procedures of workers' and employers' unions and confederations. It also determines the procedures and principles regarding the conclusion of collective bargaining agreements to determine the economic and social conditions and working conditions of workers and employers, the settlement of disputes by peaceful means and the implementation of strikes and lockouts.
Regulation on Working Duration Related to Labour Law	06.04.2004	25425	Regulating the principles regarding the implementation of working hours. Determining the working hours, rest periods, and overtime conditions of workers.
Regulation on Excess Work and Work in Excess Periods related to Labour Law	06.04.2004	25425	Regulating the procedures and principles regarding overtime work and overtime work to be performed outside the normal weekly working hours for reasons such as the general interests of the country, the nature of the work, or increasing production.
Regulation on Special Principles in Works Carried out by Employing Workers in Shifts	07.04.2004	25426	Regulating the special procedures and principles regarding working hours, night work, week holidays, and intermediate rest in the works carried out by employing workers in successive posts without stopping due to their continuous work due to their nature.
Regulation on Minimum Wage	01.08.2004	25540	Ensuring that the minimum wages of the workers who will work in the Project are not less than the amount determined by the Minimum Wage Determination Commission, to make wage policies in accordance with the procedures and principles specified in the regulation, and if a similar commission will be established in the Project, to regulate the attendance fee to be paid to the chairman, members, and rapporteurs of this commission according to the principles specified in the regulation.
Regulation on Suspension of Work in Workplaces	01.08.2004	28603	When a situation that poses a life-threatening danger to workers is detected in the buildings and annexes, working methods and forms or work equipment in the workplaces or if a risk assessment has not been carried out in the works classified as very dangerous, to determine the procedures and principles of stopping the work until this danger is eliminated and allowing the resumption of work in the workplace where the suspension decision has been applied.
Law on People with Disabilities (5378)	07.07.2005	25868	Ensuring that persons with disabilities fully and effectively benefit from their fundamental rights and freedoms at all phases of the Project.
Stakeholder Engagement			
Law on Right to Information (4982)	24.10.2003	25269	

Regulation on the Principles and Procedures for Enforcement of the Law on the Right to Information	27.04.2004	25445	Ensuring that the Project is carried out in accordance with the principles of transparency and accountability. In this context, ensuring that the information obtained within the scope of the Project is open and accessible to the public and to respond effectively, quickly, and accurately to requests for information.
Law on Preservation of Personal Data (6698)	07.04.2016	29677	Protection of fundamental rights and freedoms, particularly the privacy of private life, in the processing of personal data throughout the Project duration.
Law on Use of the Right to Petition (3071)	10.11.1984	18571	Ensuring public participation in the Project. Providing information about the Project, collecting petitions, evaluating and integrating public opinions and suggestions into the Project. This process increases public support while minimizing the environmental and social impacts of the Project.
Others			
Workplace Opening and Permit Regulation	10.08.2005	25902	Regulating the principles and procedures to be applied in granting the necessary licenses for the opening and operation of workplaces.
Law on the Conservation of Cultural and Natural Assets (2863)	23.07.1983	18113	Identifying movable and immovable cultural and natural assets that require protection, organising related transactions and activities, and establishing the organization responsible for implementing necessary principles and decisions.
Regulation on Detection and Registration of Immovable Cultural Assets and Sites That Need to be Protected	13.03.2012	28232	Regulating the procedures and principles regarding the identification and registration of immovable cultural assets and protected areas.
Ministry of Culture and Tourism, Principal Decision No: 658, Archaeological Sites, Conditions of Protection and Usage			Regulating the protection and utilization conditions of archaeological sites.
Turkish Criminal Law (No. 5237)	12.10.2004	25611	Protecting individual rights and freedoms, public order and security, the rule of law, public health, and the environment through the Project duration.
Law on Private Security Services (No. 5188)	10.06.2004	25504	Determining the principles and procedures for the provision of private security services complementary to public security. This law covers issues such as the granting of private security permits, licensing and supervision of persons and organizations that will perform this service.
Regulation on Contractors and Subcontractors	27.09.2008	27010	Management of conditions for establishing the principal employer-subcontractor relationship, notification and registration of the subcontractor's workplace, and the issues to be included in the subcontractor agreement.
Law on Expropriation (2942)	08.11.1983	18215	Regulating the principles regarding the expropriation of immovable properties owned by real and private legal entities by the state and public legal entities, taking into account the public interest in the event of a Project-specific expropriation if any.
Zoning Law (3194)	09.05.1985	18749	Identifying the legal framework to be followed during the planning and implementation stages of the Project.

Türkiye Earthquake Regulation for Buildings	18.03.2018	30364	Determining the necessary rules and minimum requirements for the design and construction of buildings under the influence of earthquakes and for the evaluation of the performance and retrofitting of existing buildings.
Law on Organized Industrial Zones	15.04.2000	24021	Regulating the principles for the establishment and operation of organized industrial zones.
The Regulation on Incineration of Wastes	16.10.2010	27721	Preventing and limiting the negative impacts of waste incineration on the environment and human health.

12.13 Chance Find Procedure

Please refer Annex File 12.13 provided with the ESMP Report.

13 General Notes