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MSIP

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Ilgın Wastewater Treatment Plant Project Environmental and Social Impact Assessment Report

Date: 13.01.2023



REPUBLIC OF TURKEY
MINISTRY OF ENVIRONMENT,
URBANIZATION AND CLIMATE CHANGE



ILBANK
CONSTRUCTIVE POWER OF TURKEY



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Project

Details

Name	Ilgin Wastewater Treatment Plant Project Environmental and Social Impact Assessment Report
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Reference	20_1302_01
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Submitted to	General Directorate of İLBANK
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Prepared by	io Environmental Solutions Research Development Inc. www.iocevre.com
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MUNICIPAL SERVICES IMPROVEMENT PROJECT

Content

Content	ii
List of Tables	v
List of Figures	viii
Annexes	x
Abbreviations	xi
1 Executive Summary	1
2 Project Description.....	2
2.1. Background Information on the Project	2
2.2. Project Location	3
2.3. Project Characteristics	5
2.3.1 Location and Land Use	6
2.3.2 Project Characteristics and WWTP Components	7
2.3.3 Effluent Characterization	14
2.4. Potential Energy Use, Machinery and Equipment Requirement.....	14
2.5. Associated Facilities	15
2.6. Remediation Works.....	16
2.7. Workforce Requirement	16
2.8. Project Cost	16
2.9. Project Schedule.....	17
2.10. Scope of the ESIA Studies.....	17
3 Legal and Institutional Framework	19
3.1. Institutional and Legal Framework for Environmental Protection and Conservation in Türkiye 19	
3.2. National Environmental Legislation and Regulatory Requirements	20
3.3. The Turkish Regulation on EIA	22
3.3.1 Screening.....	23
3.3.2 Public Consultation.....	24
3.3.3 Scoping	24
3.3.4 Review and Approval of the EIA report.....	24
3.3.5 Disclosure	24
3.3.6 Monitoring and Inspection	25
3.4. Permits	25
3.5. National Laws on Social Impacts	26
3.5.1 Türkiye Law on the Right to Information	26
3.5.2 Occupational Health and Safety	26
3.5.3 Labor and Working Conditions	26
3.5.4 Türkiye National Laws on Land Acquisition	28
3.6. International Agreements and Conventions	28
3.7. World Bank’s Environmental and Social Standards	29
3.7.1 ESS1 Assessment and Management of Environmental and Social Risks and Impacts	29
3.7.2 ESS2 Labor and Working Conditions.....	30
3.7.3 ESS3 Resource Efficiency and Pollution Prevention and Management.....	30
3.7.4 ESS4 Community Health and Safety	31
3.7.5 ESS5 Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	31
3.7.6 ESS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources.....	31
3.7.7 ESS8 Cultural Heritage	32
3.7.8 ESS9 Financial Intermediary	32
3.7.9 ESS10 Stakeholder Engagement and Information Disclosure.....	32
3.7.10 World Bank Safeguards Policies	33

MUNICIPAL SERVICES IMPROVEMENT PROJECT

3.8.	Key Differences between the National EIA Regulation and the WB ESSs	33
4	Baseline Conditions.....	38
4.1.	Physical Environment	38
4.1.1	Geology.....	38
4.1.2	Hydrogeology	41
4.1.3	Water Resources.....	42
4.1.4	Land Use, Soil and Landscape	45
4.1.5	Protected Areas.....	50
4.1.6	Meteorological and Climate Characteristics	54
4.1.7	Baseline Measurements and Analysis	62
4.2.	Ecology and Biodiversity	68
4.2.1	Assessment Methodologies and Data Sources.....	69
4.2.2	Ecological Surveys and Findings.....	75
4.3.	Characteristics of Socio-Economic Environment.....	100
4.3.1	Socio-economic Characteristics	100
4.3.2	Demographic Characteristics	102
4.3.3	Tourism Potential.....	104
4.3.4	Income and Production.....	105
4.3.5	Employment.....	106
4.3.6	Education	107
4.3.7	Socio-Economic Conditions of the Nearest Settlements	109
5	Environmental and Social Risks, Impacts and Mitigation Measures.....	110
5.1.	Area of Influence.....	110
5.2.	Impact Assessment Methodology	113
5.3.	Impacts on Physical Environment	115
5.3.1	Topography, Soil and Land Use	115
5.3.2	Air Quality.....	121
5.3.3	Odor.....	128
5.3.4	Climate Change	131
5.3.5	Noise and Vibration.....	134
5.3.6	Water and Wastewater	140
5.3.7	Wastes	144
5.3.8	Protected Areas.....	150
5.3.9	Landscape	150
5.4.	Impacts on Biological Environment.....	151
5.4.1	Construction Phase Impacts	151
5.4.2	Operation Phase Impacts	152
5.4.3	Decommissioning & Site Reclamation Phase Impacts	152
5.4.4	Mitigation Measures.....	153
5.4.5	Significance of Impacts and Residual Impacts.....	155
5.4.6	Biodiversity Monitoring	156
5.5.	Impacts on Socio-Economic Environment	156
5.5.1	Transport Network.....	158
5.5.2	Local Employment and Procurement.....	159
5.5.3	Community Health and Safety	160
5.5.4	Summary of Impacts	165
5.6.	Labor and Working Conditions	166
5.6.1	Working Conditions and Management of Worker Relationship	167
5.6.2	Workers Engaged by Third Parties and the Supply Chain	167
5.6.3	Occupational Health and Safety	168
5.6.4	Summary of Impacts	171
5.7.	Cumulative Impacts.....	171

MUNICIPAL SERVICES IMPROVEMENT PROJECT

	5.7.1 Methodology	172
	5.7.2 Cumulative Impact Assessment Study	173
6	Project Alternatives	176
	6.1. Introduction	176
	6.2. “No Action” Alternative	176
	6.3. Site Alternatives	176
	6.4. Process Alternatives	177
	6.5. Evaluation of Process Alternatives	178
	6.6. Selected Process	180
	6.7. Sludge Management	181
	6.7.1 Sludge Thickening Alternatives	181
	6.7.2 Sludge Stabilization Alternatives	182
	6.7.3 Sludge Dewatering Alternatives	183
	6.7.4 Sludge Drying Alternatives	184
	6.7.5 Disposal Methods	185
	6.7.6 Evaluation of Sludge Management Methods	187
7	Environmental and Social Management and Responsibilities	190
	7.1. Environmental and Social Management	190
	7.2. Roles and Responsibilities	190
	7.3. Capacity Development and Training Requirements	192
	7.4. Environmental and Social Reports on Monitoring and Supervision	194
	7.4.1 Construction Phase	194
	7.4.2 Operational Phase	195
	7.5. Environmental and Social Management Plan	196
	7.5.1 Mitigation Plan	198
	7.5.2 Monitoring Plan	229
8	Stakeholder Consultation	241
	8.1. Stakeholder Consultation Meetings	241
	8.2. Grievance Mechanism	243
	8.2.1 Operational Flow of Grievance Mechanism	246
	8.2.2 World Bank Grievance Redress Service	248

Annexes

Annex 1: References

Annex 2: List of Preparers and Contributors

Annex 3: Official Letter Regarding Out of Scope of EIA Regulation

Annex 4: WWTP Project Approval Form

Annex 5: Approved ETL Application Project

Annex 6: Emergency Preparedness and Response Framework

Annex 7: Measurement and Analysis Results

Annex 8: Photographs, Minutes and Participant Lists of the Stakeholder Consultation Meetings

Annex 9: Letter about Voluntary Leave of the Informal Land User

Annex 10: Code of Conduct

MUNICIPAL SERVICES IMPROVEMENT PROJECT

List of Tables

Table 1-1 ESMP Cost Breakdown for Implementation and Monitoring	1
Table 2-1 Konya Province Refugee and Host Population	2
Table 2-2 Brief Description of Project.....	5
Table 2-3 Aeration basin design dimensions.....	11
Table 2-4 Ilgin Sewerage System Wastewater Analysis Results	14
Table 2-5 UWTR Annex 4 Table 1 Urban Wastewater Secondary Treatment Discharge Criteria	14
Table 2-6 Machinery and Equipment Planned to be used in the Construction Phase	14
Table 2-7 Total Cost of Investments for Ilgin WWTP, 2020 Unit Prices.....	16
Table 2-8 Project Schedule	17
Table 3-1 WWTP Capacities and Their Categorization (According to Turkish EIA Regulation)	23
Table 3-2 Comparison of National Legislation on Environment and Social and WB's ESSs	34
Table 4-1 Sub Basins of Konya Endorheic Basin.....	43
Table 4-2 Groundwater Masses in Konya Endorheic Basin.....	43
Table 4-3 Agricultural Potentials Represented by Different Land Use Capability Classes and Their Characteristics	47
Table 4-4 Erosion Levels and Their Characteristics.....	49
Table 4-5 Temperature Values	55
Table 4-6 Average Monthly Precipitation and Maximum Precipitation Values.....	56
Table 4-7 Average, Maximum and Minimum Relative Humidity Values.....	57
Table 4-8 Monthly Average Wind Speeds.....	60
Table 4-9 Maximum Wind Speeds and Directions, Average Numbers of Stormy and Windy Days	60
Table 4-10 Monthly Average, Maximum and Minimum Pressure Values.....	61
Table 4-11 Monthly Average Foggy, Snowy, Hail, Frosty and Stormy Days	62
Table 4-12 Soil Sampling Location and Timing.....	62
Table 4-13 Activity Specific Contamination Indicator Parameters.....	62
Table 4-14 Comparison of the Soil Chemical Analysis Results with the Generic Pollutant Limit Values given in Soil Regulation.....	63
Table 4-15 Surface Water Sampling Location and Timing.....	64
Table 4-16 Surface Water Quality	65
Table 4-17 Noise Measurement Points Location and Timing.....	66
Table 4-18 Background Noise Levels Measured	67
Table 4-19 Measurement Points Location and Timing.....	67
Table 4-20 PM10 and PM2.5 Measurement Results.....	68
Table 4-21 Flora List of Ilgin WWTP Area and its Close Vicinity	84
Table 4-22 List of Amphibian and Reptilian in the Ilgin WWTP Area and its Close Vicinity	92
Table 4-23 Major Bird Species in and around Ilgin WWTP Area	94
Table 4-24 List of Mammal Species in and around Ilgin WWTP Area	98
Table 4-25 Agricultural Products Produced in Konya.....	100
Table 4-26 Population Results of Konya Province.....	102
Table 4-27 Population Results of Ilgin District.....	102
Table 4-28 Data Recorded of Tourist Overnight Stays in Konya.....	104
Table 4-29 Türkiye, Gross Domestic Product (million TRY) in Current Prices.....	105
Table 4-30 Sectorial Percentages of GDP in Türkiye.....	105
Table 4-31 Konya, Gross Domestic Product (million TRY).....	105

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 4-32 Sectorial percentages of GDP in Konya.....	106
Table 4-33 Labor Force Participation, Employment and Unemployment Rates.....	106
Table 4-34 Education Level and Rates for Ilgın, Konya and Türkiye	108
Table 4-35 Summary of the Interviews with Mukhtar	109
Table 5-1 Matrix Representing Environmental and Social Impact Sources and Possible Interacts with Environmental and Social Components (Before Mitigation Measures Are Taken)	114
Table 5-2 Interaction Matrix for Significance Assessment.....	115
Table 5-3 Criteria for Determining the Magnitude of Impact.....	115
Table 5-4 Criteria for Determining the Severity of Impact	115
Table 5-5 Assessment of Impacts on Soil and Land Use for the WWTP Project.....	118
Table 5-6 Threshold Values for Stack and Non-Stack Sources.....	122
Table 5-7 Ambient Air Quality Limit Values – National Legal Limit Values	122
Table 5-8 Ambient Air Quality Limit Values – WBG Standards	123
Table 5-9 Emission Factors to be used to Calculate Dust Emissions	123
Table 5-10 The Predicted Amount of Dust Emission for the Land Preparation and Construction Activities	124
Table 5-11 Uncontrolled and Uncontrolled Dust Emissions Generated on Ilgın WWTP Area	124
Table 5-12 Emission Factors (USEPA)	125
Table 5-13 Calculated Amounts of Exhaust Emissions	126
Table 5-14 Assessment of Dust and Emission Impacts on Air Environment	126
Table 5-15 Recommended Distances to Settlements against Odor Nuisance.....	129
Table 5-16 Dominant Wind Directions for Ilgın WWTP and Distance to Nearest Receptor at the Directions.....	129
Table 5-17 Summary of Odor Impact Assessments for Ilgın WWTP.....	129
Table 5-18 Environmental Noise Limits for Industrial Plants	135
Table 5-19 Environmental Noise Limits for Construction	135
Table 5-20 Noise Level Guidelines of WBG.....	135
Table 5-21 Machinery and Equipment and their Noise Intensity Levels (Lw)	135
Table 5-22 Distribution of Noise Generated by WWTP Construction Relative to Distance.....	137
Table 5-23 Assessment of Noise Impact for WWTP Project.....	138
Table 5-24 Water Requirement of the Project.....	141
Table 5-25 WPCR Table 21.3 Domestic Wastewater Discharge Criteria	142
Table 5-26 UWTR Annex 4 Table 1 Urban Wastewater Secondary Treatment Discharge Criteria	142
Table 5-27 UWTR Annex 4 Table 2 Urban Wastewater Advanced Treatment Discharge Criteria.....	142
Table 5-28 Selected Discharge Limits for Ilgın WWTP	143
Table 5-29 List of Possible Waste Types to be generated during Land Preparation and Construction Phase of the Project.....	145
Table 5-30 List of Possible Waste Types to be generated during Operation Phase of the Project	147
Table 5-31 Sensitive Receptors, Baseline Conditions and Possible Social Impacts	158
Table 5-32 VECs for Ilgın WWTP Project.....	173
Table 6-1 Alternative Treatment Systems Rating Table	179
Table 6-2 Alternative Treatment Systems Environmental Considerations Rating Table	180
Table 6-3 Waste Acceptance Limit Values for Class II Landfill Facilities.....	186
Table 6-4 Sludge Treatment Systems Rating Table	188
Table 7-1 Institutional Tasks of Relevant Authorities.....	191
Table 7-2 Environmental and Social Reports on Monitoring	194
Table 7-3 Sub-Management Plans to be Prepared	196
Table 7-4 ESMP Cost Breakdown for Implementation and Monitoring	198

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 7-5 Land Preparation and Construction Phase Mitigation Plan 199

Table 7-6 Operation Phase Mitigation Plan..... 221

Table 7-7 Land Preparation and Construction Phase Monitoring Plan 230

Table 7-8 Operation Phase Monitoring Plan..... 236

Table 8-1 Grievance Mechanism Flow Chart 247

Table 8-2 Sample Grievance Register Form 248

MUNICIPAL SERVICES IMPROVEMENT PROJECT

List of Figures

Figure 2.1 Geographical Location of Konya.....	4
Figure 2.2 Districts of Konya Province.....	4
Figure 2.3 Nearest Neighborhoods to Ilgın WWTP.....	5
Figure 2.4 Ilgın WWTP Area.....	7
Figure 2.5 Existing Final Manhole and Discharge Point (will be the discharge point of Ilgın WWTP as well).....	7
Figure 2.6 Process Flow Diagram for Ilgın WWTP.....	8
Figure 2.7 Ilgın WWTP Layout.....	8
Figure 4.1 Geology Map for Ilgın WWTP Project Area.....	39
Figure 4.2 Tectonic Map of the Project Area.....	40
Figure 4.3 Earthquake Zones Map Showings the Project Area.....	41
Figure 4.4 Earthquake Hazard Map of Project Area.....	41
Figure 4.5 Hydrogeology Map for Ilgın WWTP Project Area.....	42
Figure 4.6 Existing and Project Discharge Point.....	45
Figure 4.7 Stand Type Map of Ilgın WWTP Land.....	47
Figure 4.8 Land Use Capability Classes for Ilgın WWTP Land.....	48
Figure 4.9 Map of Great Soil Groups for Ilgın WWTP Land.....	49
Figure 4.10 Map of Erosion Levels for Ilgın WWTP Land and Its Vicinity.....	50
Figure 4.11 Nearest Officially Protected Areas to the Ilgın WWTP.....	51
Figure 4.12 The Relationship of the Ilgın WWTP Project and the Çavuşçu Lake KBA.....	54
Figure 4.13 Average Temperature, Maximum Average Temperature and Minimum Average Temperature Values.....	55
Figure 4.14 Average Monthly Precipitation and Maximum Precipitation Values.....	56
Figure 4.15 Average and Minimum Relative Humidity Values.....	57
Figure 4.16 Annual Wind Diagram of Wind Blow Numbers and Average Wind Speed.....	58
Figure 4.17 Seasonal Wind Diagram of Wind Blow.....	59
Figure 4.18 Seasonal Wind Diagram of Wind Speeds (m/sec).....	59
Figure 4.19 Monthly Average, Maximum and Minimum Pressure Values.....	61
Figure 4.20 Sampling and Measurement Points Location Map.....	63
Figure 4.21 Satellite Map of the Ilgın WWTP Project.....	76
Figure 4.22 Satellite View of Stabilization Ponds and Project Site.....	77
Figure 4.23 Ruderal Vegetation Grows up Inside the Obsolete Stabilization Pools.....	77
Figure 4.24 The planned Ilgın WWTP Facility crossing with the agricultural ecosystems (left side; dry pasturelands- the facility, right side-the agricultural areas/Beta vulgaris fields).....	78
Figure 4.25 Existing Discharge Point and Ilgın WWTP Area.....	78
Figure 4.26 General view of the Tributary of Bulasan Creek (650 m downstream) (Dominated by Phragmites australis reeds).....	79
Figure 4.27 Upstream of the Discharge Point on the tributary of Bulasan Creek.....	79
Figure 4.28 Cleaned Section of Creek by State Hydraulic Works.....	79
Figure 4.29 Irano-Anatolian Steppes (See some mining activities on the limestone mountain steppe) at the far north of the Project area.....	80
Figure 4.30 CORINE Map of the Project Site and its Close Vicinity.....	80
Figure 4.31 EUNIS Habitat Map of the Ilgın WWTP Project Site.....	81
Figure 4.32 Project Area and Phytogeographical Regions of Türkiye.....	82
Figure 4.33 Distribution of Enterprises Registered in Konya Province Industrial Registry by Sectors (2019).....	101

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Figure 4.34 Number of Unemployed Population in Konya Province 107

Figure 5.1 Ilgın WWTP - Project Area of Influence 112

Figure 5.2 Distribution of Noise Generated by WWTP Construction with respect to Distance 138

Figure 5.3 Composition and Classification of Municipal Waste 146

Figure 5.4 Waste Management Hierarchy 148

Figure 5.5 IFC's Six-Step Cumulative Impact Assessment Approach 172

Figure 7.1 Institutional Structure 191

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Annexes

Annex 1	References
Annex 2	List of Preparers and Contributors
Annex 3	Official Letter Regarding Out of Scope of EIA Regulation
Annex 4	Wastewater Treatment Plant Project Approval
Annex 5	Approved Energy Transmission Line Application Project
Annex 6	Emergency Preparedness and Response Framework
Annex 7	Measurement and Analysis Results
Annex 8	Photographs, Minutes and Participant Lists of the Stakeholder Consultation Meeting Letter about Voluntary Leave of the Informal Land User
Annex 9	Letter about Voluntary Leave of the Informal Land User
Annex 10	Code of Conduct

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Abbreviations

ABPRS	Address Based Population Registration System
AoI	Area of Influence
BAG-KUR	Social Security Organization for Artisans and the Self-employed
BERN	Bern Convention
BIE	Evaluation in Birds in Europe
BMMP	Biodiversity Management/Monitoring Plan
CHC	Central Hunting Commission
CIA	Cumulative Impact Assessment
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CR	Critically Endangered
dBA	A-weighted decibels
DD	Data Deficient
DLP	Defects Liability Period
DSİ	General Directorate of State Hydraulic Works
EBRD	European Bank for Reconstruction and Development
EC	European Commission
EEC	Environmental European Commission
EHS	Environment, Health and Safety
EIA	Environmental Impact Assessment
EN	Endangered
ERL	European Red List
ESF	Environmental Social Framework
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standards
ETL	Energy Transmission Line
EU	European Union
EUNIS	European Nature Information System
EUR	European
EW	Extinct in the Wild
EX	Extinct
FI	Financial Intermediaries
FRIT	Facilities for Refugees in Türkiye
GDP	Gross Domestic Product
GIS	Geographical Information System
GM	Grievance Mechanism
GRS	Grievance Redress Service
GT	The Government of Türkiye
IAPCR	Industrial Air Pollution Control Regulation
IBAs	Important Bird Areas
IFC	International Finance Corporation
ILO	International Labor Organization
IPCC	The Intergovernmental Panel on Climate Change
IPF	Investment Project Financing
IUCN	International Union for the Conservation of Nature
KOSKİ	Water and Sewerage Administration of Konya
KBAs	Key Biodiversity Areas

MUNICIPAL SERVICES IMPROVEMENT PROJECT

LC	Least Concern
LMP	Labor Management Procedures
MEDAŞ	MERAM Electricity Distribution Company
MEVKA	Mevlana Development Agency
MoAF	Ministry of Agriculture and Forestry
MoEU	Former Ministry of Environment and Urbanization
MoEUCC	Ministry of Environment, Urbanization and Climate Change
MSIP	Municipal Services Improvement Project
MTA	Mineral Research and Exploration
NE	Not Evaluated
NGO	Non-Governmental Organization
NT	Near Threatened
OHS	Occupational Health and Safety
PAP	Project Affected Person
PIF	Project Information File
P.E.	Population equivalent
PDoEU	Former Provincial Directorate of Environment and Urbanization
PDoEUCC	Provincial Directorate of Environment, Urbanization and Climate Change
PS	Performance Standard
RAMAQ	Regulation on the Assessment and Management of Air Quality
RAMEN	Regulation on the Assessment and Management of Environmental Noise
RDB	Red Data Book for Birds of Türkiye
RF	Resettlement Framework
RP	Resettlement Plan
SEA/SH	Sexual Exploitation and Abuse/Sexual Harassment
SEP	Stakeholder Engagement Plan
SGK	Social Security Organization
SIB	Siberian Phytogeographic Region
SPAs	Special Protection Areas
TurkStat	Turkish Statistical Institute
TSMS	Turkish State Meteorological Service
USEPA	United States Environmental Protection Agency
UWTR	Urban Wastewater Treatment Regulation
VEC	Valued Environmental and Social Components
VU	Vulnerable
WB	World Bank
WBG	World Bank Group
WHO	World Health Organization
WPCR	Water Pollution Control Regulation
WR&EMP	Water Resources and Effluent Management Plan
WWTP	Wastewater Treatment Plant
YİMER	Foreigners Communication Center

MUNICIPAL SERVICES IMPROVEMENT PROJECT

1 Executive Summary

There are investments to be financed under the EU Facility for Refugees in Türkiye Municipal Services Improvement Project, both financed by EU and WB, implemented in the provinces impacted by refugee influx. These investments directly aim to improve municipal services priorities, particularly through construction and rehabilitation of water supply, wastewater and solid waste facilities in targeted five provinces (Adana, Kahramanmaraş, Kayseri, Konya and Osmaniye) affected by the Syrian refugees in Türkiye. Each investment is indicated as subproject that will be financed under the Municipal Services Improvement Project.

The sub-project Ilgın Wastewater Treatment Plant (WWTP) is to be implemented in Ilgın district of Konya Province of Republic of Türkiye where no operational wastewater treatment plant is present. This sub-project will be financed under Municipal Services Improvement Project (MSIP) to meet the demand for increasing infrastructure at the region.

Ilgın WWTP Project is located within the administrative boundaries of Ilgın district, Şihbedrettin neighborhood. The WWTP area is estimated as 25,125 m² land which has been registered as WWTP land and owned by treasury since 1980. No land has been or will be acquired for the WWTP Project. The area was formerly used as stabilization pond for wastewater treatment purposes, and which was established in 1980; however, has not been under operation for the last 15 years since 2005. The untreated domestic wastewater from Ilgın has been discharged to a tributary of Bulasan Creek by the collector line which was constructed in 2017. Currently, the collector line collects wastewater of Ilgın and conveys it to the proposed WWTP land. Since the WWTP has not been established yet, the collector line continues to the discharge point by passing at the north edge of the WWTP area in the east direction and then goes along the north-east of the WWTP area until to the tributary of Bulasan Creek. This tributary has been dried during all seasons. With the establishment of Ilgın WWTP, the existing collector line will be connected to the WWTP and wastewater will be treated. The discharge point will not change and the end of the collector line after the WWTP will be used as discharge channel ending up at the existing discharge point.

Ilgın WWTP Project aims to avoid untreated wastewater discharge to environment. Within this context, Ilgın WWTP's Application Project Dossier has been prepared by a design consultant contracted by KOSKİ in 2017 and was approved by both Regional Directorate of İLBANK and General Directorate of İLBANK. Ilgın WWTP Project is designed to serve for 41,000 people in 2033 with an average capacity of 7,000 m³/day, 46,000 people in 2048 with an average capacity of 8,500 m³/day. With the grant fund, the first stage serving 41,000 people in 2033 with an average capacity of 7,000 m³/day will be established. Details about the Project is provided in Section 2 of this ESIA.

Legal and Institutional Framework for environmental and social aspects is presented in Section 3 including National Legislation, international agreements and conventions and World Bank's Environmental Social Framework.

Baseline conditions of the Project area detailed in Section 4 of this ESIA starts with physical environment with subheadings geology and hydrology, water resources at and around the Project area, land use, soil and landscape characteristics, existing protected areas, meteorological and climate characteristics. Existing ecology and biodiversity in and around the Project area are discussed and characteristics of socioeconomic environment is provided under Section 4.

The environmental and social management risks, impacts and mitigation measures are assessed comprehensively in Section 5 for both construction and operation phases of the Project.

The assessment starts with identifying area of influence for the Project in different contexts such as direct physical impacts, noise, odor etc. Afterwards, impacts on physical environment considering the baseline data has been evaluated. In that scope, impacts on topography, soil and land use, impacts on air quality, odor impact, Project's relation with climate change, noise and vibration induced impacts, water, wastewater,

MUNICIPAL SERVICES IMPROVEMENT PROJECT

wastes and landscape related impacts as well as risks on protected areas were detailed. Project impacts on biological environmental and socio-economic environment containing transportation, local employment, community health and safety were also assessed under Section 5. Section also provides a comprehensive assessment on labor and working conditions including occupational health and safety aspects. The significance of each impact assessment is rooted to interaction matrix which evaluates severity of impact and magnitude of impact. The assessment presented along with mitigation measures designed based on the impact significance and separate for construction and operation phases of the Project.

Proposed environmental and social impacts of the Project to be discussed in this section are:

1. Impacts on Physical Environment

▪ Topography, Soil and Land Use

The WWTP to be constructed within the scope of Project has a 25,125 m² area where permanent impact will be observed. which has been registered as WWTP land and owned by treasury since 1980. No land has been or will be acquired due to the WWTP Project. The area was formerly used as stabilization pond for wastewater treatment purposes, and which was established in 1980; however, has not been under operation since 2005. The Ilgin WWTP land has not been used for any purposes by anybody for the last 15 years.

The topsoil will be stripped to a 15-30 cm depth before start of construction. The topsoil stripped will be stored on a designated area on WWTP area until to be used for landscaping purposes. The excavated subsoil will be temporarily stored on designated areas of WWTP land until to be used for backfilling purposes. Any excess excavated material will be sent to Municipality's permitted excavation material dump sites after taking relevant official documents.

At the southeast of the land owned by KOSKİ, where there will be no construction activity, there is an old structure. This was the office of obsolete stabilization ponds. This structure is now used as barn by a farmer who is engaged in husbandry. KOSKİ representatives indicated that they communicated with the farmer in 2020 and the farmer informed that he was planning to move his husbandry (around 250 small ruminant) to his own land right after collecting the forage he planted on his land in autumn. According to the official letter submitted by the farmer to KOSKİ, the farmer left the building of his own accord on 2nd November 2021 (See Annex 9).

As it is clearly mentioned in Section 2.3.1, there is no need for land acquisition for the Project area and the associated facilities (ETL, water line, construction camp sites, site offices etc.). Therefore, any land acquisition and land use impact are not expected and Resettlement Plan has not been prepared for this project.

▪ Air Pollution

Dust generation is expected as a result of earthworks such as excavation, filling, backfilling, and land preparation works etc. Application of dust suppression methods are important to minimize the impact. In addition, exhaust emissions from construction machinery and equipment are expected. Periodical checks and maintenance of the construction machinery, equipment and vehicles to be used for the Project shall be provided. Therefore, the effects are expected to be low.

The operation phase of the Project is not expected to cause significant dust and exhaust emissions. However, as also stated in the WBG's EHS Guidelines for Water and Sanitation, air emissions from wastewater treatment operations could include hydrogen sulfide. Hydrogen sulfide (H₂S) could be generated from physical treatment and sludge treatment systems of WWTPs in general that will be monitored during the operation.

▪ Odor

During the operation phase, odor is generally generated in physical treatment and sludge units of WWTPs. The closest receptor to Ilgin WWTP is out of the odor AoI of Ilgin WWTP. Therefore, the impact significance is determined as "low". It will be reduced to negligible by enclosing the sludge treatment

MUNICIPAL SERVICES IMPROVEMENT PROJECT

units and providing good operational conditions to avoid nuisance of the community and resident who are engaged in agricultural activities around the WWTP area.

▪ **Climate Change**

It is crucial to operate the systems in a good and controlled conditions to decrease the N₂O and CO₂ emissions. There is no anaerobic digester to emit CH₄ within the system designed. However, there is a possibility of generation of CH₄ under long term anaerobic conditions at pumping stations, sludge tank and sludge cake containers unless adequate conditions for maintenance of these are met such as frequent cleaning, continuous aeration of sludge tanks and periodical removal of sludge cake. Under standard operational conditions, CH₄ emission is not foreseen from the system.

In addition, the Project is out of scope of Regulation on Tracking Greenhouse Gas Emissions.

▪ **Noise Pollution and Vibration**

The construction vehicle and machinery will generate noise emission during the construction phase.

With the aim of minimizing the impact period, construction works will be carried out during daytime (08:30- 18:30). High-quality equipment will be selected with low noise levels and the adherence to speed limit will be ensured. Since the measured background noise levels was above the WBG's daytime limit value; therefore, the noise impact shall not exceed the acceptable noise level with the addition of allowed maximum increase calculated under relevant section and the construction contractor will strictly implement measures given in Table 7-5 to mitigate the noise impact. In addition, project activities will not result in an increase in background noise levels of 3dB.

▪ **Water and Wastewater**

Potable and drinking water will be used for human consumption on working areas and at site offices. The wastewater generated could result in water pollution if it is discharged to water resources without any treatment. In addition, contamination of the water resources is a risk with the possibility of a chemical leak at the vicinity of a watercourse. Relevant measures will be taken for discharge of the wastewater and prevention of possible water pollution.

For the operation phase, the discharge criteria for WWTP are selected based on Urban Wastewater Treatment Regulation for BOD, COD, TSS, Total Phosphorus, Total Nitrogen and pH. The WBG's Environmental, Health and Safety Guidelines for Water and Sanitation, which is another key document, does not provide limit values for effluent water quality parameters as in Turkish Urban Wastewater Treatment Regulation. The Article 65 of the Guideline refers to the "applicable national requirements or international accepted standards" for the effluent water quality. The Turkish Urban Wastewater Treatment Regulation fully comply with the European Union: Council Directive 91/271/EEC of 21 May 1991 Concerning Urban Wastewater Treatment.

Only domestic wastewater generated from the district will be treated in the Ilgın WWTP. Bulasan creek will be used as a receiving environment for treated effluent and that it will not be discharged into any other surface water body.

▪ **Wastes**

The construction activity will generate different kinds of wastes such as excess subsoil from excavation, domestic wastes, recyclables, packing wastes that could not be recycled, hazardous wastes, waste oil, medical waste etc. The disposal of this waste to environment has an adverse impact on soil, water resources, community health and biodiversity features by resulting contamination.

The wastes will be collected separately, stored according to the relevant standards and disposed via the licensed companies.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

▪ **Protected Areas**

There are no protected areas defined in national legislations, key biodiversity areas recognized internationally and archaeological sites within the Project area. Any hazard to protected areas and key biodiversity areas is not expected due to Project activities.

▪ **Visual Impacts and Landscape**

During the construction phase, a visual impact is foreseen because of the construction vehicles presence, earthworks, excavation works and relevant construction activities.

After the completion of construction works, topsoil will be spread to the reclamation areas of treatment plant site, grass cover growth will be ensured, and improvement of the landscape features of the area will be ensured. Types of trees and shrubs to be used for landscaping purposes shall be selected in accordance with the existing flora. Tall plants and trees will be used along the borders of the treatment plant area to reduce the noise and odor impacts.

2. Impacts on Biological Environment

There are some semi-natural dry pasturelands, degraded steppes, reeds, freshwater bodies and agricultural fields in and around the Project area. A total of 95 terrestrial flora and 69 terrestrial fauna species and subspecies are expected within the Project area. Although none of them is endemic or rare, the mitigation measures should be taken for the natural flora and fauna elements for protection. Ilgin WWTP area cannot be classified as Critical Habitat as the criterions are not valid for the site.

The existing wildlife would be most affected by habitat reduction within the Project site. Wildlife within surrounding habitats might also be affected if the construction activity (and associated noise) disturbs normal behaviors, such as feeding and reproduction.

The Project has a positive impact on receiving environment due to the avoidance of untreated wastewater discharge to environment. The potential adverse impact on biological environment as a result of the Project will be avoided and minimized by implementation of given measures.

In the operation phase, any significant impact on biological environment is not expected.

3. Impacts on Social Environment

▪ **Traffic**

An increase in traffic load is foreseen with the Project vehicles access and ingress to the construction site; however, this is assessed as not significant. For Project-related vehicles, approaches to traffic safety will be implemented, such as setting speed limits in residential areas, covering transported material with a paulin, and loading the vehicles according to their load limits. The risk of accidents will be reduced as much as possible because of the implementation of such measures and the low traffic intensity outside of the Project area.

▪ **Local Employment and Procurement**

Prioritizing local employment and local procurement will contribute to the local economy, which is noted as a positive impact. The construction contractor will pay attention to carry services and procure goods locally as much as possible in the course of construction phase. In addition, the construction contractor will give priority to hire local people especially in terms of unskilled personnel and security personnel. In case there are skilled personnel locally available for employment, the contractor will prioritize their employment possibilities as well.

▪ **Community Health and Safety**

Labor influx is a risk arising from long-term accommodation of the workers in the course of construction. However, the number of personnel working for the project will be limited due to the scope of the Project. The work force will be mostly recruited locally, and labor influx is not expected.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

KOSKİ and the construction contractor will closely monitor potential diseases among the project employees (direct and contracted) throughout the construction phase and ensure that necessary medical checks are in place at the time of hiring, which would be repeated as necessary. The contractor has medical screening reports for all the existing operations personnel. Hygienic working conditions will be ensured, and potable and sanitary water will be supplied in line with the requirements of the national legislation. On site facilities such as sanitary facilities and medical/first aid facilities will meet the requirements of EBRD/IFC's Guidance Note on Worker's Accommodation Processes and Standards.

The construction contractor will prepare Covid-19 precaution plans/procedures prepared in order to prevent any possible Project impact related to Covid-19 pandemic.

The emergency related risks will start in land preparation and construction phase. The whole emergency context will be managed with an Emergency Preparedness and Response scheme and will continue for the operation phase as well.

Community access to construction sites will increase the likelihood of adverse community health and safety impacts such as accidents involving community members. The contractor shall take necessary measures to prevent the access to construction sites such as perimeter fences surrounding working areas, safety guardrails, signs, announcements etc.

The complaints by community members caused by presence and behavior of workers and/or security personnel will be addressed through the Code of Conduct and conduct of awareness raising among workers and security personnel. In addition, a Grievance Mechanism will be in place. The repair and maintenance works are considered as construction works; therefore, the repair and maintenance crews should perform works by considering the construction phase impacts and comply with corresponded mitigation measures all the time.

▪ **Labor and Working Conditions**

Personnel shall be recruited during the construction phase of the project considering the requirements of Labor Management Procedure of the project which is based on the ESS2 and the national Labor Law. Local work force recruitment options will be considered as much as possible.

Labor related administrative works are critical to ensure compliant employment procedures and for protecting worker rights. Labor Management Procedure of the Project including a Grievance Mechanism is in place and the contractor is required to prepare its own Labor Management Plan by adopting it together with its specific code of conduct.

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

▪ **Occupational Health and Safety**

Construction stage of the Project includes assembling works for equipment and the use of duty vehicles in this scope. As described in the sectoral WBG EHS Guidelines Water and Sanitation; work at sanitation facilities is often physically demanding and may involve hazards such as open water, trenches, and slippery walkways, working at heights, energized circuits, and heavy equipment. The nature of the work may also involve entry into confined spaces, including manholes, sewers pipelines, storage tanks, wet wells, digesters, and pumps.

Before the commencement of land preparation and construction works, the construction contractor will prepare a site-specific Occupational Health and Safety Management Plan for the Project which will comply with the Turkish Legislation and international standards.

The repair and maintenance works are considered as construction works; therefore, the repair and maintenance crews will perform works by considering the construction phase impacts and comply with relevant mitigation measures all the time.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

The cumulative impact assessment (CIA) of the Project is presented referring to a methodological tool in Section 5.7. In consequence of absence of any other existing/planning developments within the CIA study areas of the subject WWTP Project, it is concluded that there will be no cumulative impact on each Valued Environmental Component estimated under the Section.

Section 6 provides alternatives for the Project including no action, site, process alternatives. After the evaluation, the benefits of the Project are considered as of great importance to the surrounding population, therefore, no action alternative is eliminated. For site alternatives, as the subject land is beside the end point of sewage network and adjacent lands expect for the selected land are owned privately, no other alternative has been evaluated. Within the applicable processes, in the light of the treated water quality targets and the associated evaluations, 'Extended Activated Sludge process with Nutrient removal' is selected for Ilgin WWTP Project. For sludge management alternatives, the selected sludge management techniques are gravity thickening and sludge dewatering by centrifuge at site. Dewatered sludge will be collected at site in containers which will be transferred to Konya Centrum WWTP. The collected sludge in the Konya Centrum WWTP will be further dried in the drying area of this WWTP before sent to agricultural lands as compost.

Roles and responsibilities for environmental and social management, capacity development and training requirements and monitoring methodologies with requirements for successful implementation of environmental and social management practices are given under Section 7 where the construction contractor, KOSKİ and İLBANK has clear responsibilities for construction and operation phases of the Project.

Environmental and social mitigation plan for land preparation, construction and operation phases including proactive, preventive and mitigation measures about the above-mentioned possible project impacts, responsible party and cost estimations are presented under Section 7, in Table 7-5 and Table 7-6. The Tables also provide estimated level of significance of impact before mitigation and significance level of residual impact after mitigation. For most of the topics with a potential impact, the residual impacts are evaluated as low with the successful implementation of measures to be taken. In addition, the monitoring plan is designed to control the implementation status of the measures. This designed monitoring scheme is presented including responsible parties in Table 7-7 and Table 7-8.

The SEP of the Project is disclosed in KOSKİ web-page.¹ The document includes information about past stakeholder engagement activities and the grievance mechanism by which the Project stakeholder can sent their requests, complaints and wishes. The stakeholders can use various tools to deliver their grievances which are detailed in the SEP document.

Cost items and their breakdown for ESMP Implementation and Monitoring within the scope of the Project is provided in Table 1-1.

¹ https://www.koski.gov.tr/uploads/sayfalar_v/dosya/sayfalar-137-turkiye-nin-multecilerden-etkilenen-bolgelerinde-belediye-hizmetlerinin-iyilestirilmesi-projesi--frit-ii--2020-03-26-14-35-45-LD.pdf

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 1-1 ESMP Cost Breakdown for Implementation and Monitoring

Budget Item	Estimated Cost
Construction Phase	
Environmental Expert	Key staff (*)
Social Expert	Key staff (*)
OHS Expert	Key staff (*)
Monitoring (Measurements and laboratory analyses)	Included in the contractor's budget (**)
Financial Experts	No extra cost (***)
Technical Experts	No extra cost (***)
Operation Phase	
Monitoring (Measurements and laboratory analyses)	Included in the operation budget of KOSKÍ (**)
Financial Experts	No extra cost (***)
Technical Experts	No extra cost (***)

(*) Recruitments of specialists shall be financed under the budget of supervision consultancy services. Relevant cost estimates are taken into account at the initial stage of the consultant selection. The contractors are obliged to hire environmental, social and OHS experts for the implementation and monitoring of ESMP within the scope and price of their bids. . At this stage monthly cost estimated per specialist is 1,000 €/month)

(**) The laboratory and testing obligations and relevant reporting responsibility will be included within the works contract, during the construction period and the defect liability period. Later, for the operation stage, this responsibility will be transferred to KOSKÍ.

(***) Since KOSKÍ permanent staff will be appointed to these positions, there will be no extra cost to the Project budget.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

2 Project Description

2.1. Background Information on the Project

Following the protracted political crisis across in Syria, Türkiye has become the largest refugee hosting country, serving as a transit hub and a reception country for irregular migrants and refugees from the region. With almost 4 million refugees, more than 3.58 million are registered Syrian refugees under temporary protection in 2020. As of June 2020, only a small share (approximately 1.7%) resides in camps, while the rest live outside camps, mostly in urban areas². Municipalities are among the primary responders in addressing the impact of the Syria crisis, and they have played an essential part in the development of more resilient capacities able to respond to the increase in demand for services³. The refugee crisis has resulted in a substantial increase in the population of many municipalities across Türkiye, especially in the South Eastern region as well as a number of other provinces across the country.

The provinces of Adana, Kahramanmaraş, Kayseri, Konya and Osmaniye are among several provinces in Türkiye impacted by the influx of refugees. In June 2020, these five cities had a refugee population of about 581,508 people⁴. The increased populations have put significant pressure on existing municipal infrastructure including water supply, wastewater and solid waste management services in affected host communities. As a result, urgent interventions in municipal infrastructure to augment existing systems are required. The Government of Türkiye (GT) has requested grant financing from the European Union (EU) under its Facility for Refugees in Türkiye (FRIT) for a project to support municipal services in refugee-affected areas.

There are investments to be financed under the EU Facility for Refugees in Türkiye (FRIT II) Municipal Services Improvement Project both financed by EU and WB, implemented in the provinces impacted by refugee influx. These investments directly aim municipal services priorities, particularly through construction and rehabilitation of water supply, wastewater and solid waste facilities in targeted five provinces (Adana, Kahramanmaraş, Kayseri, Konya and Osmaniye) affected by the Syrian refugees in Türkiye. Each investment is indicated as subproject that will be financed under Municipal Services Improvement Project.

Konya Province refugee influx (according to total refugee population) is presented below.

Table 2-1 Konya Province Refugee and Host Population

Province	2020, June ⁵			2018 ⁶		
	Refugee Population	Host Population	Refugee to Host (%)	Refugee Population	Host Population	Refugee to Host (%)
Konya	114,641	2,232,374	5.14%	107,664	2,205,609	4.88%

Source: Directorate General of Migration Management and European Commission, 2018. Technical Assistance to the EU Facility for Refugees in Türkiye, Need Assessment Report, Annex 2

According to the EU Needs Assessment Report, water supply is likely to become a severe problem for Türkiye in the near future. To counter this challenge, the Government has embarked on an extensive modernization and development process to improve water quality nationally, to ensure all rural and urban residential and industrial areas have access to drinking water and water treatment facilities. However, the sizeable population increase due to hosting refugees has caused an unexpected stress on this modernization program.

² Directorate General of Migration Management (DGMM), www.goc.gov.tr/gecici-koruma5638, on 29.07.2020

³ Strengthening Municipal Resilience in Response to the Impact of the Syria Crisis in Türkiye, 3RP

⁴ DGMM, www.goc.gov.tr/gecici-koruma5638, on 29.07.2020

⁵ DGMM, www.goc.gov.tr/gecici-koruma5638, on 29.07.2020

⁶ European Commission, 2018. Technical Assistance to the EU Facility for Refugees in Türkiye, Need Assessment Report, Annex 2

MUNICIPAL SERVICES IMPROVEMENT PROJECT

The provinces located in the south east of Türkiye in particular, which remain the prime target of the Turkish Government's development program, have seen the greatest negative impact, facing issues such as water scarcity problems and significant stress on existing wastewater treatment facilities.

Although the population in Türkiye with access to sewage networks is relatively high, a significant proportion of wastewater is discharged untreated into the environment. According to Turkish Statistic Institution (TurkStat) Municipal Wastewater Statistics for 2018, 90.7% of the population living in municipalities are served with a sewage network. However, only 78.7% of the municipal population is served with a wastewater treatment plant. In individual municipalities' coverage is lower, and the quality of sewerage infrastructure is inadequate, resulting in sewage leakages which impact the environment. These conditions not only impact the environment, but also lead to significant increases in operation and maintenance costs of the system. The added pressure due to the increased population from the refugee influx is further exacerbating the quality and quantity of services provided to the existing populations.

The priority issues have been identified by Konya Water and Sewerage Administration (KOSKİ) to improve the health standards and to protect natural resources in the region. These priority issues include increasing capacity of wastewater treatment.

The subproject Iğın Wastewater Treatment Plant (WWTP) is to be implemented in Iğın District of Konya Province of Republic of Türkiye where no operational wastewater treatment plant is present. This subproject will be financed under Municipal Services Improvement Project to meet the demand for increasing infrastructure in Konya Province. Iğın Wastewater Treatment Plant Project (hereafter "the Project") is developed under the responsibility of General Directorate of KOSKİ considering the infrastructure needs of the Konya Province.

KOSKİ which is established in accordance with the national law no 2560, is acting as a public legal entity of Konya Metropolitan Municipality. As per the Regulation on Establishment, Authorization and Organization of General Directorate of KOSKİ⁷, KOSKİ was established by 89/14524 numbered Cabinet Decision on 28.09.1989. The primary purpose of KOSKİ is to execute water and sewage services and establish required facilities, operate water and sewage systems and facilities.

İLBANK as the financial intermediary will transfer the received grant from EU under the Municipal Services Improvement Project to borrowing municipalities/utilities (such as KOSKİ). In this respect, KOSKİ is also named as a sub-borrower whereas ILBANK is indicated as the borrower.

Construction controls of eight (8) and operation of thirty-seven (37) wastewater treatment plants are currently being carried out by KOSKİ. A team composed of one environmental engineer, one mechanical engineer, one electrical engineer and one civil engineer is assigned for supervision of the facilities to be constructed. Until the end of the work, both field inspections and payment-based controls are carried out by this team.

In addition, the Utility of the Future project carried out by the World Bank for the improvement of the institutional capacity of KOSKİ was carried out and completed. Therefore, institutional EHS capacity of KOSKİ is observed to be sufficient to manage the construction activities and operation of the new WWTP.

2.2. Project Location

Konya Province, Türkiye's largest province in terms of surface area, is the seventh most populous city. Its total surface area is 40,838 km² and it is located in the south of the Central Anatolian region. Konya provincial boundaries extend to Haymana plateau in the north, Cihanbeyli plateau and Salt Lake in the northeast, Beyşehir and Akşehir Lakes in the west, volcanic mountains -formed along a fault line starting from Sultan Mountains and lies through south of Karaman Province- in the south, Obruk plateau in the east. Its average altitude is 1,016 m. Due to its wide plains and plateaus, it is suitable for agriculture.

⁷ Retrieved from www.koski.gov.tr/mevzuat/yonetmelikler, on 5.12.2019

MUNICIPAL SERVICES IMPROVEMENT PROJECT

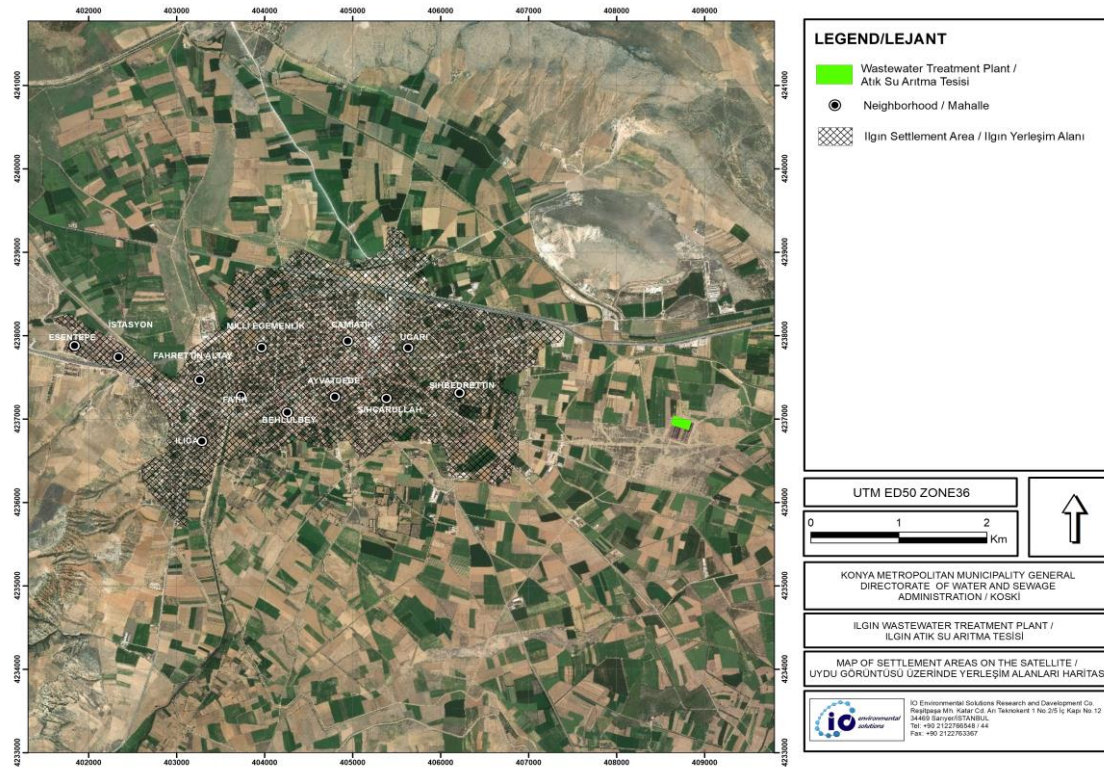


Figure 2.3 Nearest Neighborhoods to Ilgın WWTP

2.3. Project Characteristics

Ilgın WWTP Project aims to avoid discharging untreated wastewater to the environment. Its Application Project Dossier has been prepared by a design consultant contracted by KOSKİ on September 5th, 2017. This Application Project was approved by both Regional Directorate of İLBANK and General Directorate of İLBANK. KOSKİ contracted a Supervisor Consultant Company to review/revise and finalize the designs and to prepare the bidding documents for this project on August 2021. Brief description on the Project is given in Table 2-2.

Table 2-2 Brief Description of Project

Facility Name	District	Service Area (Neighborhoods)	Scope of WWTP
Ilgın WWTP	Ilgın	Ayvaddede Behlülbey Camiatik Esentepe Fahrettinaltay Fatih Ilıca İstasyon Milliegemenlik Sahip Ata Şihbedrettin Şihcarullah Ucarı	Construction of WWTP (for 41,000 people in 2033 with an average capacity of 7,000 m ³ /day, 46,000 people in 2048 with an average capacity of 8,500 m ³ /day)

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Only domestic wastewater generated from the district will be treated in the Ilgın WWTP. The treated domestic wastewater from Ilgın WWTP will be discharged to the existing collector line to be discharged to Bulasan Creek.

There is a separate storm water collection system in the district, therefore storm water in the district will not be diverted to the WWTP. However, leakages from groundwater and storm water into the sewage system is added to the projected domestic wastewater amount in scope of the design calculations, which is assumed to be 10% of the total domestic wastewater.

The following sub-sections provides information on Ilgın WWTP location, characteristics, components, project activities, estimations on machinery and equipment as well as workforce requirement for construction and operation phases and schedules.

2.3.1 Location and Land Use

Ilgın WWTP Project is located within the administrative boundaries of Ilgın District, Şihbedrettin Neighborhood. The WWTP area is estimated as 25,125 m² land which has been registered as WWTP land and owned by treasury since 1980. No land has been or will be acquired for the WWTP Project. The area was formerly used as stabilization pond for wastewater treatment purposes, and which was established in 1980; however, has not been under operation for the last 15 years since 2005.

The untreated domestic wastewater from Ilgın has been discharged to a tributary of Bulasan Creek by the collector line which was constructed in 2017. Currently, the collector line collects wastewater of Ilgın and conveys it to the proposed WWTP land. Since the WWTP has not been established yet, the collector line continues to the discharge point by passing at the north edge of the WWTP area in the east direction and then goes along the north-east of the WWTP area until to the tributary of Bulasan creek. This tributary has been dried during all seasons. With the establishment of Ilgın WWTP, the existing collector line will be connected to the WWTP and wastewater will be treated. The discharge point will not change and the end of the collector line after the WWTP will be used as discharge channel ending up at the existing discharge point.

There is an existing earth road to reach the WWTP area which is on the north of Mehmet Arslan Street.

The closest neighborhoods to the Ilgın WWTP is Şihbedrettin neighborhood -with a population of 2,367[®] in 2020- which is at 2.5 km west and Orhaniye neighborhood -with a population of 1,054 in 2020- at 2.5 km northeast. At the 3.1 km east of the Ilgın WWTP area, Ağalar neighborhood -with a population of 626 in 2020- is located. The nearest two settlements located in the surroundings of the WWTP Area are at 1,350 m west and at 640 m southeast in Şihbedrettin (See Figure 5.1). Those are farmhouses for farmers who are living with their families with a household population of 4-6 person according to information obtained during site visit conducted for stakeholder consultation meeting. At the north of WWTP land, agricultural lands are dominant and at the south, a pastureland with a large surface area is present (See Figure 4.21).

The construction camp site and site offices will be established on the WWTP area which is a treasury land. Within the WWTP area, the landscaping areas and areas adjacent to internal service roads will be used for this purpose. Therefore, there is no need for land acquisition for construction camp sites and site offices. All temporary auxiliary facilities associated with construction will be installed within the WWTP area to avoid any further land-based impacts per the WB's mitigation hierarchy. Referring to the energy transmission line (ETL) application project, the closest transformation station is on the adjacent public pastureland which belongs to treasury and 245 m above ground ETL will be constructed on this land through the Ilgın WWTP land. ETL will proceed within the Ilgın WWTP allocated land for 483 m reaching to Ilgın WWTP.

The general views of the Ilgın WWTP area are as follows.

[®] Population data is provided from TurkStat 2020 data.

MUNICIPAL SERVICES IMPROVEMENT PROJECT



Figure 2.4 Ilgın WWTP Area



Figure 2.5 Existing Final Manhole and Discharge Point (will be the discharge point of Ilgın WWTP as well)

Currently, the untreated wastewater is already discharged to this dry stream without treatment. After implementation of the Project, the wastewater will be treated and discharged to the same channel. Therefore, volume of discharged water will be lower. According to the design study, the stream has adequate capacity for the treated wastewater.

2.3.2 Project Characteristics and WWTP Components

Ilgın WWTP Project is designed to serve for 41,600 people in 2033 with an average capacity of 7,000 m³/day, 46,000 people in 2048 with an average capacity of 8,500 m³/day. The WWTP Application Project was conducted in 2017 by a contractor awarded by KOSKİ and the Application Project is being approved by General Directorate of İLBANK. The treated effluent will be discharged to Bulasan Creek with the existing collector line.

The selected WWTP process in the Application Project is “Extended aeration activated sludge process with nitrogen and phosphorus removal”. The selected solution has the following units:

1. Coarse Screen
2. Inlet Pump Station
3. Fine Screen
4. Aerated Grit Chamber and Oil Chamber Units
5. Biological Phosphorus Tank
6. Aeration Tanks
7. Final Settling Tank
8. Sludge Concentration Tank
9. Sludge Treatment Units
10. Chlorine Contact Tank
11. Parshall Flume

The flowchart of the process is provided in below figure.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

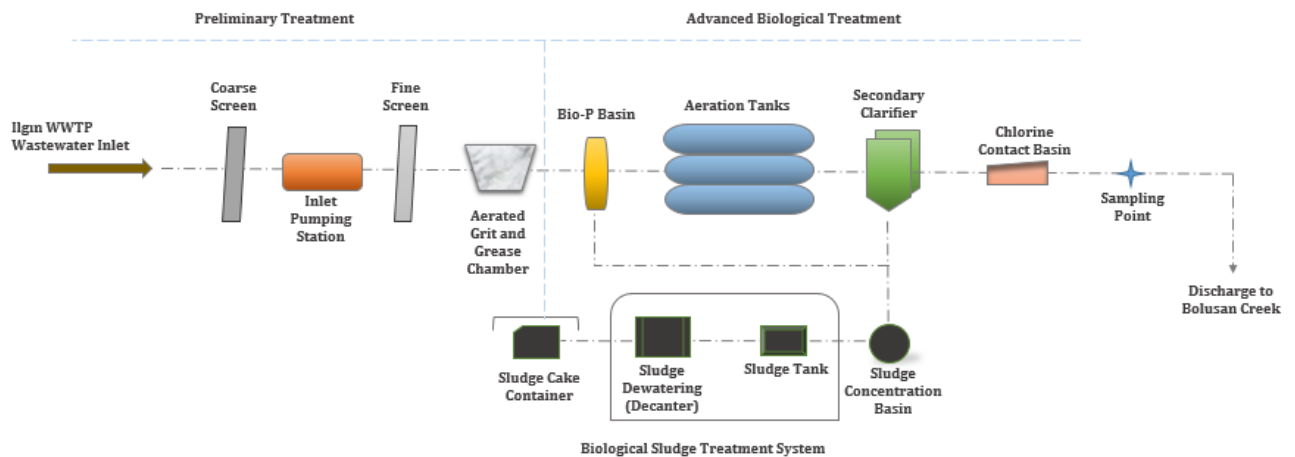


Figure 2.6 Process Flow Diagram for Ilgın WWTP

The preliminary general layout of Ilgın WWTP is provided below.

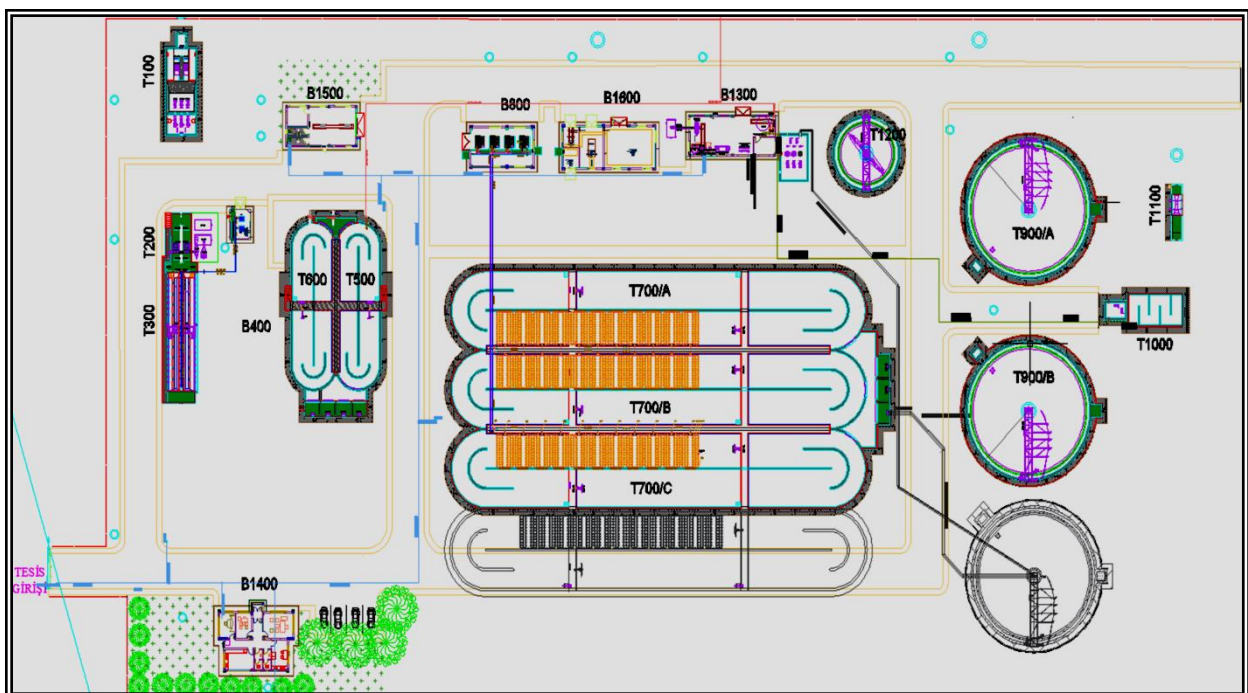


Figure 2.7 Ilgın WWTP Layout

The main wastewater treatment plant units are summarized below.

2.3.2.1 Coarse Screen

The coarse grids will be used to prevent damages that may befall the elevation pumps as well as pipe installation equipment, which are the first unit of wastewater treatment plants, to protect them, and to prevent clogging, by eliminating coarse dirt coming along with wastewater.

Coarse grids will be planned to have a capacity of meeting a maximum flow rate of 621 m³/h. Grid ducts will be equipped with actuator-motor-slide covers that will be installed at the coarse grid inlets and outlets.

Coarse grid will be cleaned automatically depending on water level difference or time. Grid dirt will be taken into impermeable containers and will be ready to be transported to Akşehir Sanitary Landfill in Akşehir District.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

According to the discussions between KOSKİ and Akşehir Municipality, it was confirmed that existing capacity of the landfill is sufficient for total amount of wastes to be generated during the operational life of WWTP.

Assuming that the maximum waste value corresponding to 2 cm grid opening is $50 \text{ m}^3 / 10^6 \text{ m}^3$,

Selected unit coarse screen waste production = $50 \text{ m}^3 / 10^6 \text{ m}^3$

Max Flow = $600 \text{ m}^3/\text{h}$

Coarse screen waste production = $600 \times 50 / 10^6 = 0.03 \text{ m}^3/\text{h}$

= $0.03 \times 24 = 0.72 \text{ m}^3/\text{day}$ (2nd Stage 0.864)

Proposed waste storage period = 4 days

Required total truck capacity = 2.88 m^3

Selected truck volume and number = 3.0 m^3 , 1 transfer per day

2.3.2.2 Inlet Pump Station

Grit will be removed in order to reduce the risk of damage to the mechanical equipment. The elevation station will be sized so as to meet the maximum flow rate of $600 \text{ m}^3/\text{h}$ and the filtrate water to be pumped to the inlet of the plant. According to the operating conditions, hourly filtrate water flow rate was found $21 \text{ m}^3/\text{h}$.

2.3.2.3 Fine Screen

Fine grids are used to separate from wastewater the materials, coming with wastewater and are over a certain size, and thereby protect the mechanical equipment and the process in the downstream treatment units. Fine grids will be planned to have a capacity to meet the maximum flow rate. Grid ducts will be equipped with actuator-motor-slide covers that will be installed at the fine grid inlets and outlets. Fine grids will have a perforated-type rotary band of 6 mm hole-diameter and will be able to operate at variable speeds according to the information on level difference they receive from the ultrasonic level meters to be placed in the inlet – outlet channels.

Fine grids will be cleaned automatically depending on water level difference, which will be determined by level meters that will be placed on upstream and downstream side, or depending on time, and collected wastes will be transferred to the auger grill press via a belt conveyor. The wastes coming to the auger grill press will be compressed at the rate of 1/8, thus, they will not occupy much space in the storage area and transportation will be saved. The wastes compressed at the auger grill press will be taken into containers and will be ready to be transported to Akşehir Sanitary Landfill in Akşehir District.

Assuming that the maximum waste value corresponding to 0.6 cm grid opening is $80 \text{ m}^3 / 10^6 \text{ m}^3$,

Selected unit fine screen waste production = $80 \text{ m}^3 / 10^6 \text{ m}^3$

Max Flow = $600 \text{ m}^3/\text{h}$

Fine screen waste production = $600 \times 80 / 10^6 = 0.048 \text{ m}^3/\text{h}$

= $0.048 \times 24 = 1.15 \text{ m}^3/\text{day}$ (2nd Stage 1.38)

Screen press dewatering percentage = 70% (Manufacturer data)

Screen press compression ratio = 1/8 (Manufacturer data)

Number of presses selected = 1 piece (1 original)

Waste volume after screen press = $0.144 \text{ m}^3/\text{day}$

Waste storage period = 6 days (Max 7 days)

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Total truck capacity required = 0.864 m³

Selected truck volume and number = 3,0 m³, 2 transfer / day (Including waste in grit and oil trap, See Section 2.3.2.4)

2.3.2.4 Aerated Grit and Oil Chamber

Aerated grit and oil chambers are designed to prevent the damages that will be inflicted by the materials, such as sand, gravel and oil contained in the wastewater, on the mechanical equipment and the process, by separating them from water and preventing them from passing to other units of the treatment plant.

In the aerated grit and oil chambers, air will be given along one side of the basin in order to create a spiral flow that will allow only sand to separate, the organic matter, below a certain particle size, to remain suspended, and the oils to gather aside. The sand will be sent to a washer separator helix by means of submerged sand pumps mounted on a scraper bridge that moves back and forth over the basin at certain intervals. The same bridge will scrape, by means of a scraper installed at water level, also the oils and collect them into the oil container to be transported and disposed of by licensed facilities as per national legislation.

Surface area of the oil chamber;

$$= 0.67 \times 20.0 = 13.4 \text{ m}^2$$

The thickness of the oil layer on the surface; 0.02 m

Number of daily bridge runs; 7 run/day

The amount of oil collected at each run;

$$= 13.4 \times 0.02 = 0.26 \text{ m}^3/\text{run}$$

Daily oil amount for all grit-oil traps = $0.26 \times 7 \times 2 = 3.75 \text{ m}^3/\text{day}$

2.3.2.5 Biological Phosphorus Tank

Biological phosphorus removal consists of two stages: phosphorus release in anaerobic environment and storage of more of the released phosphorus in anoxic and oxic tanks. For the release of phosphorus, the easily degradable dissolved organic carbon contained in the inlet water must be stored in the cell; when the electron acceptor is found, storage carbon will be used for the continuation of microorganism activities and excessive phosphorus storage will occur for the generation of ATP again.

Submersible mixers will be installed on the bottom of the tank in order to prevent settling in the tank and volume losses due to dead areas to emerge because of settling, and to provide the desired flow characteristic. In order to monitor the continuity of the anaerobic conditions in the tank, the oxidation reduction potential will be measured through redox meters to be placed in the tank. At the same time, it is desired that the oxygen concentration is zero at the tank inlet; in order to measure the oxygen concentration at the inlet, one piece of oxygen meter has been provided to the tank.

The Johannesburg process was used to increase biological phosphorus removal and to reduce chemical consumption. For this, a Return Activated Sludge (RAS)-Denitrification tank was used in which the return sludge was kept waiting and the oxygen and nitrate remaining in the active sludge were reduced. Thus, it aims that the process in the anaerobic tank and consequently the biological phosphorus removal are not adversely affected, by preventing the dissolved easily degradable organic carbon, coming from the raw wastewater, from being consumed by the nitrate contained in the return sludge, and by ensuring all of it is used in the biological phosphorus removal.

While the active sludge, which is transferred by return pumps to RAS Denitrification Tank to be built next to the anaerobic tanks, is prevented from settling by continuously mixing it with submersible mixers during the time it spends in this tank, it is ensured that the active sludge consumes nitrate and oxygen. The active sludge then goes to the anaerobic tanks for biological phosphorus removal.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Providing two valves to be left on the sludge return line, the return sludge may also be taken into the anaerobic Bio-P tank, as may be desired.

2.3.2.6 Aeration Tanks

Biological treatment will be carried out in two stages, nitrification, and denitrification. By providing the amount of air required for nitrification, the ammonium nitrogen in the inlet water will be converted to nitrate nitrogen and the generated nitrate will be used as electron acceptor for biochemical oxygen requirement removal.

Wastewater will be taken into the process tanks from Bio-P tanks for treatment. Three process tanks were designed. Process tanks were solved according to the simultaneous nitrification-denitrification system.

The following table shows the aeration tank design dimension where the sludge age is taken as 25 days.

Table 2-3 Aeration basin design dimensions

Parameter	Value
Number of tanks	3 pieces
Water depth	5,50 m
Volume of each tank	5236 m ³ /piece
Selected Tank Width	13,0 m
Selected Interim Partition Length	65,0 m
Sludge Age	25 day
Total Air Requirement	5682,12 Nm ³ /hour
Number of Blowers	2 primary + 1 substitutes
Blower Capacity	2957 Nm ³ /hour/piece
Diffuser Capacity	4 m ³ /hour
Total Diffuser Number	2376 piece
Number of Diffuser for each tank	792 piece

2.3.2.7 Final Settling Tanks

The role of the final settling operation is collecting and disposing the sludge that settles through gravity in result of the water's separation from the colloidal active sludge obtained in the aeration tank. The separated water will be directed to the treatment plant outlet after disinfection.

Final settling tanks' base was designed as circular and conical. Wastewater will enter the settling tanks through the distribution pipes located around the central structure and within the storage area boundaries of the outlet level settling tanks. The sludge settled on the floor will be collected to the center by means of scrapers mounted on the centrally driven moving bridges and will be conveyed to the return pump stations through gravity.

For collection of the sludge floating in each tank, surface scrapers, collection chambers, and transmission lines were planned. Excess sludge will be conveyed from the collection chambers to the pump container via oil pumps.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

2.3.2.8 Main Sludge Treatment Units

Sludge Concentration Tank

Concentration of the sludge forming in the system will be carried out in gravitational sludge concentrator. The concentration of the sludge solid material coming to the concentrator was taken as 1%. The concentration of the sludge solid material to come out of the concentrator was selected as 3% in the calculations.

Sludge Dewatering

The excess sludge will be directly pumped to sludge dewatering facility. For sludge dewatering, centrifuge unit was used. The centrifuge will be of the type containing pre-dehydration and concentration system. Sludge dewatering centrifuges, which have the feature of increasing the concentrated sludge of at least 0.1% to 22% concentration, were selected. Decanters will work 8 hours a day and 7 days a week.

Amount of sludge to be generated is calculated below:

Sludge flow rate after dewatering:

The sludge will be dewatered up to 22% dry matter content (220 kg SS/m³)

= (2,826 kg SS/day)/(220 kg SS/m³) = 12.9 tons/day

The sludge cake density was taken as 1 ton/m³

Sludge Cake volume = 12.9 m³/day

Sludge Cake Storage Area;

Daily volume of sludge cake = 12.9 m³/day

Storage Time = 90 days

Required Storage Volume = 12.9 x 90 = 1,161 m³

Storage Height = 1.50 m

Required Storage Area = 1,161/ 1.5 = 774 m²

Width = 30m

Length = 26m

Selected truck volume and number = 3,0 m³, 387 transfer / 90 days

In operation phase, the generated sludge cake will be transferred to a covered and appropriate container through the belt conveyor. These containers will be impermeable and labelled adequately as well as placed in an enclosed area. It is estimated that a 50 m³ sludge container will be filled up eight times in a month. The enclosed sludge containers will be transferred to Konya Centrum WWTP by specific trucks used for transportation of such containers within the specified periods. The collected sludge in the Konya Centrum WWTP will be further dried in the drying area of this WWTP before sent to agricultural lands as compost which is preferred practice of KOSKİ. Requirements related to use of sludge at agricultural lands are provided in 03.08.2010 dated and 27661 numbered Regulation on Using Domestic and Urban Treatment Sludge in Soil. The sludge of Konya Centrum WWTP itself has been used for agricultural purposes for the agricultural lands in its operation period with the permit it has obtained; therefore, this is an applied and approved procedure for KOSKİ. In the case that the sludge does not meet the legislative requirements for reuse, then the sludge will be sent to Akşehir Sanitary Landfill. According to the discussions between KOSKİ and Akşehir Municipality, it was confirmed that existing capacity of the landfill is sufficient for total amount of wastes to be generated during the operational life of WWTP.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

2.3.2.9 Chlorine Contact Basin

By disinfection, microorganisms are inactivated by disruption of the cell wall, impairment of cell permeability, destruction of the colloid structure of the cell protoplasm, and inhibition of the enzyme activity. As a result of the calculations, the chlorine pump capacity was chosen as 50 L/hour.

$$\text{Daily amount of chlorine to be used} = \frac{7000 \frac{\text{m}^3}{\text{day}} \times 5 \frac{\text{mg}}{\text{L}}}{1000 \times 0,1} = 350 \text{ kg/day}$$

The concentration of chlorine solution has been taken as 1.3 kg/L and the dosing time will be limited to 8 hours per day.

$$\text{Daily volume of chlorine to be used} = \frac{350 \text{ kg/day}}{1,3 \text{ kg/L}} = 270 \text{ L/day}$$

Selected truck volume and number = 3,0 m³, 33 transfer / 1 year

2.3.2.9.1 Parshall Flume

With the Parshall Flume, speed may be controlled, and flow rate may be measured. After the chlorine contact tank, one piece of Parshall flume will be built.

The maximum flow rate that will pass through the Parshall flume is 621 m³/h = 0.173 m³/sec and the dimensions of the Parshall flume that has been designed to meet this value.

2.3.2.9.2 Buildings

In wastewater treatment plant, there will be also some buildings. These are;

- Administration building,
- Workshop,
- Sludge dewatering building.

Administration building will consist of offices, laboratory, control room, meeting room, canteen, lavatory and showers.

Sludge dewatering building will have enough space for installation of the centrifuge decanter, PE preparation unit, sludge conveyors, sludge feeding pumps, polyelectrolyte feeding pumps etc.

2.3.2.9.3 Automation and SCADA System

The plant will be equipped with a control and automation system including Supervisory Control and Data Acquisition (SCADA) for the control of the main equipment and monitoring of the plant. At the inlet and outlet, on the return activated sludge pipe, excess sludge pipe to each centrifuge, on the air pipes of each aeration tank flowmeters will make flow measurements. At the inlet and outlet, automatic flow proportional sampling (based on the outlet flow measurement device) will take place.

The main functions of the wastewater treatment plant will be controlled, regulated and monitored by means of a SCADA system. For this reason, the relevant equipment, machinery and measurement instruments will be connected to the main controller.

2.3.2.9.4 Drainage System

A suitable drainage system will be constructed in the Project area. The surface run-off will be diverted to the out of the Project boundaries and the potential impact of surface runoff will be minimized. In this context, drainage channels will be constructed in accordance with the topographical conditions of the site.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

2.3.3 Effluent Characterization

Within the design studies of scope of this Project, besides the analysis studies of the wastewater samples, the literature data was assessed and a comparison was made for the selection of the pollution loads. Wastewater analyses were conducted from 2-hour composite samples of the discharge point of Ilgin sewerage network between 02.10.2017 - 11.10.2017. The results of the analysis are given in below table.

Table 2-4 Ilgin Sewerage System Wastewater Analysis Results

Date	pH	COD (mg/L)	BOD ₅ (mg/L)	Suspended Solid (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)
04.10.2017	7.35	595.2	400	476	88.73	15.17
07.10.2017	7.88	396	330	390	69.69	15.97
13.10.2017	8.08	688	320	320	66.12	14.29

Discharge standards for Ilgin WWTP are presented in the Urban Wastewater Treatment Regulation (UWTR) (Official Gazette date: January 8, 2006, number: 26047) which was published to accomplish the harmonization of national regulations with EU Environmental Legislation. Discharge standards are given in the following table and these standards are accepted as maximum limits.

Table 2-5 UWTR Annex 4 Table 1 Urban Wastewater Secondary Treatment Discharge Criteria

Parameter	Concentration	Minimum Percentage of Reduction
BOD₅ at 20 °C without nitrification	25 mg/L	70-90
COD	125 mg/L	75
Total Suspended Solids (TSS)	35 mg/L (more than 10,000 P.E.)	90 (more than 10,000 P.E.)
Total Phosphorus	2 mg/L (more than 10,000 P.E.)	80
Total Nitrogen	15 mg/L (more than 10,000 P.E.)	70-80

The details of effluent characterization relating with the Ilgin WWTP Project is given in Section 5.3.6.

2.4. Potential Energy Use, Machinery and Equipment Requirement

Construction machinery and equipment planned to be used in the land preparation and construction activities are listed in the following table.

Table 2-6 Machinery and Equipment Planned to be used in the Construction Phase

Vehicle and Machinery	Numbers for WWTP
Truck	4
Excavator	1
Loader	2
Mini Loader	1
Crane	1
Sprinkler	1
Concrete Pump	1
Concrete Mixer	1

There is also a vehicle requirement for the operation phase for sludge cake transportation. It is planned by KOSKİ that a transportation truck for sludge will be in operation for district WWTPs of Konya Province. It is also estimated that the sludge cake which is stored in impermeable container will be transported to Konya Centrum WWTP sludge drying unit on monthly basis.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

According to the information from KOSKİ, approximately 500,000 kW/month electricity will be used during operation phase of the Project. The estimated amount of fuel which will be used for the vehicles is approximately 75 L/day. As it is stated in Section 2.3.2.9, the amount of chlorine to be used during the operation phase is 350 kg/day. Amount of polyelectrolyte to be used during wastewater treatment is between 1 to 5 g/L. An emergency generator will be installed with the capacity of 300 kVA.

During the operation phase of the Project, some portion of the water supply requirement will arise due to employee needs. The water will be provided from the Ilgın Municipality water supply network which has a sufficient capacity. Amount of water to be used during the operation phase is approximately 53.8 m³/day. Detailed information about use of water in the plant is provided in Section 5.3.6.1.

Approximate amount sludge cake to be generated during operation phase of the Project is 12.9 m³/day. In addition, relatively small amount of hazardous waste will be generated during the operation phase, which are listed in Section 5.3.7

2.5. Associated Facilities

The term “Associated Facilities” is defined in the World Bank (WB) Environmental and Social Framework (ESF) as the facilities or activities that are not funded as part of the project and, in the judgment of the WB, are:

- (a) directly and significantly related to the project; and
- (b) carried out, or planned to be carried out, contemporaneously with the project; and
- (c) necessary for the project to be viable and would not have been constructed, expanded or conducted if the project did not exist.

Even though associated facilities are separately financed, they have to comply with the WB ESF. The compliance will be ensured by KOSKİ and monitored in accordance with Section 7.5.2.

The raw materials (soil material, concrete etc.) to be used during the construction works will be supplied from the closest facilities in Ilgın District having materials with adequate standard and working in accordance with the obligatory requirements. They require to have EIA and environmental permits for operation to be selected as raw material supplier. Raw material suppliers will be determined after selection of the construction contractor and they will be approved by KOSKİ prior to the construction works.

A new energy transmission line (ETL) will be constructed for power supply requirement of the WWTP. The closest transformation station is on the adjacent public pastureland which belongs to treasury and 245 m above ground ETL will be constructed on this land through the Ilgın WWTP land. ETL will proceed within the Ilgın WWTP allocated land for 483 m reaching to Ilgın WWTP. Relevant permits will be obtained prior to construction of the ETL by MERAM Electricity Distribution Company (MEDAŞ), which is the responsible institution for distribution of electricity in the province, The ETL will also be constructed and operated by MEDAŞ after finalization of the permitting process. The ETL is an Associated Facility as per the WB ESF, and will have to meet the requirements of the ESSs in a manner and timeframe acceptable to the World Bank. Construction of the ETL is planned to be started in parallel with the start of WWTP construction.

Water will be supplied to the Project area by water tanker during construction phase of the Project. There will be adequate water tanks filled by tankers periodically for the land preparation and construction phase. During the operation of the Project, water will be supplied to the Project area through city network which will pass on zoning roads. Details are provided in Section 5.3.6.1.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

The WWTP area is accessible via Mehmet Arslan Street. There is an existing 1 km earth road to reach the WWTP area which is on the north of Mehmet Arslan Street. According to the design studies, no improvements are needed to safely transport and handle the size/weight of trucks that will access the WWTP construction site. Potential dust impacts due to traffic on earthen road will be managed via the mitigation measures provided in Section 5.3.2.4 . Therefore, any new road construction is not required for the Project. This road will be upgraded by the municipality after construction of the WWTP.

The enclosed sludge containers which contain sludge cake will be transferred to Konya Centrum WWTP by specific trucks used for transportation of such containers within the specified periods. The collected sludge in the Konya Centrum WWTP will be further dried in the drying area of this WWTP with the help of sunlight before sent to agricultural lands as compost. Konya Centrum WWTP. According to the KOSKİ representatives, Konya Centrum WWTP has enough capacity for management of the sludge generated from Ilgın WWTP.

2.6. Remediation Works

Prior to the construction works Contractor will develop sub-management plans as provided in Section 7 including Soil Management Plan and Water Resources and Effluent Management Plan. Also, a pre-construction survey will be conducted to gather environmental data in order to assess if there will be a requirement for soil and/or groundwater remediation activities in accordance with the legislation.

The provisions of the Regulation on the Control of Soil Pollution and Sites Contaminated by Point Sources shall be complied within the scope of the Project.

2.7. Workforce Requirement

Within the scope of WWTP construction works, it is anticipated that there will be 30 personnel working on site at the peak period of construction activities, of which 35% is anticipated to be unskilled. Contractors will be contractually required to maximize use of local workforce, especially by utilizing the experienced and qualified workforce available in Konya, Ilgın and nearby settlements.

It is planned that there will be 10 employees working during the operation phase of the Ilgın WWTP Project.

2.8. Project Cost

The total costs estimated in the Project Identification Document, 2020 are given in the following table for the year 2020 which was an updated to the estimated cost in Application Project Dossier by using investment deflator rate.

Table 2-7 Total Cost of Investments for Ilgın WWTP, 2020 Unit Prices

Description	Cost (TL)	Cost (Euro = 6.5 TL)
Construction Works	10,259,120.62	1,578,326.25
Mechanical Works	6,690,702.29	1,029,338.82
Electrical Works	2,453,294.41	377,429.91
Commissioning Works	583,161.52	89,717.16
TOTAL (VAT excluded)	25,686,173.27	3,951,718.98
TOTAL (VAT included)	30,309,684.46	4,663,028.40

MUNICIPAL SERVICES IMPROVEMENT PROJECT

2.9. Project Schedule

The Project is planned to be completed in 2 years and the operation period will be 35 years. Tender process is expected to continue for four to six months. Constructions will begin right after the completion of the tender processes.

Table 2-8 Project Schedule

Phase	Q3-2022	Q4-2022	Q1-2023	Q2-2023	Q1-2024	Q1-2025	Q1-2026	Q1-2060
Completion of ESIA	■	■						
Preparation of tender documents for supervision		■						
Preparation of tender documents for construction		■						
Tendering for supervision			■					
Tendering for construction			■					
Construction				■	■	■		
Liability period							■	
Operation							■	■

2.10. Scope of the ESIA Studies

This Environmental and Social Impact Assessment (ESIA) Report is prepared for the project in full compliance with the World Bank Environmental and Social Framework (ESF), to ensure that the upcoming stages of the project will meet these standards. The ESIA studies for the Project were carried out through utilization of resources including the related literature, previously prepared reports and results of field studies carried out by io Environmental Solutions.

The ESIA preparation included (i) collection and analysis of any field data/samples, and (ii) public consultation during the preparation of the draft ESIA including the consultations carried out after the disclosure of the project’s SEP. According to the ESMF of the FRIT-II/MSIP project “the draft site-specific environmental and social documents will be disclosed prior to consultation meetings and after the completion of the consultations these documents will be updated to address and reflect the feedback of the stakeholders, and then the final versions will be disclosed following the Bank’s clearance. The final version of the ESIA will be disclosed on ILBANK’s, KOSKI’s and the Bank’s official webpages.

After gathering required data from the sources, impact assessment was carried out by using relevant impact assessment methodologies including mathematical calculations, geographical information systems, and experts’ opinions.

The “List of Preparers and Contributors” who have contributed in the ESIA studies is included in Annex 2 of this report.

Various kinds of documents were consulted during the preparation of the ESIA Report, including legal reports, laws and regulations, technical and economic reports regarding the project, publications on land use, natural resources, geology, socio-economic features of the area/region, maps, various data on water quality, hydrology, and climatology obtained from different agencies. The impacts were identified and evaluated in the light of all results gathered together.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

This ESIA also covers baseline conditions of the physical, biological, and socio-economic environments, assessments regarding the potential impact of the project on the outlined baseline conditions, and the environmental and social management plan (ESMP).

According to the National Regulation on Environmental Impact Assessment (EIA), the Project is neither listed under its Annex I nor Annex II as having capacity below 10,000 m³/day. Thus, a National Environmental Impact Assessment (for Annex I facilities) or a Project Information File (for Annex II facilities) of the proposed wastewater treatment plant have not been developed. The Project is determined as out of scope of EIA Regulation.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

3 Legal and Institutional Framework

3.1. Institutional and Legal Framework for Environmental Protection and Conservation in Türkiye

Turkish environmental regulations were developed in line with national and international initiatives and standards, and some of them have recently been revised to be harmonized with the EU Directives in the scope of Türkiye's pre-accession efforts.

The Ministry of Environment, Urbanization and Climate Change (MoEUCC) is the responsible organization for the implementation of policies adopted for protection and conservation of the environment, and for sustainable development and management of natural resources.

MoEUCC (central organization) is based in Ankara and it has provincial directorates in each province. MoEUCC has an overall coordinating role for the development and implementation of environmental policies in Türkiye, including the approximation process for the EU environmental Acquis. The central organization is mainly composed of the following primary directorates and departments:

- General Directorate of EU and Foreign Relations
- General Directorate of Environmental Management
- General Directorate of Environmental Impact Assessment, Permit and Inspection
- General Directorate of Natural Assets Conservation
- General Directorate of Local Administrations
- General Directorate of National Estate
- General Directorate of Structural Works
- General Directorate of Infrastructure and Urban Transformation Services
- General Directorate of Professional Services
- General Directorate of Spatial Planning
- General Directorate of Geographic Information Systems
- General Directorate of Legal Services
- General Directorate of Personnel
- Directorate of High Technics Board
- Directorate of Strategy Development
- Directorate of Support Services
- Directorate of Training and Publication
- Office of Press and Public Relations
- Directorate of Revolving Fund

Main environmental responsibilities of MoEUCC are summarized below:

- Prepare the legislation on environment, public works, and housing development and monitor and audit the related implementations;
- Identify the principles and policies on environmental protection, rehabilitation of environment and prevention of environmental pollution, develop standards, criteria and programs in this context; outline the principles for implementing and monitoring these standards and criteria; undertake the works related to climate change;
- Assess the impacts of all facilities/activities that pollute the environment due to their activities resulting in solid, liquid or gaseous waste disposal/discharge into receiving environments; monitor, audit and issue the permits of such facilities/activities;
- Perform the measurements/analyses and monitoring studies concerning receiving environments;
- Establish the plans and policies regarding the global climate change and measures to be taken against its effects.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

For the management of environmental issues, MoEUCC collaborates with other ministries (including their provincial organizations where relevant), government agencies and relevant stakeholders, such as: Ministry of Transport and Infrastructure (General Directorate of Highways, General Directorate of Infrastructure Investments), Ministry of Agriculture and Forestry (General Directorate of Nature Protection and National Parks, General Directorate of Water Management, General Directorate of State Hydraulic Works, General Directorate of Forestry, General Directorate of Meteorological Services, General Directorate of Agricultural Reform), Ministry of Culture and Tourism (General Directorate of Cultural Heritage and Museums), Ministry of Energy and Natural Resources (General Directorate of Mining and Petroleum Affairs, General Directorate of Mineral Research and Exploration), Ministry of Labor and Social Services (General Directorate of Occupational Health and Safety, General Directorate of Labor) and Ministry of Health (General Directorate of Health Services, General Directorate of Public Health).

The Turkish Environmental Law (Law No: 2872; Date of Ratification: 1983), which came into force in 1983, addresses environmental issues on a very broad scope. According to the basic principles that govern the application of the Environmental Law, and as stated in the Constitution, citizens as well as the state bear responsibility for the protection of environment. Complementary to the Environmental Law and its regulations, other laws also govern the protection and conservation of the environment, resources and cultural and natural assets, the prevention and control of pollution, the implementation of measures for the prevention of pollution, health, and safety and labor issues. Some of these laws are:

- Conservation of Cultural and Natural Assets Law (Law No: 2863, Date of Ratification: 1983)
- Energy Efficiency Law (Law No: 5627, Date of Ratification: 2007)
- Forestry Law (Law No: 6831, Date of Ratification: 1956)
- Groundwater Law (Law No: 167, Date of Ratification: 1960)
- Labor Law (Law No: 4857, Date of Ratification: 2003)
- Law on Soil Protection and Land Use (Law No: 5403; Date of Ratification 2005)
- Amendment on Law on Soil Protection and Land Use (Law No: 6537; Date of Ratification 2014)
- Municipality Law (Law No: 5393, Date of Ratification: 2005)
- Metropolitan Municipality Law (Law No: 5216, Date of Ratification: 2004)
- National Parks Law (Law No: 2873, Date of Ratification: 1983)
- Occupational Health and Safety Law (Law No: 6331, Date of Ratification: 2012)
- Pastures Law (Law No: 4342, Date of Ratification: 1998)
- Public Health Law (Law No: 1593, Date of Ratification: 1930)
- Social Insurances and General Health Insurance Law (Law No: 5510, Date of Ratification: 2006)

3.2. National Environmental Legislation and Regulatory Requirements

Subprojects planned to be financed under Component 1 of FRIT II – Municipal are required to comply with various Turkish environmental regulations in line with the activities being or planned to be conducted within the scope of the proposed subprojects, as well as in implementing related management plans. In line with the Environmental Law and other supplementary laws, several regulations, communiqués and ordinances have been published since 1983. A comprehensive (though non exhaustive) list of relevant regulations, communiqués and ordinances is given below:

Air Quality Control and Management

Regulation Concerning Monitoring of Greenhouse Gas Emissions, Official Gazette date: May 31, 2017, No: 30082.

Regulation on the Control of Air Pollution from Heating, Official Gazette date: January 13, 2005, No: 25699.

Regulation on the Control of Exhaust Emissions, Official Gazette date: March 11, 2017, No: 30004.

Industrial Air Pollution Control Regulation, Official Gazette date: December 20, 2014, No: 29211.

Regulation on Assessment and Management of Air Quality, Official Gazette date: June 6, 2008, No: 26898.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Environmental Management, Permitting and Planning

Environmental Auditing Regulation, Official Gazette date: November 21, 2008 and No: 27061.

Environmental Impact Assessment Regulation, Official Gazette date: July 29, 2022 and No: 31907.

Regulation Concerning Environmental Land Use Plans, Official Gazette date: November 11, 2008 and No: 27051.

Regulation on Environmental Permit and Licenses, Official Gazette date: September 10, 2014, No: 29115.

Regulation for Starting up and Operating a Workplace, Official Gazette date: August 10, 2005, No: 25902.

Health and Safety

Communiqué on Hazard Classes List related to Occupational Health and Safety, Official Gazette date: March 29, 2013, No: 28602.

First Aid Regulation, Official Gazette date: July 29, 2015, No: 29429.

Heavy and Hazardous Works Regulation, Official Gazette date: June 16, 2004, No: 25494.

Health and Safety Signs Regulation, Official Gazette date: September 11, 2013, No: 28762 (based on EU Council Directive 92/58/EEC dated June 24, 1992).

Regulation Concerning the Use of Personal Protection Equipment at Workplaces, Official Gazette date: July 2, 2013, No: 28695 (based on EU Council Directive 89/656/EEC dated November 11, 1989).

Regulation on Health and Safety in Fixed Term and Temporary Employment, Official Gazette date August 23, 2013, No: 28744

Regulation on Health and Safety Measures in the Use of Work Equipment, Official Gazette date: April 25, 2013, No: 28628.

Regulation on Health and Safety Measures to be taken at Works Involving Chemicals, Official Gazette date: August 12, 2013, No: 28733.

Regulation on Methods and Essentials of Work Health and Safety Training for Workers, Official Gazette date: May 15, 2013, No: 28648.

Regulation on Occupational Health and Safety, Official Gazette date: December 9, 2003, No: 25311) (based on EU Council Directive 89/391/EEC dated June 6, 1989)

Regulation on Radiation Safety, Official Gazette date: March 24, 2000, No: 23999.

Management of Chemicals and Other Dangerous Substances

Regulation Concerning the Classification, Packaging, and Labeling of Dangerous Substances and Preparations, Official Gazette date: December 11, 2013, No: 28848, repeated.

Regulation Concerning the Material Safety Data Sheets for the Dangerous Substances and Preparations, Official Gazette date: December 3, 2014, No: 29204.

Regulation on the Inventory and Control of Chemicals, Official Gazette date: December 26, 2008, No: 27092 (repeated).

Nature Protection

Regulation on Pastures, Official Gazette date: July 31, 1998, No: 23419.

Regulation on the Protection of Wetlands, Official Gazette date: April 4, 2014, No: 28962.

Regulation on Procedures and Principles Concerning the Protection of Game and Wild Animals and their Habitats and Combat with their Pests, Official Gazette date: October 24, 2005, No: 25976.

Noise Control and Management

Regulation on the Assessment and Management of Environmental Noise, Official Gazette date: June 4, 2010, No: 27601.

Regulation on the Environmental Noise Emission caused by Equipment used Outdoors, Official Gazette date: June 30, 2016, No: 29758.

Soil Quality Control and Management

Implementation Regulation on Soil Protection and Land Use, Official Gazette date: December 15, 2005, No: 26024.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Regulation on the Control of Soil Pollution and Polluted Areas by Point Sources, Official Gazette date: June 8, 2010, No: 27605.

Waste Management

Regulation of Waste Management, Official Gazette date: April 2, 2015, No: 29314.

Regulation Concerning the Landfill of Wastes, Official Gazette date: March 26, 2010, No: 27533.

Regulation on the Control of Excavation Materials, Construction and Demolition Wastes, Official Gazette date: March 18, 2004, No: 25406.

Regulation on the Control of Medical Wastes, Official Gazette date: January 25, 2017, No: 29959.

Regulation on the Control of Packaging Wastes, Official Gazette date: December 27, 2017, No: 30283.

Regulation on the Control of Waste Batteries and Accumulators, Official Gazette date: August 31, 2004, No: 25569.

Waste Oils Management Regulation, Official Gazette date: December 21, 2019, No: 30985

Zero Waste Regulation, Official Gazette date: July 12, 2019, No: 30829.

Regulation on the Control of Waste Tires, Official Gazette date: March 11, 2015, No: 29292.

Water Quality Control and Management

Ordinance on Groundwater Resources, Official Gazette date: August 8, 1961, No: 10875.

Regulation Concerning Protection of Ground Waters against Pollution and Deterioration, Official Gazette date: May 22, 2015, No: 29363.

Regulation Concerning Quality of Surface Waters Planned or Used as Drinking Water Supply, Official Gazette date: June 29, 2012, No: 28338.

Regulation Concerning Water for Human Consumption, Official Gazette date: March 7, 2013, No: 28580.

Regulation on the Control of Pollution Caused by Dangerous Substances in Water Environment, Official Gazette date: November 26, 2005, No: 26005.

Regulation on Pit Opening Where Sewer System Construction is not Applicable, Official Gazette date: March 19, 1971, No: 13783.

Surface Water Quality Management Regulation, Official Gazette date: April 15, 2015, No: 29327.

Urban Wastewater Treatment Regulation, Official Gazette date: January 8, 2006, No: 26047.

Regulation Concerning Wastewater Collection and Disposal Systems, Official Gazette date: January 6, 2017, No: 29940.

Water Pollution Control Regulation, Official Gazette date: December 31, 2004, No: 25687.

General

Türkiye Building Earthquake Regulation, Official Gazette date: March 18, 2018, No: 30364 (repeated).

Regulation Concerning the Decrease of Ozone Depleting Substances, Official Gazette date: April 7, 2017, No: 30031.

Regulation Concerning the Increase of Efficiency in the Usage of Energy and Energy Resources, Official Gazette date: October 27, 2011, No: 28097.

Regulation on Control of Large-Scale Industrial Accidents, Official Gazette date: August 18, 2010, No: 27676.

Regulation on the Implementation of the Law Concerning Private Security Services, Official Gazette date: September 26, 2009, No: 27358.

3.3. The Turkish Regulation on EIA

Under Article 10, Environmental Law sets out the general scope of the Environmental Impact Assessment (EIA) procedure in Türkiye, indicating that institutions, agencies and establishments that lead to environmental problems as a result of their planned activities are obliged to prepare Environmental Impact Assessment report or Project Information File (PIF). Based on this legal framework, the Regulation on Environmental Impact Assessment (henceforth "EIA Regulation") was put into force for the first time after being published in the Official Gazette numbered 21489 and dated on February 7, 1993.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Since then, there have been several amendments in the first regulation and new EIA regulations were published in 2008, 2013 and 2014 repealing the former regulations in force. The latest EIA Regulation has been published in the Official Gazette dated July 29, 2022 and numbered 31907, which repealed the 2014 EIA Regulation.

The EIA Regulation is largely in line with the EU Directive on EIA. The key relevant steps of the Turkish EIA procedure namely screening, public consultation, scoping, disclosure and supervision are briefly reviewed below in the order they are prescribed to occur.

3.3.1 Screening

The EIA Regulation classifies projects into two categories:

Annex I projects. These are projects that have significant potential impacts and require an EIA. Annex I of the EIA Regulation lists these projects types, so project proponents are expected to start the EIA procedure without any other screening process; and

Annex II projects. Annex II of the EIA regulation covers the projects that may or may not have significant effects on the environment. Proponents of Annex II projects are required to submit a Project Information File (PIF) to PDoEUCC. The PIF is prepared following the General Format for PIF provided in Annex IV of the EIA Regulation and contains information on: (i) project characteristics; (ii) environmental characteristics of the project site and impact area; and (iii) significant impacts of the project and measures to be taken during construction and operation phases of the project. A non-technical summary of the above items is also to be added to the PIF. The PIF is submitted to the PDoEUCC for review and evaluation. Provincial Directorate gives its “EIA is Necessary” or “EIA is not necessary” decision regarding the project. The decision of the Provincial Directorate is communicated to public using appropriate means (i.e., announcement boards, internet).

The following table provides WWTP capacities and their category per the EIA Regulation according to the former regulation and the regulation in force.

Table 3-1 WWTP Capacities and Their Categorization (According to Turkish EIA Regulation)

Regulation	Category	Annex I	Annex II
Former Regulation (25.11.2014 dated)	Wastewater	WWTPs having a capacity of above 150,000 P.E. and/or 30,000 m ³ /day	WWTPs having a capacity between 50,000 – 150,000 P.E. and/or 10,000 – 30,000 m ³ /day
Regulation in force (29.07.2022 dated)	Wastewater	WWTPs having a capacity of above 50,000 m ³ /day	WWTPs having a capacity between 30,000 – 50,000 m ³ /day

According to the National Regulation on Environmental Impact Assessment (EIA), the Project which is evaluated in this ESIA is neither listed under its Annex I nor Annex II as having capacity below 10,000 m³/day. Thus, neither a National Environmental Impact Assessment (for Annex I facilities) nor a Project Information File (for Annex II facilities) of the proposed wastewater treatment plant have not been developed. The Project is determined as out of scope of EIA Regulation. The official letter taken from former Konya Provincial Directorate of Environment and Urbanization (PDoEU) regarding that the Project is out of scope of EIA Regulation is in place (Annex 3).

The social impacts within the screening are not compulsory in the national EIA regulation and generally are either very briefly mentioned or not at all.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

3.3.2 Public Consultation

For projects that require the preparation of an EIA, the Governorate is required to inform the public that a project application has been submitted in a specified locality, that the EIA process has begun and that the public may submit its comments and suggestions to the Governorate or MoEUCC. The announcement is made using a variety of methods, including the internet, bulletin boards and loudspeaker announcements. MoEUCC informs the public of the same through the internet.

A formal public consultation meeting occurs for projects that are subject to an EIA after the screening process and prior to scoping. The project proponent organizes a public consultation meeting chaired by PDoEUCC in a location that affected local groups can access easily. The invitation to the meeting is published in a national and a local newspaper at least ten days prior to the meeting. There is no requirement that information on the project should be provided to the public in advance, except for the subject matter of the meeting. However, the EIA Regulation specifies that during the meeting, which is chaired by the Director or a member of MoEUCC's provincial directorate, it should be ensured that the public is informed about the project, and its comments and suggestions regarding the project are obtained. The meeting chairperson may request comments in writing too. Minutes of the meeting are kept and submitted to MoEUCC and the Governorate. The Governorate is required to inform the public about the timeframe for submission of public comments and suggestions. Such comments and suggestions are submitted to the EIA commission.

3.3.3 Scoping

The project proponent presents a project dossier (using the outline given in Annex III of the EIA regulation for Annex I projects) to a commission, which comprises representatives of MoEUCC and relevant organizations as identified by MoEUCC. Based on the information submitted, the commission determines the scope of the EIA and the "project specific format". Furthermore, the commission may exclude or include some items depending on the specific characteristics of the proposed project. The commission also determines the level of detail under each heading depending on the special project's environmental impacts. In this process, the commission takes into consideration of the opinions expressed during the public consultation meeting.

3.3.4 Review and Approval of the EIA report

As mentioned previously, the commission revises the draft version of the EIA report. In its review, the commission assesses (i) the adequacy of the EIA report and its annexes; (ii) whether the analyses, evaluations or calculations were adequately substantiated by relevant data and documentation; (iii) whether the potential environmental impacts of the project were evaluated in adequate scope and depth; (iv) whether measures necessary to prevent or mitigate negative environmental impacts have been identified; (v) whether the public consultation meeting was carried out in accordance with prescribed procedures and the issues brought up during the meeting were adequately addressed in the report. While the EIA identifies a project's environmental impacts and mitigation measures, it does not specify costs and institutional responsibilities associated with these mitigation measures. Neither does the EIA include a monitoring plan.

The final EIA report, which incorporates the commission's assessments, is then submitted to MoEUCC for final review. MoEUCC determines whether the "EIA is positive" in which case the project proponent may implement the project or "EIA is negative" in which case the project may not go any forward.

3.3.5 Disclosure

The draft EIA report is made available to the public for comments at Central MoEUCC or provincial directorate. After MoEUCC's final evaluation of the EIA report, the Governorate announces to the public MoEUCC's decision together with its justifications. Disclosure of the final EIA document is not foreseen in the EIA Regulation.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

3.3.6 Monitoring and Inspection

According to the EIA Regulation, MoEUCC monitors and inspects projects that were assessed either “EIA is not necessary” or “to have a positive EIA” based on provisions specified in the PIF or the EIA, respectively. Furthermore, the project proponent is obliged to submit project progress reports to MoEUCC. In case MoEUCC determines non-compliance, the Governorate issues a warning. If after the granted time compliance is still not achieved the Governorate may suspend the operation of the plant in question.

3.4. Permits

The required permits to be taken following the completion of ESIA process are as follows:

- Wastewater Treatment Plant Project Approval
- Construction license
- Building license
- Operation license
- Temporary Certificate of Operation
- Environmental Permit

The Wastewater Treatment Plant Project Approval was taken from MoEU with the submission of a Project Dossier during the Project Design phase. The provisions indicated in Wastewater Treatment Plants/Deep Sea Discharge Project Approval Circular numbered 2018/14 was followed. The Project Approval Form is dated 13.09.2018 and signed off by KOSKİ and MoEU representatives (Annex 4).

The ETL Application Project was approved on 25.07. 2018 by MERAM Electricity Distribution Company (Annex 5).

After the completion of the construction, KOSKİ will apply to Konya Provincial Directorate of Environment, Urbanization and Climate Change (PDoEUCC) for Temporary Certificate of Operation. This process will be managed by Environmental Officer of KOSKİ or a Consultant firm. This Certification has a duration of one year. However, it is compulsory to apply for Environmental Permit within the first six months in one year. Environmental Permit application will also be made to PDoEUCC. The application of Environmental Permit for WWTPs specifically requires (i) analysis taken from influent and effluent for three times by a licensed firm under the supervision of PDoEUCC representatives and (ii) a letter indicating the disposal method for generated sludge and analysis of sludge per the parameters listed under Regulation Concerning the Landfill of Wastes Annex II. Environmental Permit will be taken after the approval of application. This process will be followed by using Integrated Environmental Information System moderated by MoEUCC. The provisions indicated in Regulation on Environmental Permits and Licenses will be followed.

The raw materials (soil material, concrete etc.) to be used during the construction works will be supplied from the closest facilities in Iğın District having materials with adequate standard and working in accordance with the obligatory requirements. They require to have EIA and environmental permits for operation to be selected as raw material supplier. Raw material suppliers will be determined after selection of the construction contractor and they will be approved by KOSKİ prior to the construction works.

Relevant permits (i.e., connection permit and permits related to acquisition of the treasury land) will be obtained prior to construction of the ETL by MERAM Electricity Distribution Company (MEDAŞ), Since any road will not be opened and the existing east road will be upgraded at the end of construction, any permit is not required. In addition, since the existing capacity of Konya WWTP will not be increased due to disposal of the sludge, any permit is not required.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

3.5. National Laws on Social Impacts

Although the Turkish EIA Regulation does not entirely meet the requirements of international standards in terms of social impacts and stakeholder engagement, there are some legal arrangements for managing various social impacts. In this respect, the following are identified to be a non-exhaustive list of social legal framework applicable for this project:

- Labor Law (No. 4857), published in the Official Gazette no. 25134 dated 10 June 2003
- Law on Occupational Health and Safety (No. 6331), published in the Official Gazette no. 28339 dated 30 June 2012
- Regulation on Contractors and Sub-contractors, published in the Official Gazette no. 27010 dated 27 September 2008
- Laws on Right to Information (No. 4982), published in the Official Gazette no 25269 dated 24 October 2003
- Regulation on the Environmental Impact Assessment (EIA) published in the official Gazette no. 29186 dated 25 November 2014

3.5.1 Türkiye Law on the Right to Information

The Turkish Law on the Right to Information (Law No: 4982) was adopted in 09.10.2003 and published in the official gazette on 24.10.2003. The main purpose of this legislation is to regulate the process and the basis of the right to information in compliance with the principles of equality, impartiality and transparency which are the requirements of a democratic and accountable Government. This law applies to the public institutions 'and professional organizations' activities which qualify as public institutions. The law that is composed of five sections in total outlines the legal responsibilities regarding the procedures of disclosure of information. The first part of the law specifies the purpose, scope, and meanings of words used in law. The second section of the law makes assumptions regarding the Right to Information and Disclosure Duty topics. According to Articles 4 and 5 of this Law contained in this section, everybody has the right to information and the parties responsible are obliged to provide information. In the third part of the law the approval procedure for access to information is clarified. In the fourth part of the law, some examples are the information that is restricted; information and documents pertaining to the state secrets, information, and documents pertaining to the state's economic interests, etc. Lastly, the last section of the Law defines the different aspects of this legislation, such as entry into force and implementation.

3.5.2 Occupational Health and Safety

In recent years, Türkiye has undergone a reform to improve its national Occupational Health and Safety (OHS) system through adapting a set of international and regional standards into its national level requirements for the prevention occupational risks as defined in the ILO Occupational Safety and Health Convention, 1981 (No. 155). The convention, along with the Occupational Health Services Convention, 1985 (No. 161) were both ratified by Türkiye in 2005. Türkiye is also party to the Labor Inspection Convention, 1945 (No. 81) since 1951. In 2014, Türkiye ratified the Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187).

During 2012, a stand-alone Law on OHS (No. 6331) was put into force (20 June 2012). The OHS Law governs workplace environments and industries (both public and private) as well as virtually all classes of employees including part-time workers, interns, and apprentices. The legislation is comprehensive and is generally applicable across all sectors and many industries.

3.5.3 Labor and Working Conditions

The Turkish Labor Law (Law No: 4857) was enacted on 22.05.2003 and published in official gazette on 10.06.2003. The object of this law is to govern the working conditions and the rights and responsibilities of employers and workers working under an employment contract in relation to work.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

This Law extends to all institutions and their workers, members of employers and employees, regardless of the subject matter of their activities, with the exception of the activities and employment relations mentioned in Article 4 of this Law, there are some examples of these exceptions; sea and air transport activities, any construction work related to agriculture which falls within the scope of family economy, domestic services, sportsmen, etc. This law regulates the labor related subjects such as the concept of equal treatment aimed at preventing discrimination on grounds of language, race, sex, political opinion, philosophical belief, religion or similar issues; transferring the government or one of its parts that determines the transfer process, paying attention to not victimizing anyone; temporary working arrangements to preserve the rights of all parties. Age of employment is defined in labor law and according to Article 71: *“Employment of children under the age of 15 is prohibited. However, children who have completed the age of fourteen and have completed the compulsory primary education age, they can be employed in light jobs that will not interfere with their physical, mental, social and moral development and those attending education”*. Within the scope of this law, employers are also prohibited from paying less than the minimum wage to their employees. Additionally, labor law governs employment contracts, forms and terminations, salaries, arrangement of jobs, job service, monitoring and inspection of working conditions, administrative penal requirements and supplemental, transitional and ending labor-related laws.

Additionally, ILO Conventions which Türkiye has ratified are listed below.

- C 2 Unemployment Convention
- C 11 Right of Association (Agriculture) Convention
- C 14 Weekly Rest (Industry) Convention
- C 15 Minimum Age (Trimmers and Stokers) Convention
- C 26 Minimum Wage-Fixing Machinery Convention
- C 29 Forced Labour Convention
- C 34 Fee-Charging Employment Agencies Convention
- C 42 Workmen's Compensation (Occupational Diseases) Convention (Revised)
- C 45 Underground Work (Women) Convention
- C 53 Officers' Competency Certificates Convention
- C 55 Shipowners' Liability (Sick and Injured Seamen) Convention
- C 58 Minimum Age (Sea) Convention (Revised)
- C 59 Minimum Age (Industry) Convention (Revised)
- C 68 Food and Catering (Ships' Crews) Convention
- C 69 Certification of Ships' Cooks Convention
- C 73 Medical Examination (Seafarers Convention)
- C 77 Medical Examination of Young Persons (Industry) Convention
- C 80 Final Articles Revision Convention
- C 81 Labour Inspection Convention
- C 87 Freedom of Association and Protection of the Right to Organise Convention
- C 88 Employment Service Convention
- C 92 Accommodation of Crews Convention (Revised)
- C 94 Labour Clauses (Public Contracts) Convention
- C 95 Protection of Wages Convention
- C 96 Fee-Charging Employment Agencies Convention (Revised)
- C 98 Right to Organise and Collective Bargaining Convention
- C 99 Minimum Wage Fixing Machinery (Agriculture) Convention
- C100 Equal Remuneration Convention
- C102 Social Security (Minimum Standards) Convention
- C105 Abolition of Forced Labour Convention
- C108 Seafarers' Identity Documents Convention
- C111 Discrimination (Employment and Occupation) Convention
- C115 Radiation Protection Convention
- C116 Final Articles Revision Convention
- C118 Equality of Treatment (Social Security Convention)
- C119 Guarding of Machinery Convention

MUNICIPAL SERVICES IMPROVEMENT PROJECT

- C122 Employment Policy Convention
- C123 Minimum Age (Underground Work) Convention
- C127 Maximum Weight Convention
- C133 Accommodation of Crews (Supplementary Provisions) Convention
- C134 Prevention of Accidents (Seafarers) Convention
- C135 Workers' Representatives Convention
- C138 Minimum Age Convention
- C142 Human Resources Development Convention
- C144 Tripartite Consultation (International Labour Standards) Convention
- C146 Seafarers' Annual Leave with Pay Convention
- C151 Labour Relations (Public Service) Convention
- C152 Occupational Safety and Health (Dock Work) Convention
- C153 Hours of Work and Rest Periods (Road Transport) Convention
- C155 Occupational Safety and Health Convention
- C158 Termination of Employment Convention
- C159 Vocational Rehabilitation and Employment (Disabled Persons) Convention
- C161 Occupational Health Services Convention
- C164 Health Protection and Medical Care (Seafarers) Convention
- C166 Repatriation of Seafarers Convention (Revised)
- C167 Safety and Health in Construction Convention
- C176 Safety and Health in Mines Convention
- C182 Worst Forms of Child Labour Convention
- C187 Promotional Framework for Occupational Safety and Health Convention

3.5.4 Türkiye National Laws on Land Acquisition

In the scope of the Turkish legal framework, land acquisition/expropriation related issues are handled through the Expropriation Law No: 2942 (amended by Law No: 4650 in 2001).

Compensation for the subject property/assets to be expropriated is determined according to procedures and principles outlined in Articles 8, 10 and 11 of the Law. Article 27 authorizes the expropriation agency to confiscate the assets required by the project earlier than the time needed in normal expropriation procedure. This process does not prevent challenges of the property owners against the determined valuation. Expropriation Law requires consultation with affected people on compensation value. The Law only covers compensations for legal titles. There is not any requirement in the above legislation about compensation to squatters and informal land users.

3.6. International Agreements and Conventions

Turkish national policy on protection of environment, cultural heritage and conservation of biological resources has been formulated on the basis of relevant international agreements signed or ratified by Türkiye. Relevant environmental, OHS and international labor agreements and conventions ratified by Türkiye are listed below:

- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal
- Bern Convention on Protection of Europe's Wild Life and Living Environment
- Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES)
- Convention on Long-range Transboundary Air Pollution
- European Convention on the Protection of the Archaeological Heritage
- European Landscape Convention
- International Convention for the Protection of Birds
- Montreal Protocol on Substances that Deplete the Ozone Layer
- Paris Convention on the Protection of the World Cultural and Natural Heritage
- Ramsar Convention on Wetlands of International Importance Especially as Wildfowl Habitat

MUNICIPAL SERVICES IMPROVEMENT PROJECT

- Stockholm Convention on Persistent Organic Pollutants
- United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa
- United Nations (UN) Framework Convention on Climate Change (Kyoto Protocol)
- UN (Rio) Convention on Biological Diversity
- Vienna Convention on the Protection of the Ozone Layer
- ILO Occupational Safety and Health Convention
- Occupational Health Services Convention
- Labor Inspection Convention
- Promotional Framework for Occupational Safety and Health Convention
- Worst Forms of Child Labor Convention

3.7. World Bank's Environmental and Social Standards

The WB Environmental and Social Standards (ESSs) set the requirements to be met by Borrowers with respect to the identification, evaluation and mitigation of social and environmental risks and impacts associated with projects supported by the Bank through Investment Project Financing. Nine (as ESS 7 is not relevant) out of the ten ESSs establish the standards that the Borrower and the project will meet through the project life cycle, as follows:

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

ESS2: Labor and Working Conditions;

ESS3: Resource Efficiency and Pollution Prevention and Management;

ESS4: Community Health and Safety;

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

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

ESS8: Cultural Heritage;

ESS9: Financial Intermediaries; and

ESS10: Stakeholder Engagement and Information Disclosure.

In accordance with the ESSs, the World Bank Group's (WBG's) Environment, Health and Safety (EHS) Guidelines should be applied to the project. Therefore, this project will apply the relevant requirements of the WBG's EHS Guidelines.

The applicable EHS Guidelines for this project are as follows:

World Bank Group's EHS General Guidelines;

World Bank Group's EHS Guidelines for Water and Sanitation; and

World Bank Group's EHS Guidelines for Electric Power Transmission and Distribution

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

The World Bank requires assessment, management and monitoring of environmental and social risks and impacts of projects supported by the Bank to ensure that projects are environmentally and socially sound and sustainable. The objectives of ESS1 is; (i) to identify, evaluate and manage the environmental and social risks and impacts of the project in a manner consistent with ESSs; (ii) to adopt mitigation hierarchy approach to (a) anticipate and avoid risks and impacts, (b) where avoidance is not possible, minimize or reduce risks and impacts to acceptable levels, (c) once risks and impacts have been minimized or reduced, mitigate, and (d) where significant residual impacts remain, compensate for or offset them, where technically and financially feasible, (iii) to adopt differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable, and they are not disadvantaged in sharing development benefits and opportunities resulting from the project, (iv) to utilize national environmental and social institutions, systems, laws, regulations and procedures in the assessment, development and implementation of projects whenever appropriate to achieve objectives materially consistent with the ESSs;

MUNICIPAL SERVICES IMPROVEMENT PROJECT

and (v) to promote improved environmental and social performance in ways which recognize and enhance Borrower capacity.

As per requirements of ESS1, the Borrower will: (i) conduct an environmental and social assessment of the proposed subprojects; (ii) undertake stakeholder engagement and disclose appropriate information in accordance with ESS10; (iii) develop an Environmental and Social Commitment Plan (ESCP), and implement all measures and actions set out in the legal arrangement including the ESCP; and (iv) conduct monitoring and reporting on the environmental and social performance of the project against the ESSs.

3.7.2 ESS2 Labor and Working Conditions

The objectives of ESS2 is to: (i) promote safety and health at work; (ii) promote the fair treatment, nondiscrimination and equal opportunity of project workers; (iii) protect workers including vulnerable workers such as women, persons with disabilities, children (of working age, in accordance with ESS2) and migrant workers, contracted workers, community workers and primary supply workers, as appropriate; (iv) prevent the use of all forms of forced labor and child labor (v) support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law; and (vi) provide project workers with accessible means to raise workplace concerns. The applicability and scope of application of ESS2 depends on the environmental and social assessment described in ESS1 and the type of employment relationship between the Borrower and the project workers.

ESS2 requirements cover; the development and implementation of written labor management procedures which will be applicable to the project. These procedures will identify the different categories of project workers, set out the way in which project workers will be managed, in accordance with the requirements of national law and this ESS, and will include the description of the following; (i) working conditions and management of worker relationships including terms and conditions of employment, nondiscrimination and equal opportunity, and worker's organizations; (ii) protecting the work force including defining a minimum age for workers, prohibition of child labor and forced labor; (iii) grievance mechanism (for the workers); (iv) occupational health and safety. Reasonable efforts will be made to ensure that third parties engaging contracted workers have in place labor management procedures that will allow them to operate in accordance with the relevant sections of the ESS2, and such requirements will be incorporated into contractual agreements together with appropriate non-compliance remedies. In case the project employs community workers, measures will be implemented to ascertain whether such labor is provided on voluntary basis or as part of a community agreement, and the potential risks of child labor or forced labor will be assessed, and applicable requirements of the ESS2 will apply. In terms of the primary suppliers, potential labor risks will be assessed, and in case of significant risks primary supplier will be required to introduce relevant mitigatory procedures and actions.

3.7.3 ESS3 Resource Efficiency and Pollution Prevention and Management

The objectives of ESS3 is to: (i) promote the sustainable use of resources, including energy, water and raw materials; (ii) avoid or minimize adverse impacts on human health and the environment by avoiding minimizing pollution from project activities; (iii) avoid or minimize project related emissions of short and long-lived climate pollutants; (iv) avoid or minimize generation of hazardous and non-hazardous waste; and (v) minimize and manage the risks and impacts associated with pesticide use. The applicability of ESS3 depends on the environmental and social assessment described in ESS1.

ESS3 requirements cover: (i) resource efficiency including energy, water and raw material use; and (ii) pollution prevention and management including management of air pollution, hazardous and non-hazardous wastes, chemicals and hazardous materials, and pesticides.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

3.7.4 ESS4 Community Health and Safety

ESS4 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. The objectives of ESS4 is to: (i) anticipate and avoid adverse impacts on the health and safety of project-affected communities during the project life cycle from both routine and non-routine circumstances; (ii) promote quality and safety, and considerations relating to climate change, in the design and construction of infrastructure, including dams; (iii) avoid or minimize community exposure to project-related traffic and road safety risks, diseases and hazardous materials; (iv) have in place effective measures to address emergency events; and (v) ensure that the safeguarding of personnel and property is carried out in a manner that avoids or minimizes risks to the project-affected communities. The applicability of ESS4 depends on the environmental and social assessment described in ESS1.

ESS4 requirements cover: (i) community health and safety including infrastructure and equipment design and safety (including safety of dams), safety of services, traffic and road safety, ecosystem services, community exposure to health issues, management and safety of hazardous materials, and emergency preparedness and response; and (ii) security personnel.

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

The objectives of ESS5 is to: (i) avoid involuntary resettlement or, when unavoidable, minimize involuntary resettlement by exploring project design alternatives; (ii) avoid forced eviction; (iii) mitigate unavoidable adverse social and economic impacts from land acquisition or restrictions on land use by: (a) providing timely compensation for loss of assets at replacement costs and (b) assisting displaced persons in their efforts to improve, or at least restore, their livelihoods and living standards, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher; (iv) improve living conditions of poor or vulnerable persons who are physically displaced, through provision of adequate housing, access to services and facilities, and security of tenure; (v) conceive and execute resettlement activities as sustainable development programs, providing sufficient investment resources to enable displaced persons to benefit directly from the project, as the nature of the project may warrant; and (vi) ensure that resettlement activities are planned and implemented with appropriate disclosure of information, meaningful consultation, and the informed participation of those affected. The applicability of ESS5 depends on the environmental and social assessment described in ESS1 and applies to permanent or temporary physical and economic displacement resulting from the types of land acquisition or restrictions on land use undertaken or imposed in connection with project implementation described in ESS5.

ESS5 requirements cover the preparation and implementation of a resettlement framework or plan which will set ground for: (i) general requirements such as eligibility classification, project design, compensation and benefits for affected persons, community engagement, grievance mechanism, planning and implementation; (ii) physical and economic displacement; (iii) collaboration with other responsible agencies or subnational jurisdictions; and (iv) technical and financial assistance.

3.7.6 ESS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources

The objectives of ESS6 are to: (i) protect and conserve biodiversity and habitats; (ii) apply the mitigation hierarchy and the precautionary approach in the design and implementation of projects that could have an impact on biodiversity; (iii) promote the sustainable management of living natural resources; and (iv) support livelihoods of local communities including Indigenous Peoples, through the adoption of practices that integrate conservation needs and development priorities. The applicability of ESS6 depends on the environmental and social assessment described in ESS1.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

ESS6 requirements cover: (i) general requirements including assessment of risks and impacts, conservation of biodiversity and habitats (modified, natural, and critical habitats), legally protected and internationally recognized areas of high biodiversity value, invasive alien species, and sustainable management of living natural resources; and (ii) primary suppliers.

3.7.7 ESS8 Cultural Heritage

ESS8 sets out general provisions on risks and impacts to cultural heritage from project activities. The objectives of ESS8 are to: (i) protect cultural heritage from the adverse impacts of project activities and support its preservation; (ii) address cultural heritage as an integral aspect of sustainable development; (iii) promote meaningful consultation with stakeholders regarding cultural heritage; and (iv) promote the equitable sharing of benefits from the use of cultural heritage. The applicability of ESS8 depends on the environmental and social assessment described in ESS1.

ESS8 requirements cover: (i) general requirements, (ii) stakeholder consultation and identification of cultural heritage including confidentiality and stakeholders' access; (iii) legally protected cultural heritage areas; (iv) provisions for specific types of cultural heritage including archaeological sites and material, built heritage, natural features with cultural significance, and movable cultural heritage; and (v) commercial use of cultural heritage.

3.7.8 ESS9 Financial Intermediary

Financial Intermediaries (FIs) are required to monitor and manage environmental and social risks and impacts of the projects they finance. The objectives of ESS9 are to: (i) set out how the FI will assess and manage environmental and social risks and impacts associated with the subprojects it finances; (ii) promote good environmental and social management practices in the subprojects the FI finances; and (iii) promote good environmental and sound human resources management within the FI. ESS9 applies to FIs that receive financial support from the Bank including public and private financial services providers.

ESS9 requirements cover: (i) environmental and social management system including environmental and social policy, environmental and social procedures, organizational capacity and competency, and monitoring and reporting; and (ii) stakeholder engagement.

3.7.9 ESS10 Stakeholder Engagement and Information Disclosure

Open and transparent engagement between the Borrower and project stakeholders is one of the essential elements of good international practice and effective stakeholder engagement improves the environmental and social sustainability of projects. The objectives of ESS10 is to: (i) establish a systematic approach to stakeholder engagement that will help Borrowers identify stakeholders and build and maintain a constructive relationship with them, in particular project-affected parties; (ii) assess the level of stakeholder interest and support for the project and to enable stakeholders' views to be taken into account in project design and environmental and social performance; (iii) promote and provide means for effective and inclusive engagement with project-affected parties throughout the project life cycle on issues that could potentially affect them; (iv) ensure that appropriate project information on environmental and social risks and impacts is disclosed to stakeholders in a timely, understandable, accessible and appropriate manner and format; and (v) provide project-affected parties with accessible and inclusive means to raise issues and grievances, and allow Borrowers to respond to and manage such grievances. ESS10 applies to all projects supported by the Bank through Investment Project Financing.

ESS10 requirements cover the development of a stakeholder engagement framework and/or plan that will define the following: (i) engagement during project preparation including stakeholder identification and analysis, stakeholder engagement plan, information disclosure, and meaningful consultation; (ii) engagement during project implementation and external reporting; (iii) grievance mechanism; and (iv) organizational capacity and commitment.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

3.7.10 World Bank Safeguards Policies

The Environmental and Social Framework (ESF) replaced most of the environmental and social safeguard policies of the World Bank, but a few Operational Policies remain. . One of them is OP 7.50 - Projects on International Waterways. It describes the types of waterways and projects that the policy applies, and the requirements and conditions of financing projects on international waterways. With regard to OP 7.50, ILBANK is responsible for ensuring that the subprojects financed are located and dependent on national waterways only. The waterways identified as not being international waterway (thus not triggering OP 7.50) in Türkiye are the following: Susurluk, North Aegean, Gediz, Kucuk Menderes, Büyük Menderes, Western Mediterranean, Antalya, Sakarya, Western Black Sea, Yesilirmak, Kızilirmak, Konya Kapalı, Eastern Mediterranean, Seyhan, Ceyhan, Eastern Black Sea, Burdur, Afyon, Orta Anadolu, and Van.

3.8. Key Differences between the National EIA Regulation and the WB ESSs

The Turkish EIA procedures are, with some exceptions, in line with the WB's ESSs. The primary exceptions are in project categorization, scope of environmental and social assessment, and stakeholder consultation. In cases where the Turkish legislation differ from the ESSs, the more stringent one will be applied to the project implementation.

The National EIA procedures are, with some exceptions, in line with the WB's ESSs. The primary exceptions between WB ESSs and National Regulation on EIA are project categorization, scope of environmental and social assessment and public consultation and disclosure. In cases where the Turkish legislation differ from the ESSs, the more stringent one will be applied to the project implementation. A detailed comparison of WB ESSs and National Regulation on EIA is summarized in the following table.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 3-2 Comparison of National Legislation on Environment and Social and WB's ESSs

WB Environmental and Social Standards (ESS)	Gaps	Means to Fulfill Gaps
ESS1: Assessment and Management of Environmental and Social Risks and Impacts	<p>The major gaps between national EIA regulation and ESS1 are as follows:</p> <ul style="list-style-type: none"> • Social impact assessment is not completely integrated to the national legislation, and this results in the lack of proper social baseline, and assessment of the project induced social impacts including impacts on disadvantaged or vulnerable and gender related issues in the EIAs; • The absence of an executive summary and information on the legal and institutional framework in the Turkish EIA (Technical level of information in the non-technical summary required in the EIA Reports may not meet WB requirements); • Limited requirement to cover cumulative impacts with other projects. • Limited emphasis on the associated facilities; and <p>Although mitigation and monitoring measures are required for adverse impacts, no specific requirement for an ESMP.</p>	<p>Project specific environmental and social assessment studies (i.e., ESIA) should be prepared including potential social impacts of the Project as well. Sub-management plans to be determined on a case-by-case basis should also be prepared to address any specific risks/impacts depending on their level.</p>
ESS2: Labor and Working Conditions	<p>In general, national laws and regulations regarding labor and working conditions satisfy ESS2 requirements. Worker grievance mechanism is the main gap between national legislative requirement and ESS2. In national legislation on labor and working conditions, there is no specific requirement related to grievance mechanism that allows workers to communicate their complaints to the employer.</p>	<p>Labor Management Procedures (LMP) prepared for the MSIP, provides guidance on the relevant management measures (such as workers grievance mechanism, code of conduct, etc.) stipulated by ESS2.</p>
ESS3: Resource Efficiency and Pollution Prevention and Management	<p>Most of the relevant national legislation is in line with EU directives. There is no major gap between ESS3 and legislative requirements. Additionally, specific studies regarding resource use and pollution prevention such as Greenhouse Gas (GHG) estimations are not specifically included in local EIA Process.</p>	<p>The risks and impacts associated with ESS3 are addressed through the ESMP prepared in Chapter 7.5 of this ESIA report. The project specific Sub-management plans (e.g., waste management, hazardous material management, soil management, air quality and noise management.) which have been addressed in Table 7.3 should be developed as a part of ESMP depending on the level of risks/impacts to be determined on a case-by-case basis.</p>
ESS4: Community Health and Safety	<p>General principles of community health and safety are addressed under different pieces of legislation. In general, there is no gap in terms of policy. However, impacts from labor influx and gender-based violence related risks are not explicitly covered in national law.</p>	<p>The risks and impacts associated with ESS4 are addressed through the ESMP prepared in Chapter 7.5. of this ESIA report. Sub-management plans (e.g., Community Health and Safety, Traffic Management Plan, Security Plan etc.) should be developed as a part of ESMP depending on the level of risks/impacts to be determined on a case-by-case basis.</p>

MUNICIPAL SERVICES IMPROVEMENT PROJECT

WB Environmental and Social Standards (ESS)	Gaps	Means to Fulfill Gaps
ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Turkish legislation on land acquisition mainly corresponds to requirements stipulated by ESS5. However, some differences include; preparation of a Resettlement Plan (RP), compensation at replacement costs, continuous consultation during RP implementation, impact assessment on informal land users, vulnerable groups and land based livelihood restoration are the major gaps in terms of ESS5 requirement.	<p>Within the scope of the MSIP, a Resettlement Framework (RF) has been prepared.</p> <p><i>Since the project does not require any land acquisition no sub-project specific documentation related to land acquisition has been prepared. However, if the project will lead to any land acquisition during implementation, all land acquisition process will be carried out in line with the RF of the Project.</i></p>
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	There is no gap in terms of policy. In some cases, level of the considerations of not legally protected sensitive ecological areas such as Key Biodiversity Areas in local EIA Process do not meet the requirements stipulated by ESS6. Furthermore, management and monitoring of potential impacts, mitigation measures and residual impacts are not detailed in general.	ESS6 requirements are included in the ESMP which is provided in Chapter 7.5 of this report.
ESS8: Cultural Heritage	There are no major gaps in between the ESS8 and national legislation with respect to the scope of the Project activities.	The Chance Find Procedure is integrated into the ESMP in Chapter 7. 5.
ESS10: Stakeholder Engagement and Information Disclosure	<p>Effective and transparent stakeholder engagement is the main gap in terms of ESS10.</p> <p>The national legislation has provision for the development of a project specific stakeholder engagement plan for Annex-1 projects in the EIA Regulation for public consultations. However, stakeholder engagement is only a requirement during the EIA process and there is no further requirement for construction or operation phases of the projects.</p> <p>The national legislation does not have special provisions to address the concerns of the vulnerable groups during the consultation process.</p> <p>The national legislation has provisions that allow citizens to make complaints and grievances, but there is no requirement for a project specific grievance mechanism.</p>	<p>Stakeholder Engagement Plan (SEP) provides relevant means regarding this issue and should be adopted/used in implementation of the Project.</p> <p>The national law does not require any stakeholder consultation for this category/type of projects. However, in line with ESS10, several stakeholder consultations both to inform them and receive information/data from them have been carried out. The proposed stakeholder engagement program has been provided in the SEP prepared specific for this project.</p> <p>In addition to the stakeholder consultations have been carried out till today, another round of consultation will be organized after the disclosure of this draft ESIA. After the completion of the consultations, this ESIA report will be updated as per the comments received by the stakeholders. The final ESIA will be disclosed on KOSKİ's, ILBANK's and the WB's official webpages.</p> <p>The vulnerable/disadvantaged individuals/groups have been identified within the scope of the Project under the SEP prepared for this sub-project.</p> <p>The SEP also clearly defines the GM to be established, and the roles and responsibilities of all parties to be involved in the Project. This ESIA also describes the existing GMs and the GMs to be established at different level under Section 8.</p>

MUNICIPAL SERVICES IMPROVEMENT PROJECT

3.8.1.1 Project Categorization

According to the World Bank's ESF, projects (including projects involving FIs) are classified into one of four classifications as High Risk, Substantial Risk, Moderate Risk or Low Risk taking into account relevant potential risks and impacts, such as the type, location, sensitivity and scale of the project; the nature and magnitude of the potential environmental and social risks and impacts; the capacity and commitment of the Borrower; and other areas of risks that may be relevant to the delivery of environmental and social mitigation measures and outcomes.

There are no clear-cut border values distinguishing the classification of the projects or, unlike the Turkish EIA Regulation (where projects are classified into two categories as Annex I and Annex II projects), any ready lists of project types for classification; rather projects are screened on a case-by-case basis in the environmental and social risk classification of the WB.

The WB and the İLBANK team have determined the environmental and social risk categorization of the subproject as 'Substantial'.

3.8.1.2 Scope of Environmental and Social Assessment

The scope and type of environmental and social assessment required as per ESS1 varies proportionate to the potential risks and impacts of the project and, in an integrated way, all relevant direct, indirect and cumulative environmental and social risks and impacts throughout the project life cycle, as per the ESSs 2-10, are assessed.

Comparison of the indicative outline required by the WB for ESIA with the general format of a Turkish EIA indicates a number of key differences as follows:

- The absence of an executive summary and information on the legal and institutional framework in the Turkish EIA (Technical level of information in the non-technical summary required in the Turkish EIA may not meet WB requirements);
- Discrepancies with regard to the level at which the project's environmental and social impacts, its alternatives, and mitigation measures for the impacts are discussed (such as lack of discussions on residual impacts, limited discussion on indirect and induced impacts, limited assessment regarding use of resources and GHG emissions);
- Social impact assessment is not completely integrated to the Turkish EIA and this results in the absence of proper social baseline, identification and assessment of the project induced social impacts including impacts on disadvantaged or vulnerable groups and gender related issues;
- There is limited requirement to cover risks and impacts related to (i) community health and safety; (ii) occupational health and safety; and (iii) labor and working conditions;
- Limited or no requirement to cover cumulative impacts with other projects in the Turkish EIA; and
- Limited emphasis on the associated facility in the Turkish EIA.

Nevertheless, the project specific format for Turkish EIA may require more details under some of these headings than indicated in the general format. Consequently, a case-by-case review of the Turkish EIAs is necessary to identify gaps vis-à-vis with WB requirements.

3.8.1.3 Stakeholder Consultation and Disclosure

Pursuant to ESS 1, stakeholder engagement is an integral part of E&S assessment and should be conducted in accordance with ESS 10. Accordingly, the Borrowers should identify the different stakeholders (project-affected parties and other interested parties including disadvantaged or vulnerable), and develop and implement a Stakeholder Engagement Plan (SEP), in consultation with the Bank, proportionate to the nature and scale of the project and its potential risks and impacts. SEP should describe the timing and methods of engagement with stakeholders throughout the life cycle of the project, and also describe the range and timing of information to be communicated to the parties as well as the issues to be consulted with the stakeholders.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

The Borrower should disclose project information to allow stakeholders to understand the risks and impacts of the project, and potential opportunities, in a timeframe that enables meaningful consultations with the stakeholders on project design. Information regarding the project Grievance Mechanism will also be communicated to all stakeholders.

The Turkish EIA Regulation requires “pre-scoping” public consultation only for projects requiring an EIA, and only requires announcement of the environmental assessment together with the justification. However, ESS 10 does not specify an exact number and method of stakeholder consultation and information disclosure but instead the standard requires a continuous stakeholder engagement approach through the life cycle of the project that will be decided proportionate to the nature, scale and impact magnitude of the project.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

4 Baseline Conditions

4.1. Physical Environment

This chapter is divided into subsections of geology, hydrogeology, water resources, land use, landscape and soil characteristics, climatic conditions and protected areas located in the Project area, its vicinity and the region. The results of the investigation studies conducted under these subheadings are described in this chapter.

Descriptions and information provided in this chapter, regarding current/baseline conditions of the Project area and its vicinity, are based on reports prepared by related public and private institutions, field studies conducted for identification of physical environment, Geographical Information System (GIS) studies and satellite imagery, and data acquired from the Master Plan Reports of Sakarya Basin.

4.1.1 Geology

Description and geological mapping study have been carried out for the study area in Ilgın District of Konya Province where the Project area is located and its surrounding. Data used in this study was provided from Sakarya Basin Master Plan, Hydrogeological Survey Report made by DSİ. The main sources of data are 1:25000 scaled General Directorate of Research and Exploration (MTA) maps created for the said Master Plan. Lithology and age definitions are used within the scope of geological description.

Geology for Ilgın

The Project area lies on formation which consists of Quaternary aged clayey, silty, gravel, and sandstone alluvium unit. Devonian aged limestone unit outcropped in southwest and northeast of Ilgın District forms basic unit of the Project area.

While Carboniferous aged sandstone, mudstone and limestone units outcrop in northeast of the Project area, Lower Triassic aged limestone, mudstone and sandstone units spread overlaying these units.

The geological map of Ilgın District, including Project area, is presented on the figure below.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

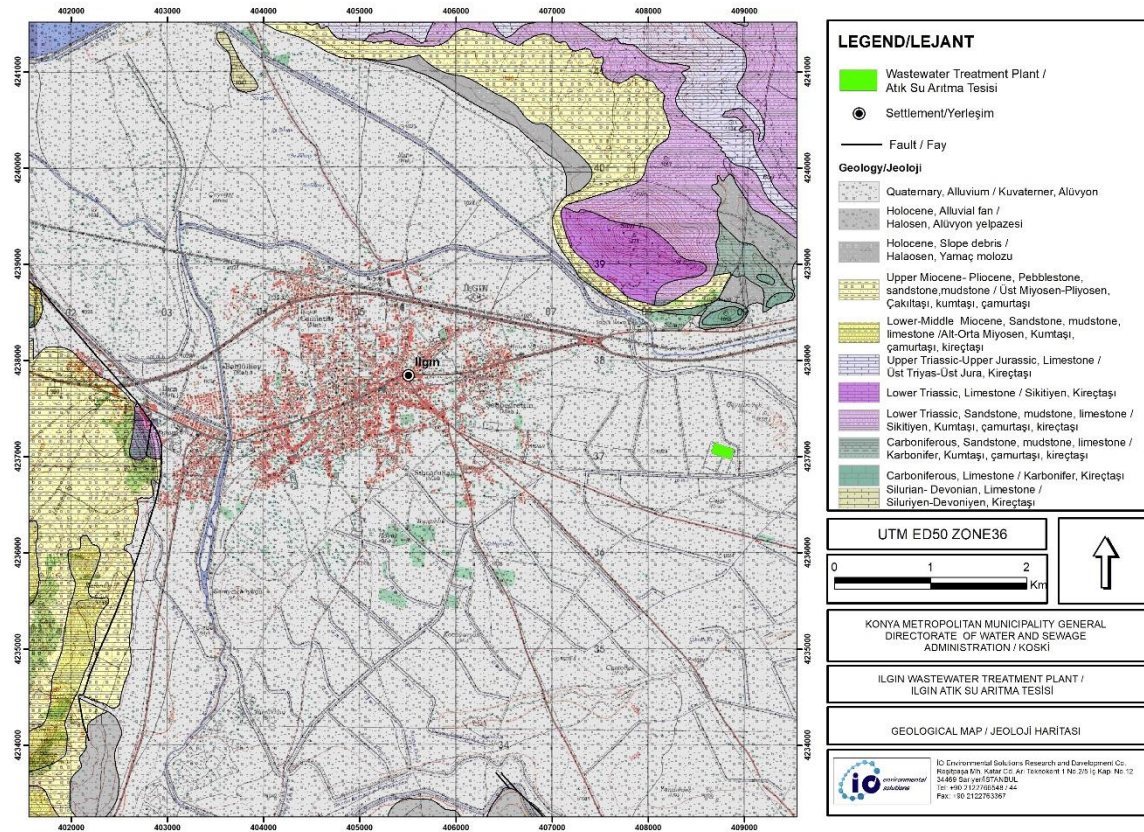


Figure 4.1 Geology Map for Ilgın WWTP Project Area

Structural Geology and Tectonism:

The Project area and its surroundings are located in the Torid zone in the Middle Taurus area. The Quaternary old alluvial unit is seen as a covering unit on older sedimentary rocks in the region. To the west of the Project area is the Ilgın Fault Zone, which starts from the southwest of the Ilgın settlement and extends to the north to the Gölyaka settlement. The Ilgın Fault Zone extends to north, starting at 5.8 km west of the Project area between Upper Miocene-Pliocene aged pebblestone, sandstone, mudstone units and Quaternary aged alluvial units.

In the southwest of the Project area, a directional strike slip fault is observed, starting from the settlement of Harmanyazı and proceeding to southwest direction. According to the MTA active fault map, active faults in the Project area are located in northwest and southwest of Ilgın WWTP.

The Active Fault Map of Türkiye and the Project area is presented below.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

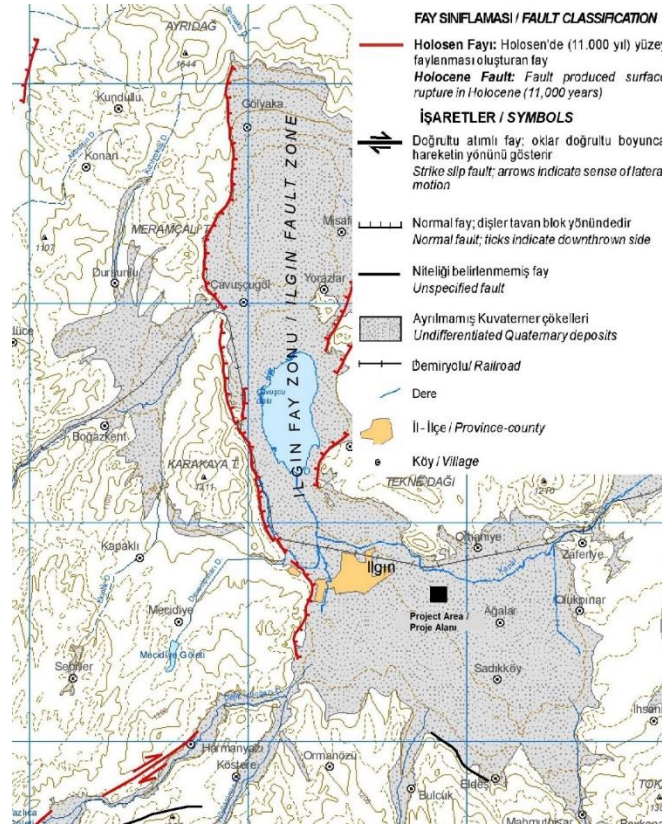


Figure 4.2 Tectonic Map of the Project Area

Source: Active Fault Map of Türkiye, MTA

Seismicity

Ilgın fault zone is located in northwest of Ilgın District center. As active faults increase the risk of seismicity in the region, the study area is in the 1st degree earthquake zone according to Konya Earthquake Zones Map prepared by Earthquake Research Department. Therefore, Ilgın WWTP is located in a high-risk seismic zone.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

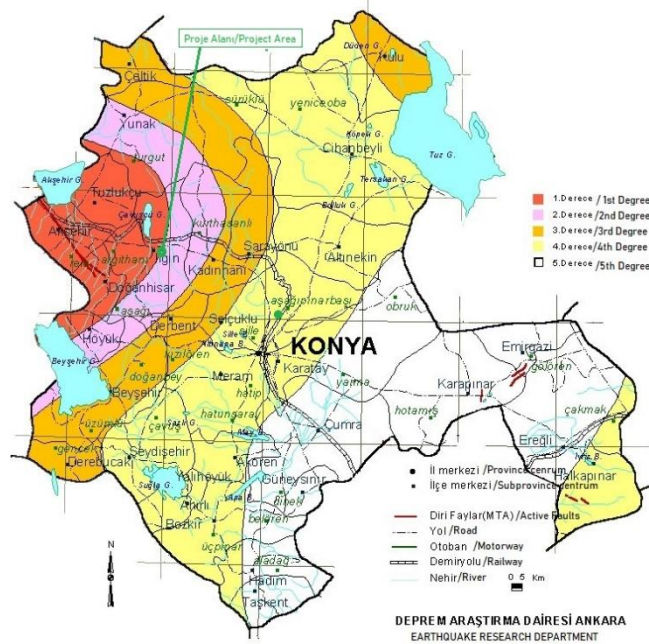


Figure 4.3 Earthquake Zones Map Showings the Project Area

Source: Konya Earthquake Zones Map, Earthquake Research Department, Ankara

As per the Earthquake Hazard Map published by Disaster and Emergency Management Presidency (AFAD), the maximum ground acceleration of Ilgın is around 0.3 g.

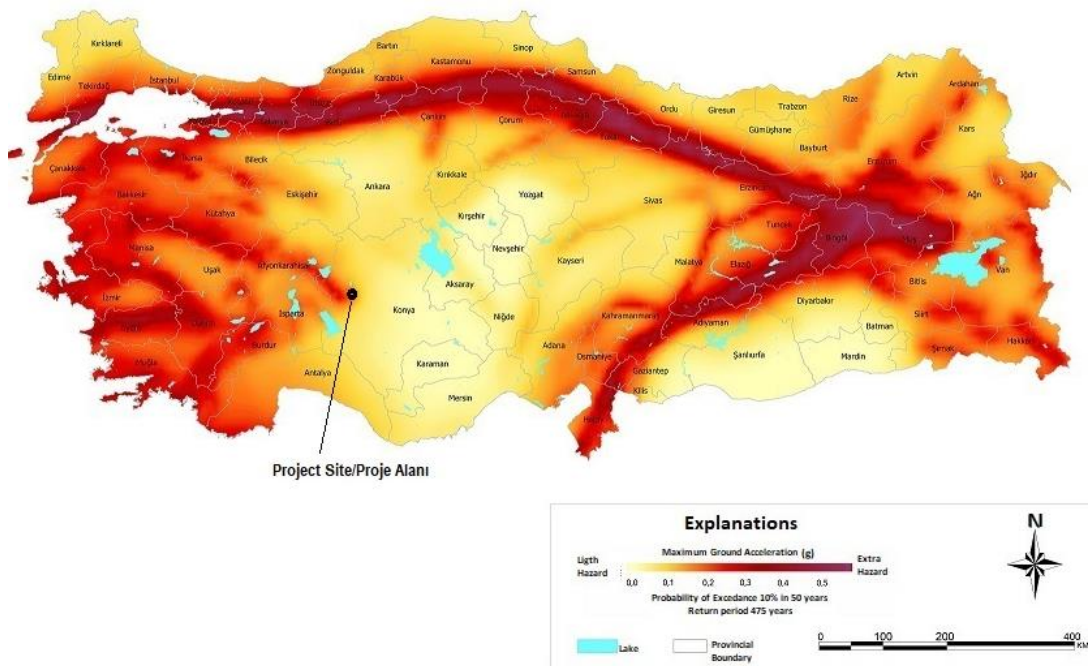


Figure 4.4 Earthquake Hazard Map of Project Area

Source: Disaster and Emergency Management Presidency (AFAD), 2018, Earthquake Hazard Map

4.1.2 Hydrogeology

The Project area is located in Upper Sakarya Sub-Basin within the borders of Sakarya Basin. Ilgın Wastewater Treatment Plant is located on Quaternary aged silty sandy gravelly alluvium unit in the southeast of Ilgın District.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Although alluvium is occasionally silty-clayey, general lithology is sandy and pebbly. The wells drilled in this unit are for agricultural irrigation purposes. Quaternary aged alluvial fan and slope debris are within upper level of alluvium unit. Although these units are lithologically permeable, they are located on dip slopes, so wells were not drilled. The use of groundwater in the region is extracted only from Quaternary aged alluvial unit.

In the north of Ilgın WWTP, high-permeable limestones outcrops and they have aquifer characteristics. Also, sandstone, pebblestone, mudstone and limestone units are within north and west of the Project area. Since these units are intercalated with impermeable mudstone units, they do not show aquifer characteristics.

The contractor will develop Water Resources and Effluent Management Plan (WR&EMP) and will conduct a preconstruction survey for determination of any requirement for remediation works (See Section 2.6). The Hydrogeology Map for the Project area is presented in Figure 4.5.

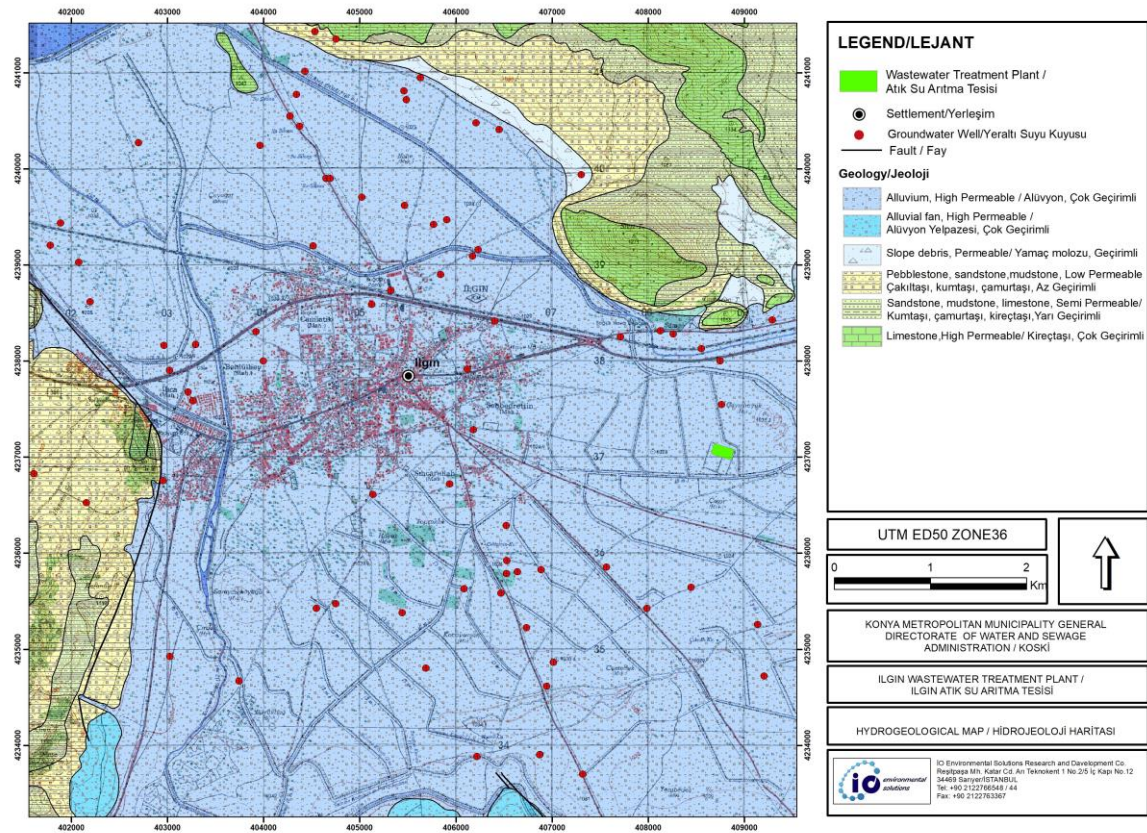


Figure 4.5 Hydrogeology Map for Ilgın WWTP Project Area

4.1.3 Water Resources

The Project area, which is in the Ilgın District of Konya, is located in Konya Endorheic Basin. The basin is located in the Central Anatolia region of Türkiye. It is surrounded by Sakarya and Kızılırmak from the north, Kızılırmak and Seyhan from the east, Doğu Akdeniz from the south and Antalya and Akarçay Basins from the west. The total area of the river basin covering about 6.4% of Türkiye's land area is 49,786 km².

One of the most important streams is the Çarşamba Creek, located in the province of Konya, southwest of the Konya Endorheic Basin. Çarşamba Creek flows into the Lake Beyşehir, merging with the Beyşehir Canal near Pınarcık Village on the east.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Melendiz Creek, which comes out of the Melendiz Mountains of Aksaray, is another important stream of the basin. After merging with Belisırma and Ilisu Streams, it is poured into Lake Tuz. Lake Mamasın Dam, which is the most important water resource of Aksaray and meets the drinking water and irrigation water needs of the province, was built on Melendiz Stream⁹.

The surface areas of sub basins of Konya Endorheic Basin are given in Table 4-1.

Table 4-1 Sub Basins of Konya Endorheic Basin

Sub Basin Name	Surface Area (km ²)
Beyşehir - Kaşaklı	7,308
Konya - Çumra - Karapınar	8,737
Karaman - Ayrancı - Akçaçehir	6,116
Ereğli - Bor	6,021
Aksaray	10,569
Altınekin	1,615
Cihanbeyli - Yeniceoba - Kulu	4,314
Şereflikoçhisar	1,463
Misli	1,672

Source: Konya Endorheic Basin Management Plan, 2018

There are pothole lakes on the Obruk Plateau, which is located at the boundaries of Karapınar District, separating the Lake Tuz Basin and the Konya Plain and has a length of 75-80 km in the east-west direction and 35-65 km in the north-south direction. Kızören, Çıralı, Timraş, Meyil, Yarımoglu are the best-known pothole lakes in the area.

Also, there are 18 groundwater resources located in the Konya Endorheic Basin, shown in Table 4-2.

Table 4-2 Groundwater Masses in Konya Endorheic Basin

Groundwater Mass Name	Province (Based on the Groundwater's Center of Mass)	District	Perimeter (km)	Surface Area (km ²)
Beyşehir - Kaşaklı	Konya	Beyşehir	796	3,069
Seydişehir	Konya	Seydişehir	226	925
Çumra - Karapınar	Konya	Çumra	694	5,719
Selçuklu	Konya	Selçuklu	204	426
Akören	Konya	Akören	257	640
Karaman	Karaman	Merkez	469	2,696
Ereğli	Konya	Ereğli	654	2,683
Altınhisar	Niğde	Altınhisar	427	1,620
Sultanhanı - Aksaray	Aksaray	Sultanhanı	592	7,251
Çiftlik	Aksaray	Merkez	529	2,612
Altınekin	Konya	Altınekin	259	1,379
Yeniceoba	Konya	Cihanbeyli	209	266
Kadıoğlu - İnsuyu	Konya	Cihanbeyli	188	836
Kulu - Cihanbeyli	Konya	Cihanbeyli	468	1,565
Kırkpınar	Ankara	Gölbaşı	257	748
Şereflikoçhisar	Ankara	Şereflikoçhisar	220	303

⁹ Konya Endorheic Basin Management Plan, 2018

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Groundwater Mass Name	Province (Based on the Groundwater's Center of Mass)	District	Perimeter (km)	Surface Area (km ²)
Devekovan	Aksaray	Ağaçören	237	783
Misli - Merkez	Niğde	Merkez	413	1,456

Source: Konya Endorheic Basin Management Plan, 2018

4.1.3.1 Water Resources in Ilgın

District of Ilgın is 89 km away from the Konya centrum. The average altitude of the District above sea level is 1,039 meters. The District has Yunak District in the north, Derbent, Beyşehir, Hüyük Districts in the south, Akşehir, Doğanhisar, Tuzlukçu Districts in the west and Kadınhanı District in the east. The surface area of the District is 1,655.7 km².

The main streams of Ilgın are Bulasan Creek and Çiğil Creek (a.k.a. Ilgın Creek). While Bulasan Creek is born from the Lake Çavuşçu and flows through Atlantı Valley where it dries, the Çiğil Creek flows into the lake in the northwest of Ilgın. Also, Çiğil Creek is poured into the Atlantı Plain from the east side of the lake through a channel¹⁰. Lake Çavuşçu is located 9 km north of Ilgın. The lake is a tectonic freshwater lake with an area of 27 km², surrounded by reeds and marshes. The water sources that feed the lake are Doğanhisar, Çiğil and Bulcuk Creeks and it is used as a water source for the irrigation of Ilgın Plain.

At 10 km southwest and 16 km south of Ilgın District, Mecidiye Pond and Bulcuk Pond, which is fed by the springs between Kozlu Mountain and Bulcuk Mountains, are located respectively. Both of them are used for irrigation.

The untreated domestic wastewater from Ilgın have been discharged to a tributary of Bulasan Creek by the collector line which was constructed in 2017. Currently, the collector line collects wastewater of Ilgın and conveys it to the proposed WWTP land. Since the WWTP has not been established yet, the collector line continues to the discharge point by passing at the north edge of the WWTP area in the east direction and then lies along the north-east of the WWTP area until to the tributary of Bulasan creek. This tributary has been dried during all seasons. With the establishment of Ilgın WWTP, the existing collector line will be connected to the WWTP and wastewater will be treated. The discharge point will not change and the end of the collector line after the WWTP will be used as discharge channel ending up at the existing discharge point.

The following map shows the existing as well as future discharge point on the tributary of Bulasan Creek by Ilgın WWTP land.

¹⁰ Ilgın İlçe Raporu, 2019, www.konyadayatirim.gov.tr

MUNICIPAL SERVICES IMPROVEMENT PROJECT

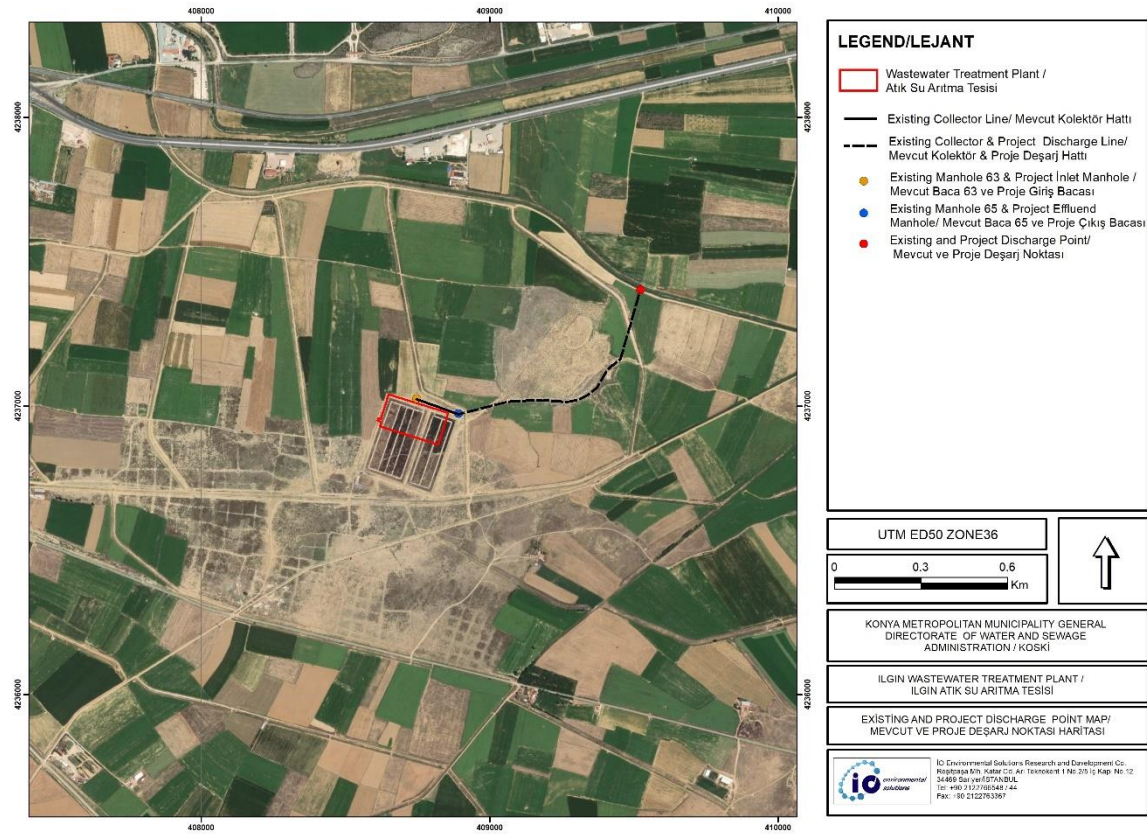


Figure 4.6 Existing and Project Discharge Point

A significant portion of resultant treated wastewater may enter the soil and then ground water. This implies the need for more details on these existing soils (e.g., permeability), specific shallow ground water in this location (including its use in the area of indirect influence, and connection to other surface bodies of aquifers, etc.) and its use (e.g., inventory of ground water wells in immediate vicinity and in particular those downgradient (of ground water flow) of the discharge point/channel location. Therefore, a detailed assessment will be done in the WR&EMP to be prepared by the construction contractor.

4.1.4 Land Use, Soil and Landscape

4.1.4.1 Land Use

İlgin WWTP area is owned by KOSKİ. The parcel number is 440/877 in Şihbedrettin Neighborhood. The total WWTP area is 25,125 m² which has been registered as WWTP land and owned by treasury since 1980. No land has been or will be acquired due to the WWTP Project. The area was formerly used as stabilization pond for wastewater treatment purposes, and which was established in 1980; however, it has not been under operation since 2005. The İlgin WWTP land has not been used for any purposes by anybody for the last 15 years.

The discharge will be to a tributary of Bulasan creek where the existing discharge point of untreated wastewater is as well.

It is assumed that all WWTP land will be disturbed due to the construction works of the Project.

There is an existing earth road to reach the WWTP area which is on the north of Mehmet Arslan Street.

The construction camp sites and site offices will be established on the WWTP area. Within the WWTP area, the landscaping areas and areas adjacent to internal service roads will be used for this purpose. Therefore, there is no need for land acquisition for construction camp sites and site offices.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

All temporary auxiliary facilities associated with construction will be installed within the WWTP area to avoid any further land-based impacts per the WB's mitigation hierarchy.

The WWTP land is belongs to treasury registered as WWTP land since 1980 with stabilization ponds on it and in 2014, with the Grand Municipality Law, the land was assigned as service area of KOSKİ; therefore, there is no land acquisition within the scope of the Project. At the southeast of the land owned by KOSKİ, where there will not be any construction activity, there is an old structure. This was the office of obsolete stabilization ponds. This structure was used as barn by a farmer who is engaged with husbandry. KOSKİ representatives indicated that they communicated with the farmer in 2020 and the farmer informed that he was planning to move his husbandry (around 250 small ruminant) to his own land right after collecting the forage he planted on his land in autumn. During the informative meetings carried out with the farmer, KOSKİ has clearly mentioned that they would be able to support the farmer during his move however, he did not accept/want any support from KOSKİ. According to the official letter submitted by the farmer to KOSKİ, the farmer left the building of his own accord on 2nd November 2021 (See Annex 9). Currently the land is vacant and there is no legal and/or illegal user on the land (including squatters).

Referring to the energy transmission line (ETL) application project, the closest transformation station is on the adjacent public pastureland which belongs to treasury and 245 m overhead ETL with 31.5 kV will be constructed on this land through the Ilgın WWTP land. The overhead ETL will proceed within the Ilgın WWTP allocated land for 483 m reaching to Ilgın WWTP. On public pastureland, no agricultural activity including grazing was observed in June 2020 during the site visit conducted within the scope of this ESIA study and according to the consultation with the local people and mukhtar, there is not any known activity at this site. The public land is classified as pastureland and having a large surface area with 93,161 ha whereas the total area for three ETL poles to be erected is smaller than 10 m². Therefore, the total area of ETL poles is 0.00107% of total area of pastureland. Considering that the affected land ratio of pastureland is very small, construction timelines for the ETLs are very short and no evidence of agricultural production or grazing has been observed or learned from the local people at this area, the impacts of the ETL establishment on land use is negligible even if there would be an unpredicted agricultural or animal grazing activity.

The general view of Ilgın WWTP area is presented in Figure 2.4

The stand type map of the Project area is presented in the following figure. According to assessment of the map, pasture, meadow, steppe (Me) is the stand type covered by the WWTP land.

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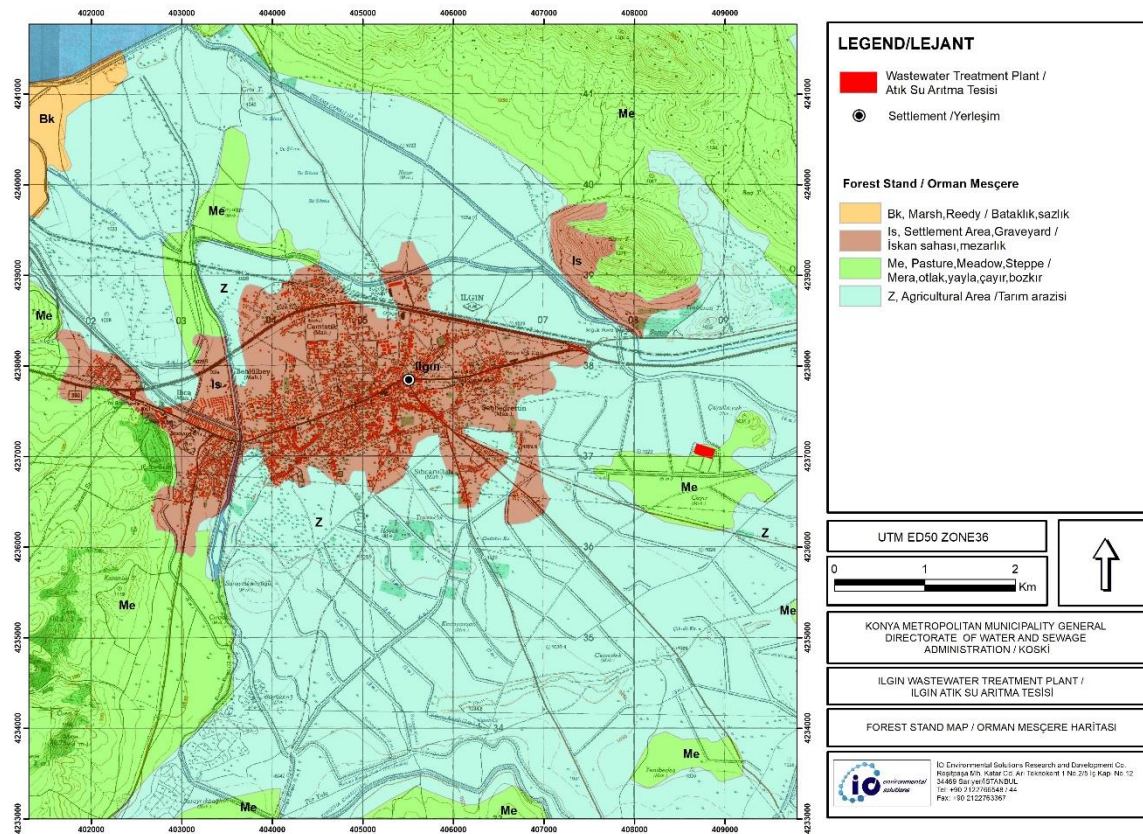


Figure 4.7 Stand Type Map of Ilgın WWTP Land

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

The Land Use Capabilities of the soils corresponding to the Project land is agricultural lands suitable for soil cultivation as Class III. The characteristics of Class III is summarized in the table below. The map of the Land Use Capability Classes for the Ilgın WWTP Land is presented in Figure 4.8.

Table 4-3 Agricultural Potentials Represented by Different Land Use Capability Classes and Their Characteristics

Class	Agricultural Potential	Definition of Land Use Capability
Class III	Agricultural lands suitable for soil cultivation	Class III lands are moderately good lands for hoe plants which can generate solid income provided they are utilized with a good cropping system and proper agricultural methods. Moderate slope, increased erosion sensitivity, excessive moisture, exposed soil, presence of stones, having a lot of sand and/or gravel, low water holding capacity and low yield are properties of this type of land.

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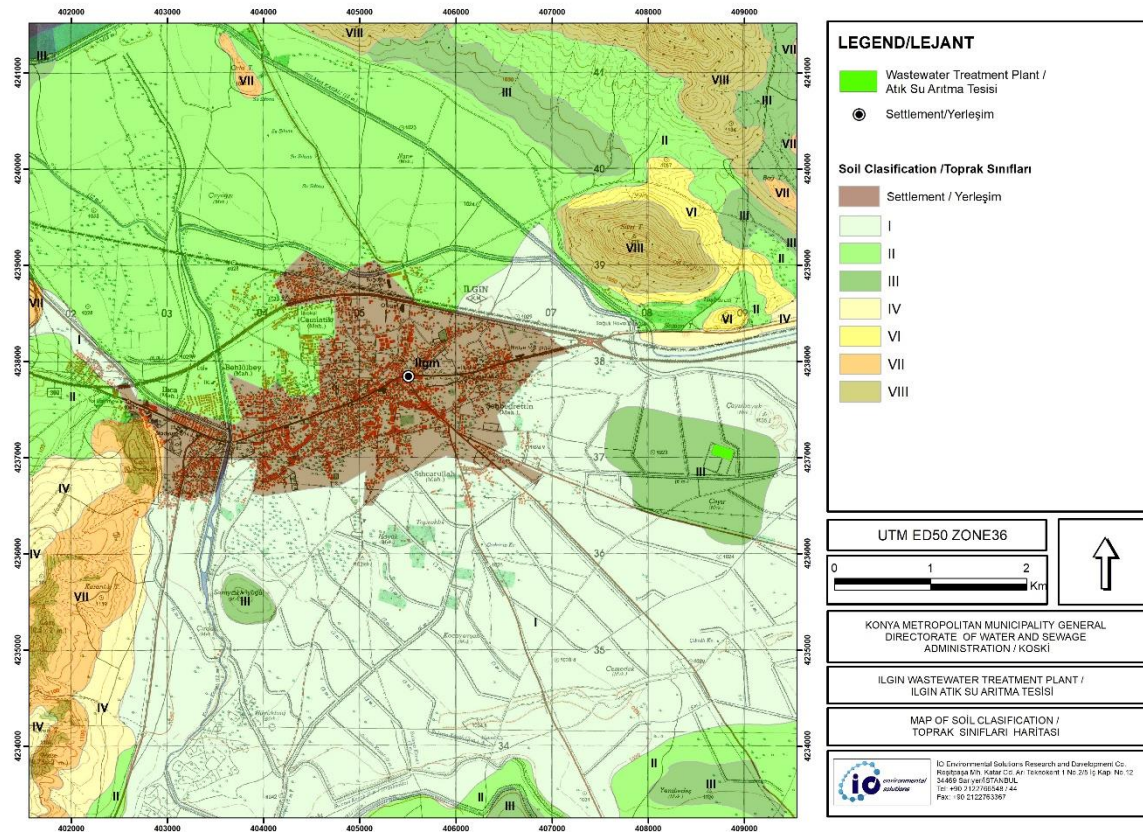


Figure 4.8 Land Use Capability Classes for Ilgin WWTP Land

4.1.4.2 Soil

The great soil groups of Project land include alluvial soils. This group of soils is accumulated on materials transported and stored by streams. This young soil group has lacking layers or even if it is present, the layers are poorly developed. On the other hand, there are different mineral layers. These soils are mostly under the influence of ground water. Lands covered by alluvial soils, which are very important in terms of agriculture, are suitable for growing all cultivated plants that the climate allows. The yield can vary from very high to low.

According to the former Turkish General Directorate for Rural Services database great soil groups of Ilgin WWTP land and its vicinity is shown below.

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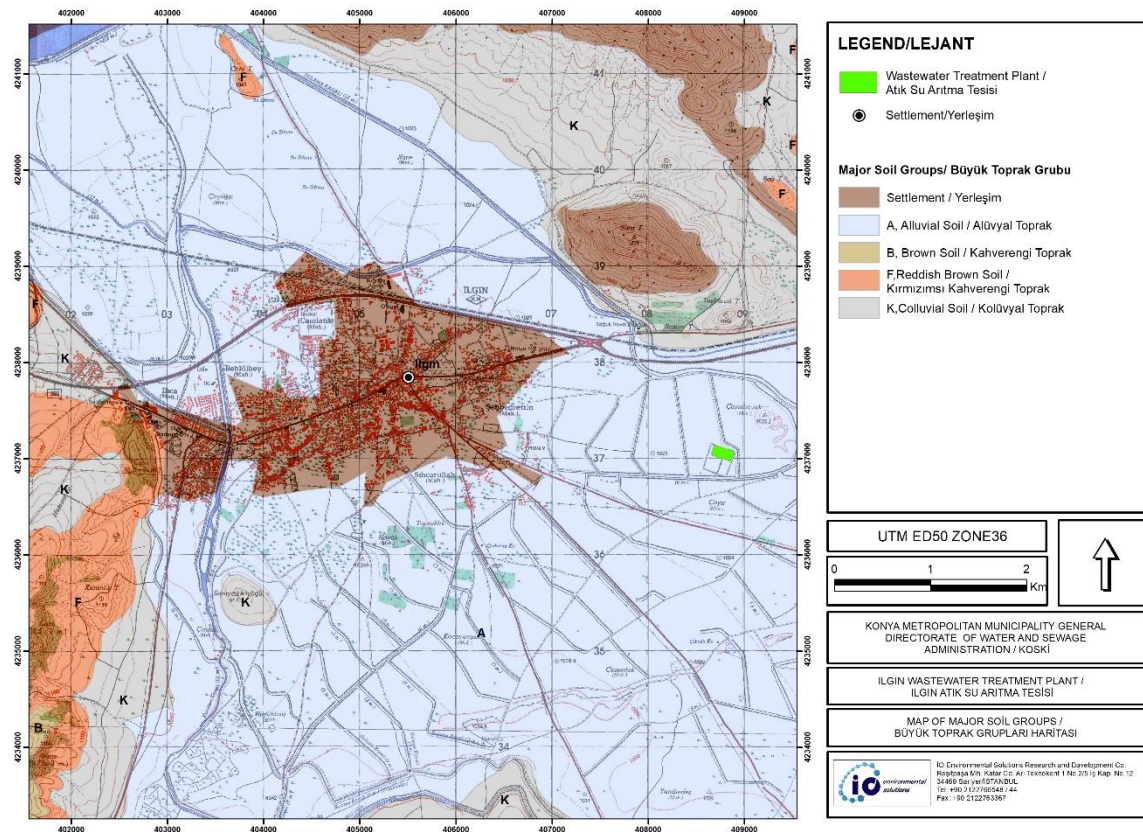


Figure 4.9 Map of Great Soil Groups for Ilgın WWTP Land

Erosion map of the Project area and its vicinity is given in the following figure. According to the erosion map, the Project area is affected with none/very low-level erosion. The following table represents the characteristics of erosion levels. Factors such as structure of soil, bareness of its surface, slope of the land and wrong cultivation of the soil are causes that increase erosion risk of the soil.

Table 4-4 Erosion Levels and Their Characteristics

Erosion Level	Characteristics
1 st Degree None/Very Low	Topsoil loss is to a rate of 25%. Soil is slightly scattered under windy conditions.
2 nd Degree Moderate	Topsoil loss is to a rate of 25-75%. Sparse hollows are seen. The distance between the hollows is more than 30 m. Under windy conditions, scattered soil generates bumps with 60 cm height.
3 rd Degree Severe	Almost all of the topsoil and 25% of the subsoil are gone. The distance between the gullies decreased to lower than 30 m and it affected 75% of the area. The bumps are more than 60 cm height in the wind and the blown areas are more.
4 th Degree Very Severe	All of the top soil and more than 75% of the subsoil are gone. Stones and rocks have come to the surface. The soil remained only in the ridges of gullies.

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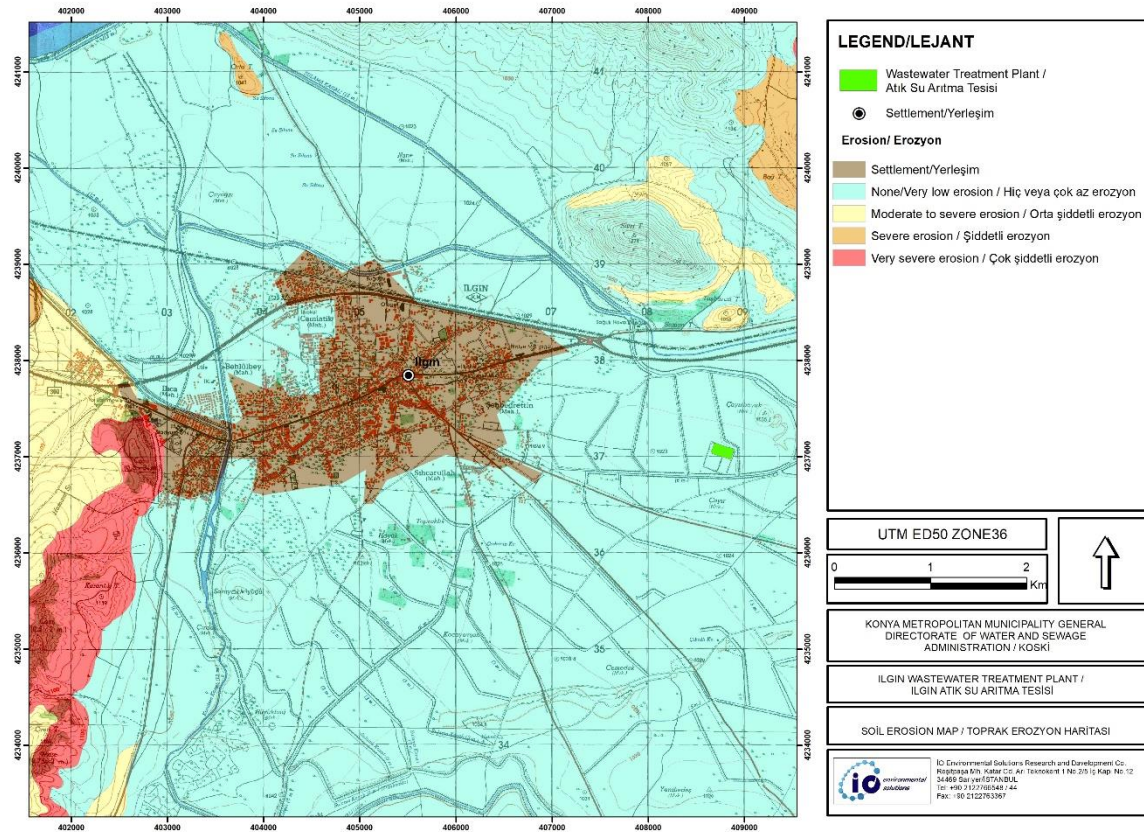


Figure 4.10 Map of Erosion Levels for Ilgın WWTP Land and Its Vicinity

4.1.4.3 Landscape

The Project area lies on an agricultural plain landscape. Ilgın as a result of its soil classification and plain topography has intense agricultural activities. Çiğil stream and Bulasan creek and their tributaries along with irrigation and drying channels are crossing the plain. A hill having steppe properties caught to eye at the north of the area. The climate is semi-dry. Ayfon-Konya main road crossing the plain passes through the settlements and lies at the north of the Project area. At the close vicinity of Project area, at the north, agricultural activities are dominant such as cultivation of corn, sugar beet and wheat; at the south, meadow characteristics are observed since this area is being used as pastureland.

During the construction phase of the Project, change of topography will be caused mainly by WWTP construction. After the construction, harmonious landscaping with the natural flora will diminish this impact. Types of trees and shrubs to be used for landscaping purposes shall be selected in accordance with the existing flora. The natural landscape elements such as terrain morphology, water resources and vegetation cover shall be protected.

4.1.5 Protected Areas

4.1.5.1 Protected Areas in accordance with National Legislation

There are no national parks, nature parks, nature reserves, nature monuments, wildlife protection areas and wildlife development areas defined by the national legislation within the Project area or their vicinity. There are no designated protected areas within the Project area (e.g., natural areas, protected areas, sensitive areas, archeological/cultural assets). The nearest officially protected areas to the Ilgın WWTP area are; Akyokuş Nature Park (59 km), Kızıldağ National Park (50 km), Beyşehir Lake National Park (53 km) and Tuz Gölü Special Environmental Protection Area (80 km) (Figure 4.11).

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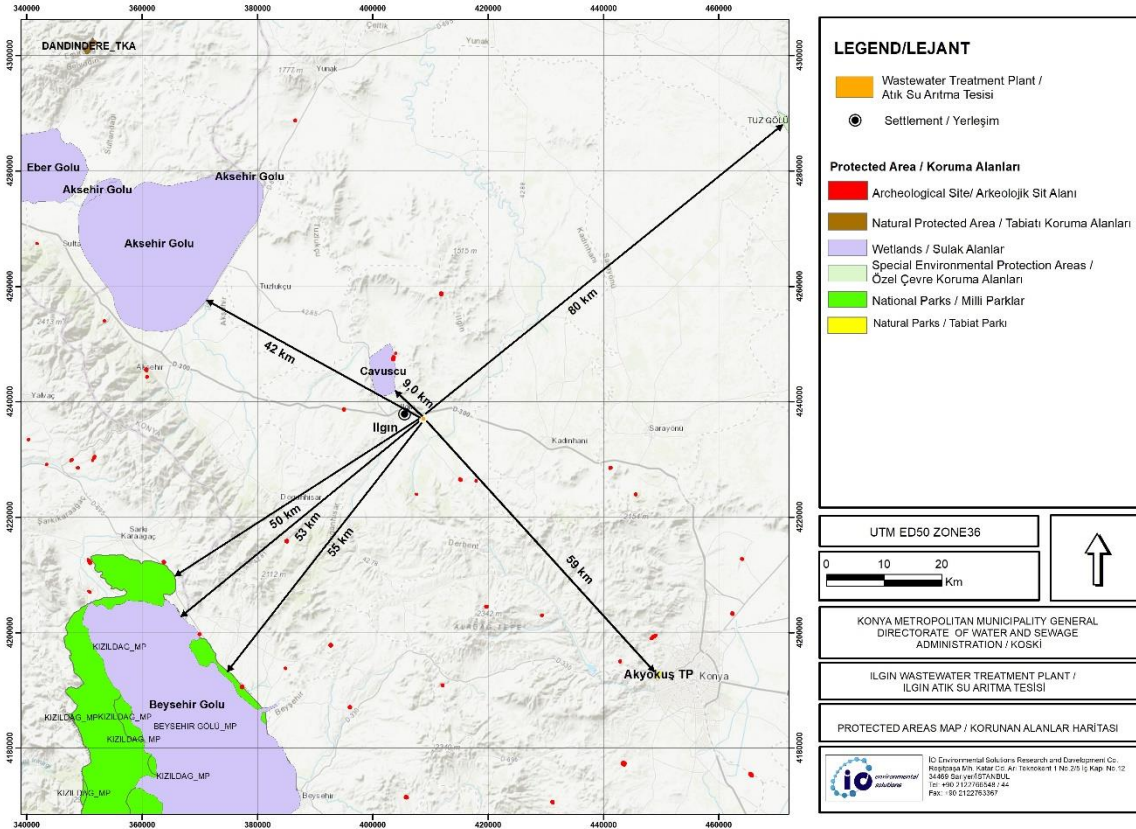


Figure 4.11 Nearest Officially Protected Areas to the Ilgin WWTP

4.1.5.2 Archeological Sites

The Project area does not lie on an archeologically protected site. The closest archeological site is at 18 km northwest of the Project site at the northeast of Çavuşçu Lake (See Figure 4.11) ¹¹.

4.1.5.3 Wetlands

Wetlands are areas of marsh, fen, peat land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters. Therefore, lakes, lagoons, shores, and deltas with depths generally to 6 m are defined as wetlands.

Wetlands have an incomparable function and value among other ecosystems. Waterfowl are birds ecologically dependent on wetlands. Wetlands provide local migratory birds with invaluable ecological systems. They serve as nesting and breeding area for migratory birds in their long survey through oceans.

As a consequence, existence of wetlands in an area might indicate potential for observing migratory birds and/or resident bird habitats. According to the list of wetlands presented in the Official Website of Ministry of Agriculture and Forestry, General Directorate of Nature Conservation and National Parks;

- The Ilgin WWTP site does not lie within any wetland. The closest wetland is Çavuşçu Lake and it is 9 km distant to the Project site.

¹¹ Source: Database of the Ministry of Culture and Tourism

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4.1.5.4 Ramsar Areas

Half of the wetlands are destroyed through this century by mostly human actions as: agriculture, chemicals, drinking water need of overcrowded populations, cutting of reeds and settlement. Wetlands constitute a resource of great economic, cultural, scientific, and recreational value, the loss of which would be irreparable. Waterfowl in their seasonal migrations may transcend frontiers and so should be regarded as an international resource. The conservation of wetlands and their flora and fauna can be ensured by combining far-sighted national policies with coordinated international action.

The Convention on Wetlands of International Importance, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. "Ramsar Convention" is an intergovernmental treaty that embodies the commitments of its member countries to maintain the ecological character of their Wetlands of International Importance and to plan for the "wise use", or sustainable use, of all of the wetlands in their territories. Desiring to stem the progressive encroachment on and loss of wetlands now and in the future; RAMSAR convention is signed in 1971.

The mission of the convention is "the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world". The Convention uses a broad definition of the types of wetlands covered in its mission, including lakes and rivers, swamps and marshes, wet grasslands and peat lands, oases, estuaries, deltas and tidal flats, near-shore marine areas, mangroves and coral reefs, and human-made sites such as fishponds, rice paddies, reservoirs, and salt pans. As the contracting parties have agreed on Convention on Wetlands of International Importance especially as waterfowl habitat, there are fundamental ecological functions of wetlands as regulators of water regimes and as habitats supporting a characteristic flora and fauna, especially waterfowl.

Türkiye became a contracting party of the convention in May 17th, 1994. With over 1-million-hectare area, 250 small and large water bodies Türkiye is one of the most important countries in Europe and Middle East. A total of 14 wetlands are in the conservation list of Ramsar and these are: Akyatan Lagoon, Gediz Delta, Göksu Delta, Kızılırmak Delta, Kızören Obruğu, Lake Burdur, Lake Manyas (Kuş), Lake Kuyucuk, Lake Seyfe, Lake Uluabat, Meke Crater Lake, Sultan Marshes, Yumurtalık Lagoon and Nemrut Kaldera. Kızören Obruğu RAMSAR site is the closest Ramsar site to the Ilgın WWTP area (104 km away).

4.1.5.5 Important Bird Areas (IBA) and Key Biodiversity Areas (KBA) in Türkiye

IBAs are key sites for ornithological conservation that meet one or more of the following criteria:

- Hold significant numbers of one or more globally threatened species,
- Are one of a set of sites that together hold a suite of restricted-range species or biome-restricted species,
- Have exceptionally high numbers of migratory or congregator species.

Since the 1980s, Birdlife International has been working with a wide range of collaborators to identify IBAs. The work has resulted in internationally accepted standards for selecting networks of key areas that fulfill the site level targets for bird conservation. A regional IBA inventory has been produced for southern Europe which includes Türkiye (Eken et al., undated). The 1997 IBA inventory for Türkiye (Magnin and Yazar, 1997) informed the overview of IBAs in Türkiye which are detailed in Important Bird Areas in Europe; Priority Sites for Conservation (Magnin et al., 2000). Türkiye has 97 IBA's which cover 4% of the total land area in Türkiye.

Türkiye is currently in the EU Accession period and therefore there are no Natura 2000 sites. The IBA inventory described in Magnin et al. (2000) could be considered as a candidate list for potential Natura 2000 areas.

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On the other hand, the concept of Key Biodiversity Area (KBA) is an approach of prioritization used to determine vulnerable and irreplaceable natural areas. In order to achieve that, a series of ecological indicators are used, starting with endangered species or species with limited geographical distribution. KBAs are selected on the basis of tangible criteria related to standards based on the distribution and population of species and habitats that require conservation of the areas, and thresholds applicable on a global scale. On the other hand, there are a series of quantitative threshold values used to determine KBAs.

An international team that included experts from Doğa Derneği (BirdLife Türkiye) presented the first design for KBA criteria in 2004, based on the “Important Bird Area” studies by BirdLife International. Later, in 2006, the International Union for Conservation of Nature (IUCN) developed the method of KBA further and recognized it as an international standard to determine the areas of top priority (Eken et al., 2006).

According to the new standards determined by IUCN in 2016, there are five major KBA criteria and a series of sub-criteria:

- A. Threatened biodiversity
 - A1. Threatened species
 - A2. Threatened ecosystem types
- B. Geographically restricted biodiversity
 - B1. Individual geographically restricted species
 - B2. Co-occurring geographically restricted species
 - B3. Geographically restricted assemblages
 - B4. Geographically restricted ecosystem types
- C. Ecological integrity
- D. Biological processes
 - D1. Demographic aggregations
 - D2. Ecological refugia
 - D3. Recruitment sources
- E. Irreplaceability through quantitative analysis

As one of the World’s first KBA inventories on a national scale, “Key Biodiversity Areas of Türkiye” book was completed in 2006 with Doğa Derneği’s coordination and the contributions of many organizations and scientists. In this work concerning eight different groups of living creatures, the data regarding plants, dragonflies, butterflies, inland water fishes, amphibians, reptiles, birds and mammals were synthesized to identify 305 KBAs. Important Bird Areas, Important Plant Areas, the sea turtle and the Mediterranean monk seal areas, identified previously by other experts and organizations, provided important bases for this work of Doğa Derneği.

Ilgın WWTP area is not related with any of the KBAs. Although the Project area is close to the Çavuşçu Lake KBA, where 9 km distant to the Project area, there is not any ecological linkages due to the topographical barriers and anthropogenic pressures (Figure 4.12). Moreover, there is not any highly threatened and/or unique ecosystems in and around the Ilgın WWTP area.

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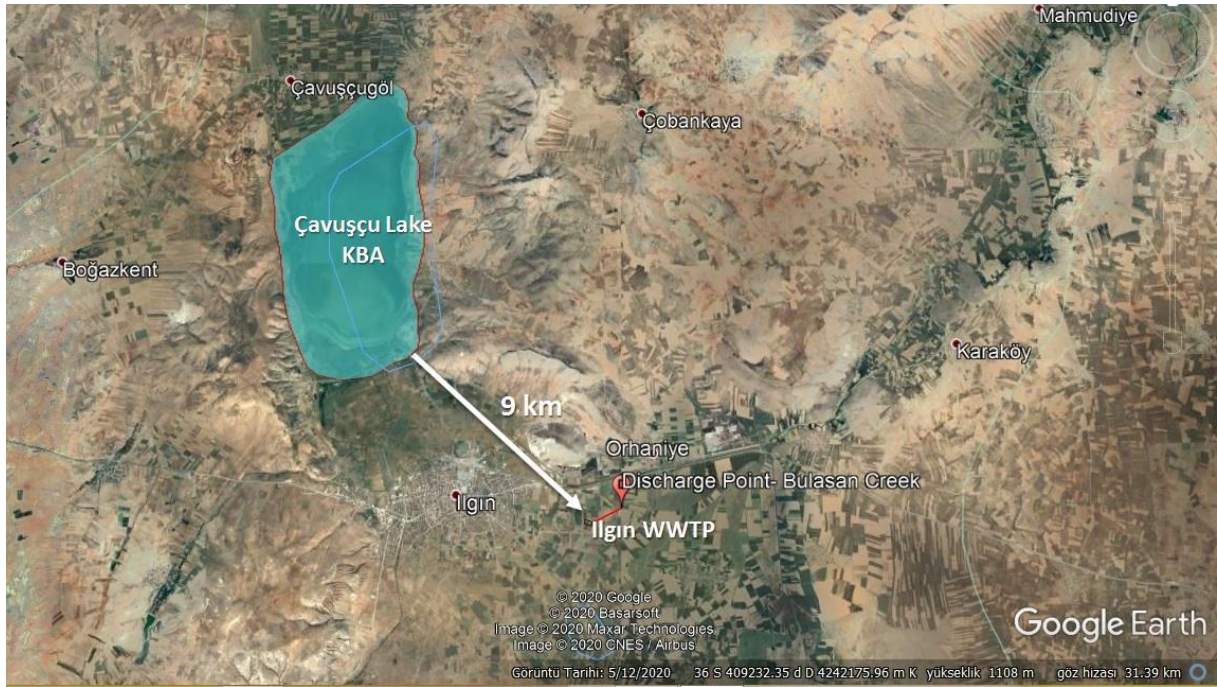


Figure 4.12 The Relationship of the İlgin WWTP Project and the Çavuşçu Lake KBA

Source: Eken et al. 2006

4.1.5.6 No Go Areas

The Project area is not at a location that would affect the any kind of “Ecologically No-Go Areas”.

4.1.6 Meteorological and Climate Characteristics

İlgin District is located in 87 km northwest of Konya in the southern part of the Central Anatolia Region. Konya has terrestrial climate, summers are dry and hot, winters are cold and snowy in the city. The temperature difference between night and day is between 16-22 degrees in summer. Due to the humidity in the spring and winters, this difference drops to 9-12 °C. Although it is located in the most southern part of Central Anatolia, it is colder than other cities in the region. This is because the central Taurus Mountains completely prevent the sea effect. Convictional rainfalls occur in the spring often.

In order to make the meteorological and climatological evaluations of İlgin District, meteorological data obtained between 1971 – 2019 from Turkish State Meteorological Service (TSMS) is used.

İlgin Meteorology Station is the closest meteorological station to the Project area. The station is located approximately 5.5 km west of the Project area. Details about the meteorological station is as follows:

Coordinates : 38.2763, 31.8940 (Geographic)

Altitude : 1,036 m

4.1.6.1 Temperature

The monthly minimum, average and maximum temperature data of the TSMS for İlgin District are analyzed within the project.

According to the data obtained, the annual average temperature in İlgin is 11.1 °C. The maximum temperature of İlgin is recorded as 40 °C in July. The minimum temperature is recorded as -27 °C in February. The long-term average, minimum and maximum temperature records of İlgin District are given in Table 4-5 and Figure 4.13 in monthly basis.

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Table 4-5 Temperature Values

Months	Average Temperature (°C)	Maximum Average Temperatures (°C)	Minimum Average Temperatures (°C)	Maximum Temperature (°C)	Minimum Temperature (°C)
January	-0.1	4.7	-4.2	18.5	-25.6
February	1.6	7.0	-2.9	22.6	-27.0
March	5.6	11.8	0.2	28	-19.2
April	10.5	17.0	4.4	31.1	-10.2
May	14.8	21.7	8.1	33.1	-2.0
June	18.9	26.2	11.2	35.9	0.7
July	22.1	29.9	13.6	40.0	5.2
August	21.7	29.8	13.2	38.2	4.3
September	17.6	26	9.3	35.5	-2.0
October	12.1	19.8	5.4	31.8	-6.4
November	6.2	12.9	0.9	25.3	-23.3
December	1.7	6.6	-2.3	22.1	-22.0
Annual	11.1	17.8	4.7	40.0	-27.0

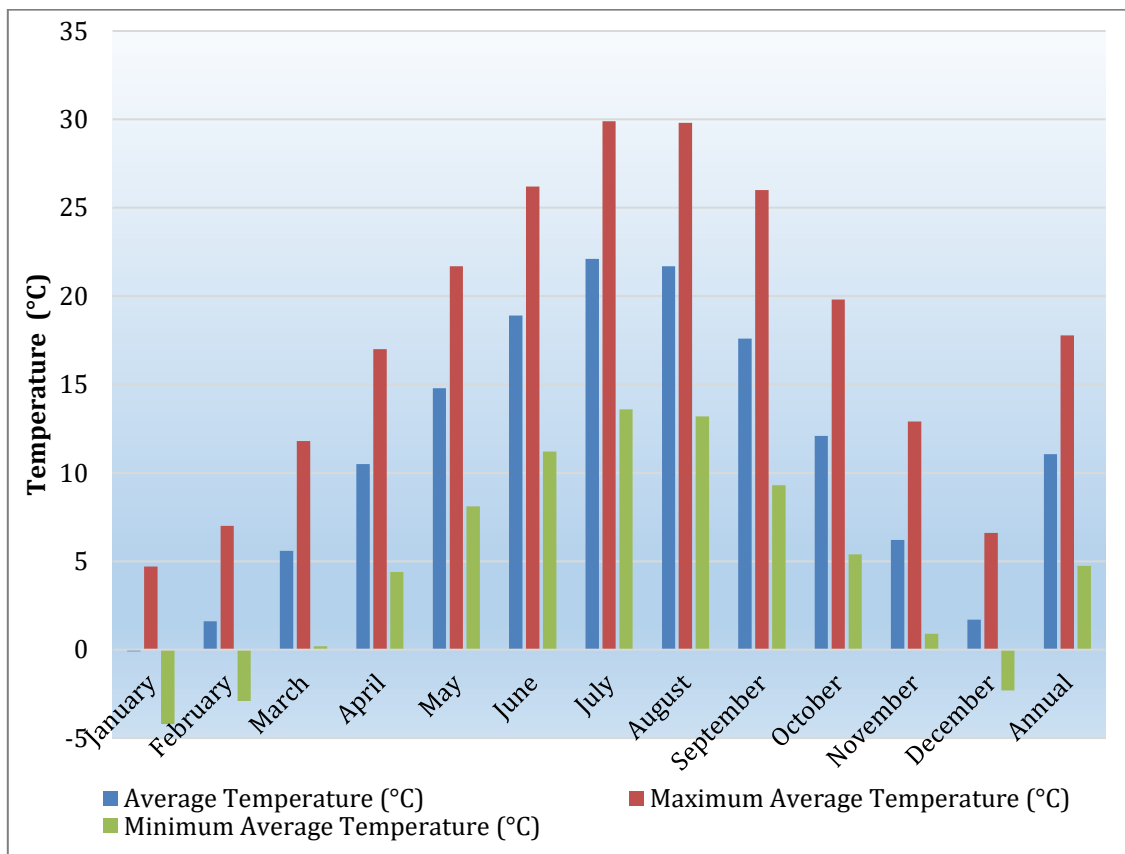


Figure 4.13 Average Temperature, Maximum Average Temperature and Minimum Average Temperature Values

In Ilgin District, the maximum annual average temperature and minimum annual average temperature are 17.8 °C and 4.7 °C respectively.

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4.1.6.2 Precipitation

According to TSMS records, annual average total precipitation in Ilgın is 33.38 mm. Total precipitation is maximum in September with 74.80 mm and minimum in February with 19.40 mm. Average monthly precipitation and maximum precipitation amounts are given Figure 4.14 and tabulated in Table 4-6.

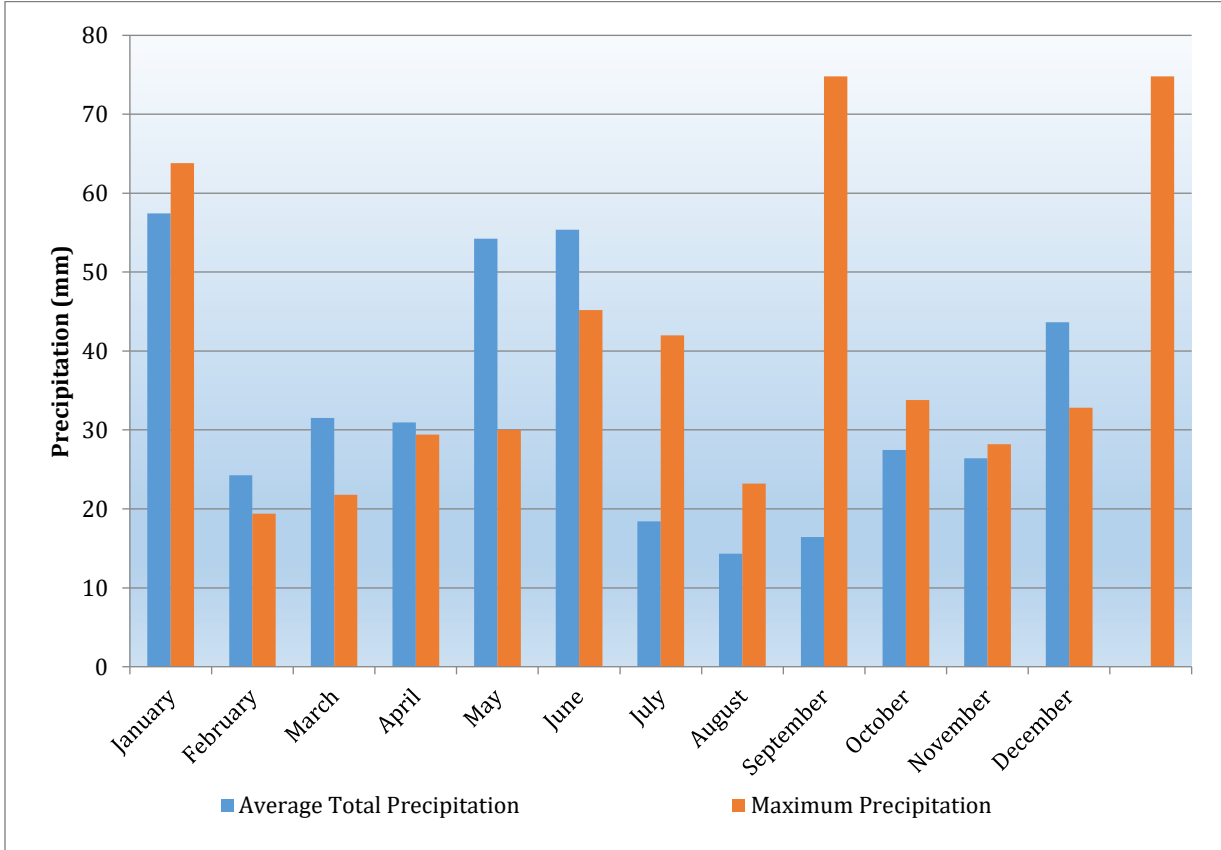


Figure 4.14 Average Monthly Precipitation and Maximum Precipitation Values

Table 4-6 Average Monthly Precipitation and Maximum Precipitation Values

Months	Average Total Precipitation (mm)	Maximum Precipitation (mm)
January	57.4	63.8
February	24.3	19.4
March	31.5	21.8
April	31.0	29.4
May	54.2	30.0
June	55.4	45.2
July	18.4	42.0
August	14.3	23.2
September	16.5	74.8
October	27.5	33.8
November	26.4	28.2
December	43.7	32.8

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4.1.6.3 Relative Humidity

According to data obtained from TSMS, average annual humidity is 62.8%. Minimum monthly relative humidity is recorded in July (51.2%) and maximum relative humidity is recorded in December (74.9%). The monthly average and minimum relative humidity values are given graphically in Figure 4.15 and in tabular format in Table 4-7.

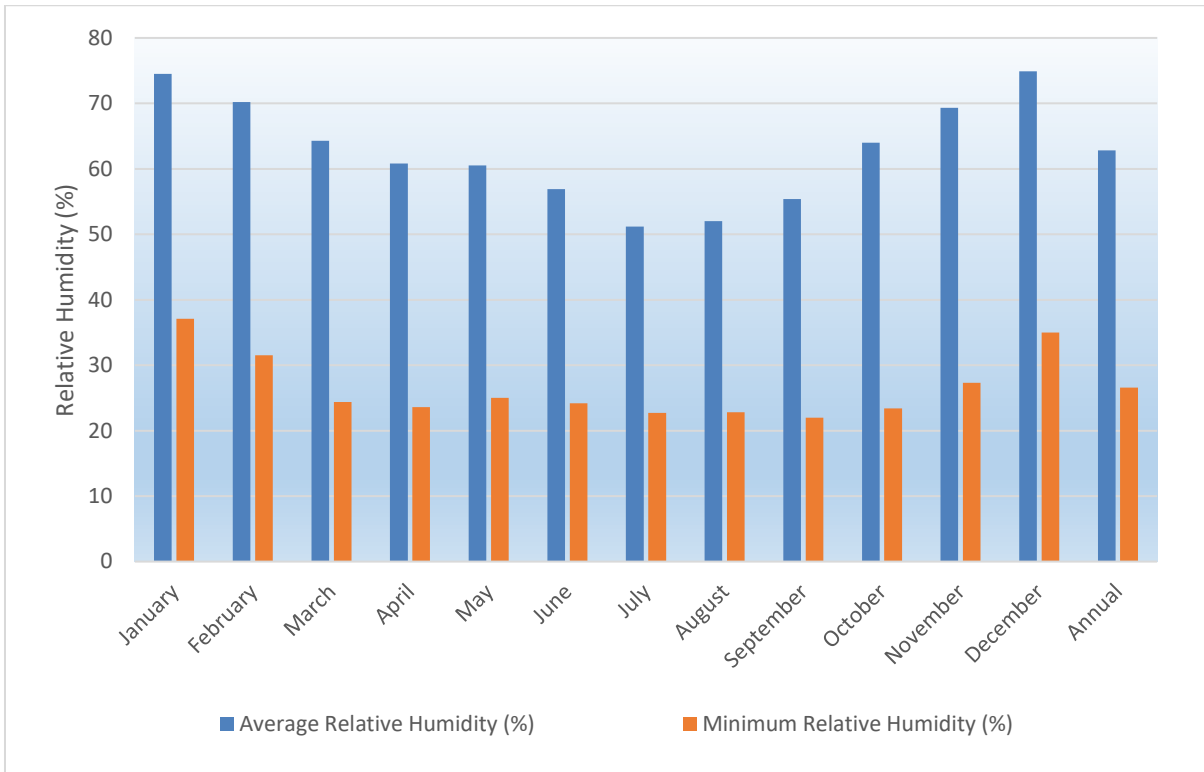


Figure 4.15 Average and Minimum Relative Humidity Values

Table 4-7 Average, Maximum and Minimum Relative Humidity Values

Months	Average Relative Humidity (%)	Maximum Relative Humidity (%)	Minimum Relative Humidity (%)
January	74.5	94.2	37.1
February	70.2	94.1	31.5
March	64.3	93.9	24.4
April	60.8	93.2	23.6
May	60.5	92.9	25.0
June	56.9	91.1	24.2
July	51.2	87.9	22.7
August	52.0	89.3	22.8
September	55.4	91.8	22.0
October	64.0	94.5	23.4
November	69.3	94.4	27.3
December	74.9	94.5	35.0

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4.1.6.4 Wind Speed and Direction

The annual and seasonal distribution of wind blow numbers and wind speeds recorded in Ilgin by TSMS are graphically represented in Figure 4.16, Figure 4.17 and Figure 4.18. According to annual wind blow numbers, 1st dominant wind direction is NW (northwest). 2nd dominant wind direction is SW (southwest). 3rd dominant wind direction is N (north) and 4th dominant wind direction is S (south).

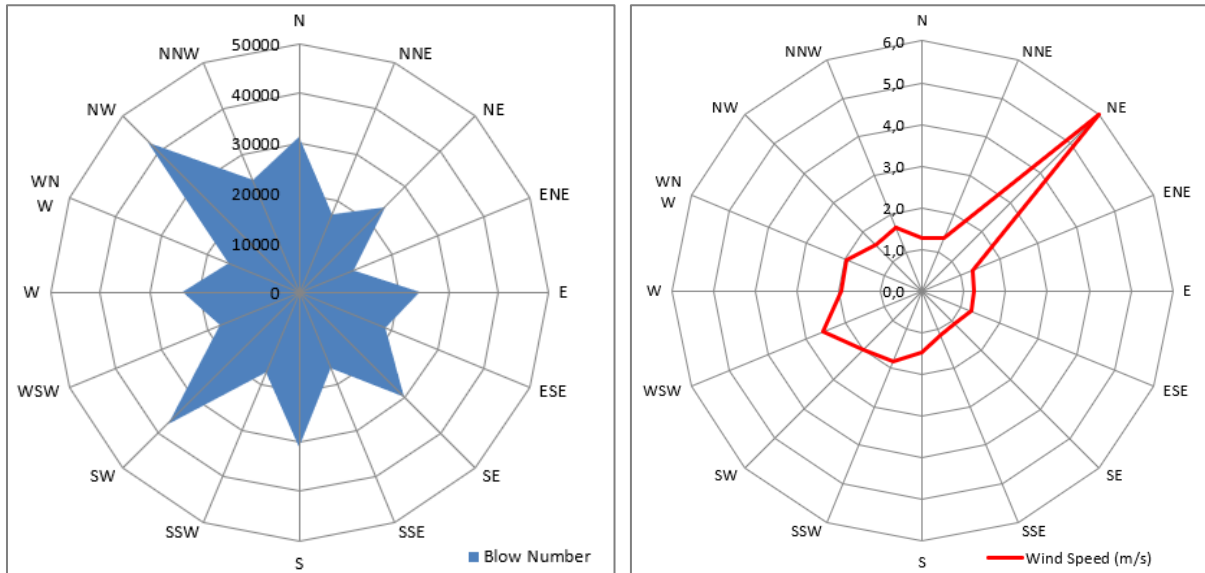
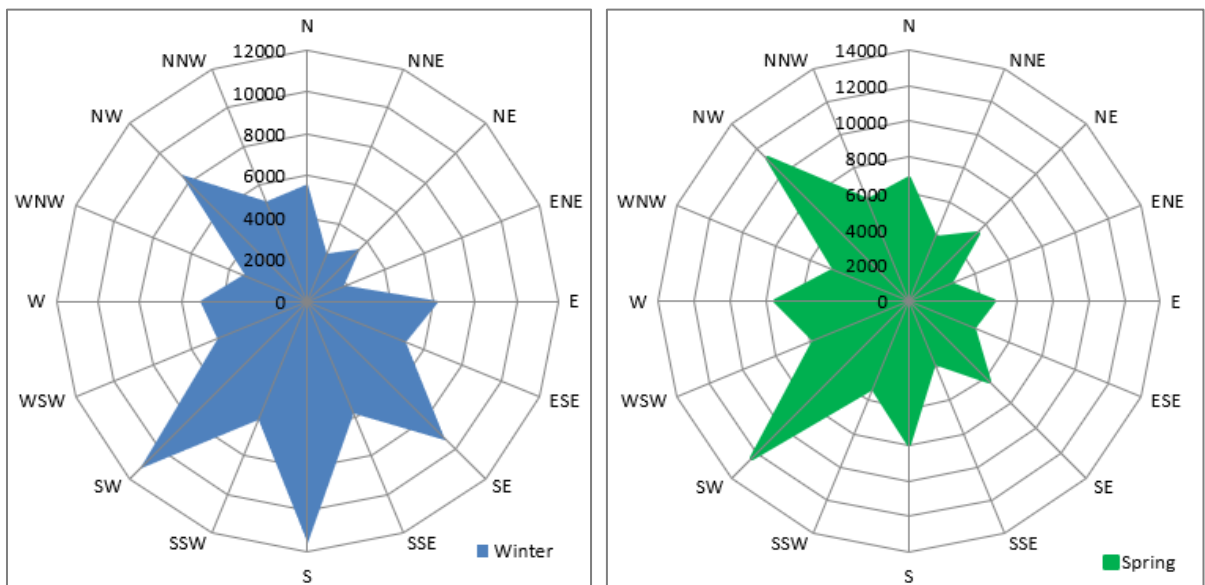


Figure 4.16 Annual Wind Diagram of Wind Blow Numbers and Average Wind Speed



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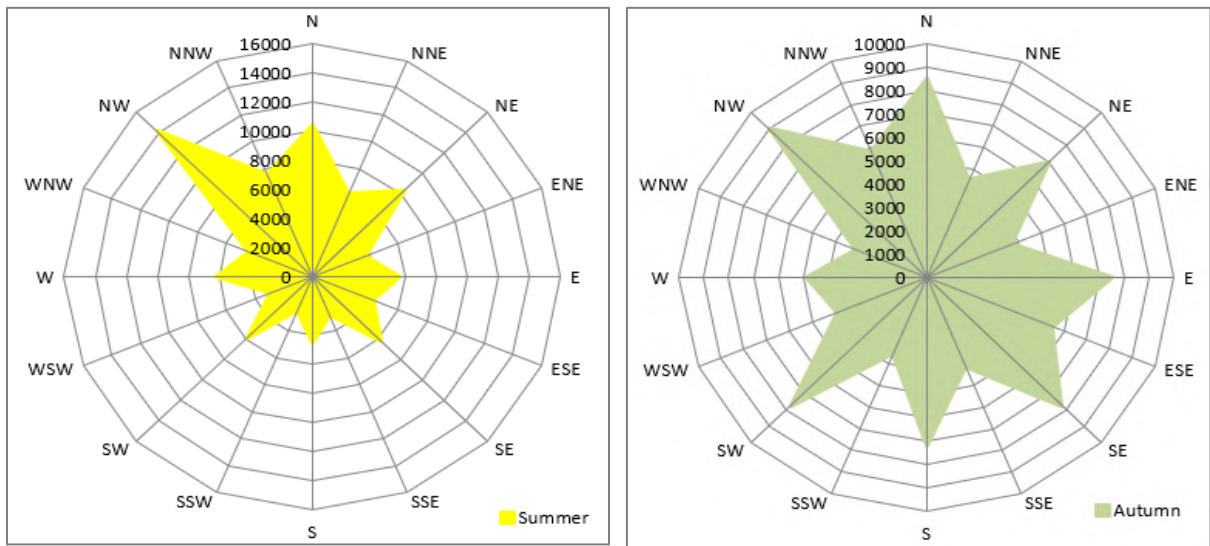


Figure 4.17 Seasonal Wind Diagram of Wind Blow

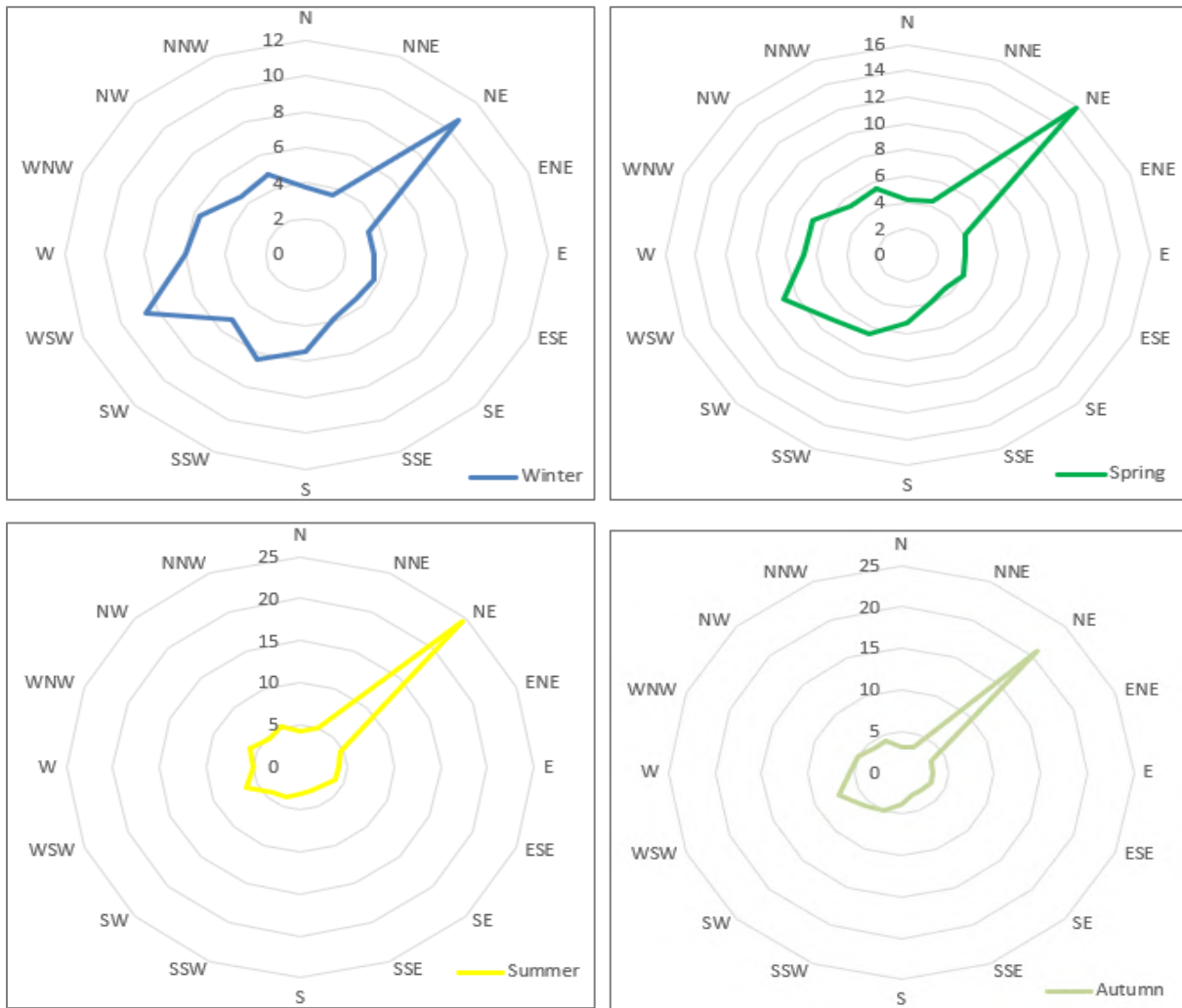


Figure 4.18 Seasonal Wind Diagram of Wind Speeds (m/sec)

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According to TSMS records, annual average wind speed is 1.6 m/sec. Monthly average wind speeds are presented for each month in Table 4-8.

Table 4-8 Monthly Average Wind Speeds

Months	Average Wind Speed (m/sec)
January	1.7
February	2.0
March	2.1
April	2.0
May	1.5
June	1.5
July	1.4
August	1.3
September	1.2
October	1.2
November	1.5
December	1.7

According to TSMS records, the direction of the highest wind speed is S (south) with 45.0 m/sec. According to TSMS records, number of annual average stormy days is 8.30 and number of annual average strong windy days is 54.25. Maximum wind speeds and directions and average stormy and strong windy day numbers are provided in Table 4-9.

Table 4-9 Maximum Wind Speeds and Directions, Average Numbers of Stormy and Windy Days

Months	Direction of Maximum Wind	Maximum Wind Speed (m/sec)	Average Number of Stormy Days	Average Number of Strong Windy Days
January	WSW	26.2	1.00	4.45
February	ESE	44.4	1.52	4.81
March	S	45	1.42	7.19
April	WSW	23	1.26	7.65
May	WSW	21.5	0.35	5.45
June	WSW	22.3	0.42	4.84
July	WNW	18.9	0.23	3.06
August	WNW	24	0.13	2.84
September	SSW	19.6	0.13	2.61
October	N	30.1	0.26	3.13
November	WSW	23	0.71	3.87
December	WSW	27.6	0.87	4.35

4.1.6.5 Pressure

Annual mean local pressure measured in Ilgin by TSMS is 898.0 hPa. During the whole observation period, minimum pressure is recorded as 874.0 hPa in January. Monthly average, maximum and minimum pressure values recorded in Ilgin District are provided in Figure 4.19 and Table 4-10.

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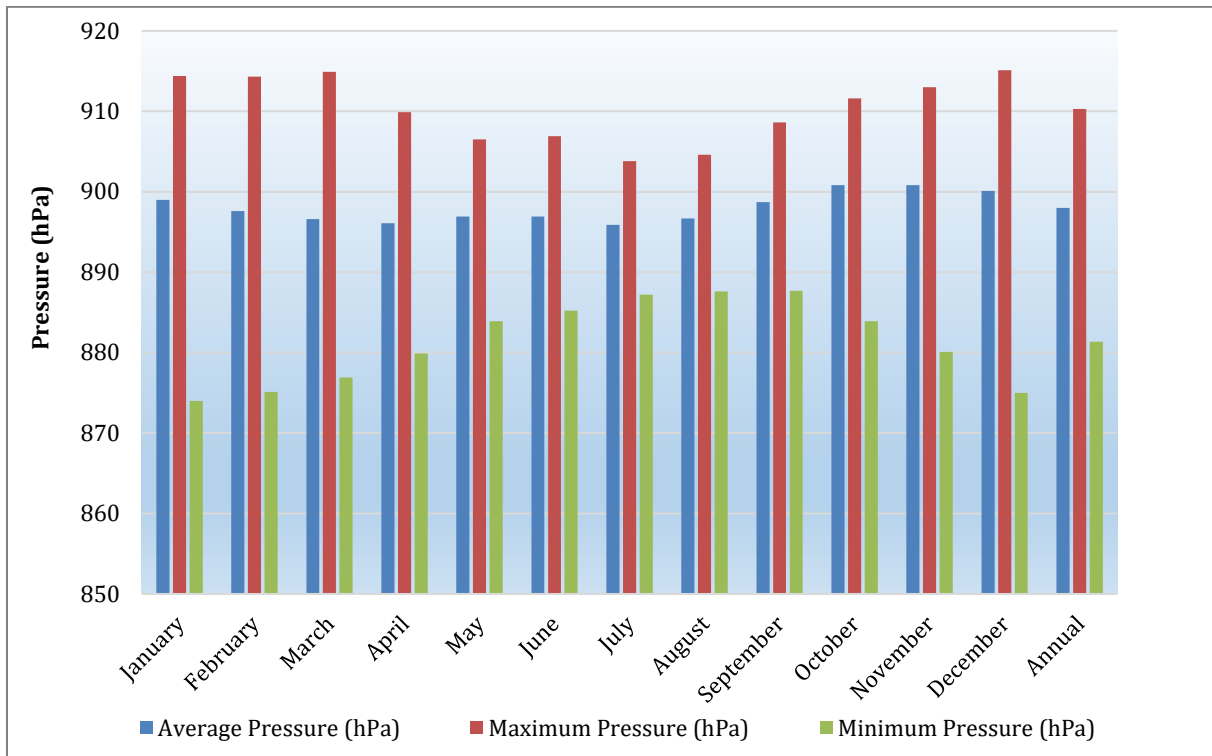


Figure 4.19 Monthly Average, Maximum and Minimum Pressure Values

Table 4-10 Monthly Average, Maximum and Minimum Pressure Values

Months	Average Pressure (hPa)	Maximum Pressure (hPa)	Minimum Pressure (hPa)
January	899.0	914.4	874.0
February	897.6	914.3	875.1
March	896.6	914.9	876.9
April	896.1	909.9	879.9
May	896.9	906.5	883.9
June	896.9	906.9	885.2
July	895.9	903.8	887.2
August	896.7	904.6	887.6
September	898.7	908.6	887.7
October	900.8	911.6	883.9
November	900.8	913.0	880.1
December	900.1	915.1	875.0

4.1.6.6 Foggy, Snowy, Hail, Frosty and Stormy Days

According to TSMS records, the number of annual average snowy days is 15 and annual average number of days with snow blanket is 26.8. The snow cover depth is recorded as 7.4 cm annually. Monthly distribution of average foggy, snowy, snow covered, hail, frosty and stormy days are given in Table 4-11.

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Table 4-11 Monthly Average Foggy, Snowy, Hail, Frosty and Stormy Days

Months	Number of Snowy Days	Number of Snow Covered Days	Average Number of Foggy Days	Average Number of Hail Days	Average Number of Frosty Days	Average Number of Stormy Days
January	4.06	9.43	3.53	0.02	0.02	-
February	3.84	6.82	1.29	0.04	0.04	0.02
March	2.55	3.33	0.37	0.24	0.24	-
April	0.47	0.41	0.04	0.51	0.51	-
May	0.06	0.02	-	0.67	0.67	0.04
June	-	-	-	0.37	0.37	0.22
July	-	-	-	0.06	0.06	0.16
August	-	-	-	0.04	0.04	0.27
September	-	-	-	0.06	0.06	0.04
October	0.08	-	0.24	0.08	0.08	-
November	1.06	1.14	1.63	0.02	0.02	-
December	2.88	5.63	3.76	0.02	0.02	-

4.1.7 Baseline Measurements and Analysis

4.1.7.1 Soil Quality

No visual indications of contamination or potential contamination sources were observed at the Project area during the site visit conducted on July 23th and 24th, 2020. KOSKİ noted that for cleaning purposes, a professional scraping work was performed in ponds up to the impervious material lied in ponds in 2015 where the scraped dry sludge was transported to Konya Centrum WWTP to be given for agricultural purposes. There is 5-6 cm soil on impervious layer in pond. In the light of this observation and information, in order to describe the baseline soil quality, a soil sample was collected from the topsoil layer (upper 30 cm) of the Project area on September 3th, 2020 to be used as reference sample. The soil sampling information (ID, coordinates, sampling date and time) is given in Table 4-12.

Table 4-12 Soil Sampling Location and Timing

Sampling ID	Coordinates (UTM ED50)			Date	Time
	Zone	Easting	Northing		
Ilgin_SS	36 S	408646	4236915	September 3 th , 2020	15:00

The assessment of soil in Türkiye is based on the “Regulation on Soil Pollution Control and Point Source Contaminated Sites” (“the Soil Regulation”) 08.06.2010 dated and 27605 numbered.

The activities within the Project area would be covered by Annex-2, Table 2 of the Soil Regulation. Referring to regulation Activity Specific Contamination Indicator Parameters are identified and presented in Table 4-13 below.

Table 4-13 Activity Specific Contamination Indicator Parameters

NACE Code	Activity	Activity Specific Contamination Indicator Parameters
4120	Construction of residential and non-residential buildings	TOX, TPH, As, Cd, Cr, Cu, Hg, Ni, Pb, Zn

MUNICIPAL SERVICES IMPROVEMENT PROJECT

The list of analytical parameters that need to be analyzed in the samples, per the regulation, are referred to as “the activity specific contamination indicator parameters”. Activity specific contamination indicator parameters for the Project area, listed in the table above are: Total Organic Halogens (TOX), Total Petroleum Hydrocarbons (TPH), Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Mercury (Hg), Nickel (Ni), Lead (Pb) and Zinc (Zn).

The map showing the soil sampling location is given in Figure 4.20 below.

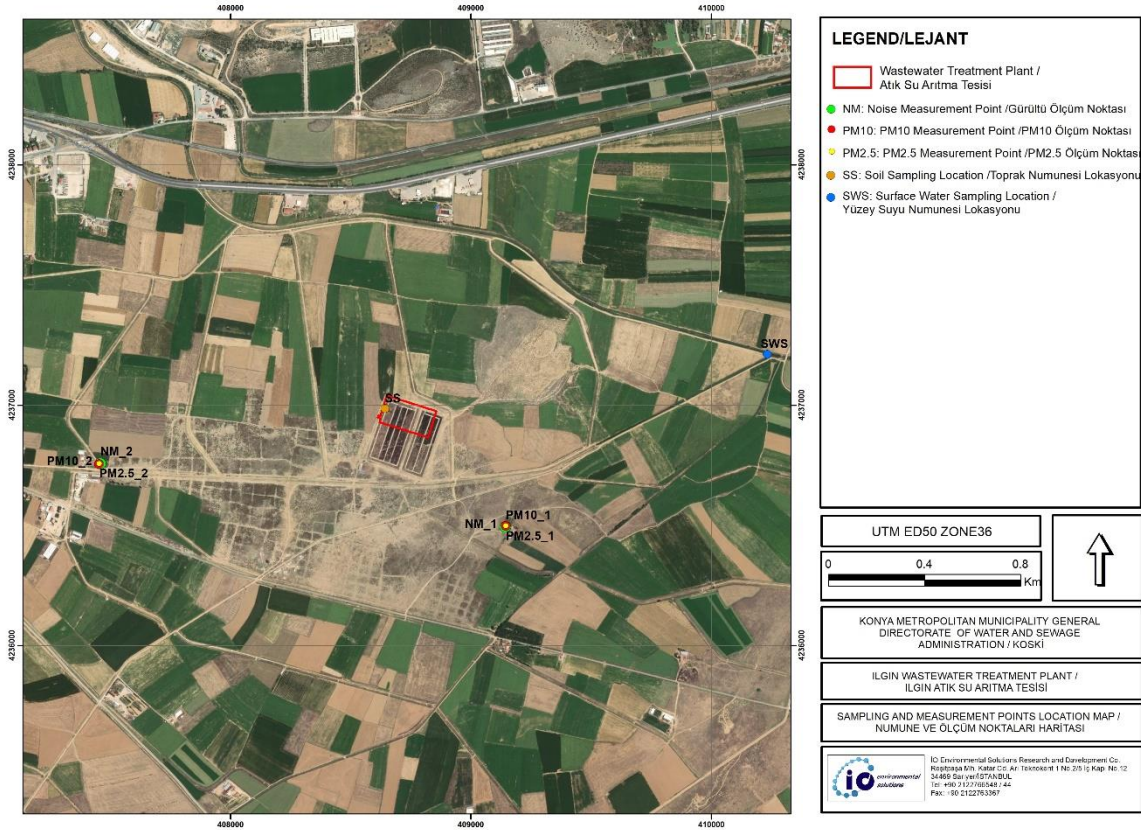


Figure 4.20 Sampling and Measurement Points Location Map

As the sample was collected from the topsoil, in accordance with the Soil Regulation, the results are compared with the generic pollutant limit values¹² listed in Annex-1: List of Generic Pollutant Limit Values, column “Ingestion of soil or dermal contact” and “Outdoor inhalation of fugitive dust”.

The comparison of the soil chemical analysis results to the Turkish Regulatory Limits is given in Table 4-14 below.

Table 4-14 Comparison of the Soil Chemical Analysis Results with the Generic Pollutant Limit Values given in Soil Regulation

Parameter	Unit	Ingestion of soil or dermal contact (mg/kg oven dry soil)	Outdoor inhalation of fugitive dust (mg/kg oven dry soil)	İlgin_SS Analysis Results
Total Organic Halogens (TOX)	mg/kg	-	-	62

¹² The Generic Pollutant Limit Values have the following description in the Soil Regulation: “Generic Pollutant Limit Value (GPLV): Refers to the Limit Value for a Pollutant, given in Annex-1: List of Generic Pollutant Limit Values, calculated or determined by considering that intended use of the polluted area is or will be residential area and that it will pose risks on human health, and by assuming that humans are exposed to the pollutant at maximum level for a reasonable period.”

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Parameter	Unit	Ingestion of soil or dermal contact (mg/kg oven dry soil)	Outdoor inhalation of fugitive dust (mg/kg oven dry soil)	Ilgin_SS Analysis Results
Total Petroleum Hydrocarbons (TPH)	mg/kg	-	-	298
Arsenic (As)	mg/kg	0.4	471	<4.8
Cadmium (Cd)	mg/kg	70	1,124	<0.0020
Chromium (Cr)	mg/kg	235	24	22.2
Copper (Cu)	mg/kg	3,129	-	30.3
Mercury (Hg)	mg/kg	23	-	<7.9
Nickel (Ni)	mg/kg	1,564	-	21.7
Lead (Pb)	mg/kg	400	-	17.5
Zinc (Zn)	mg/kg	23,464	-	112.0

As is seen from Table 4-14, none of the analysis results for the selected parameters are above generic pollutant limit values.

The results of the analyses performed on the soil sample will be taken as reference levels and monitoring of soil quality during construction will be performed for listed parameters, then will be evaluated against given analysis results which were taken to reflect baseline data.

For the operation phase, the parameters for NACE Code 3700 for sewage will be taken as contamination indicator and the construction contractor will perform its last sampling right before the operation phase for the parameters for NACE Code 3700 in order to provide a baseline for relevant contamination indicators.

The Soil Quality Measurement Report (in Turkish) is presented in Annex 7.

Soil and/or groundwater remediation activities will be conducted in accordance with the legislation (Regulation on the Control of Soil Pollution and Sites Contaminated by Point Sources) and best available techniques due to previous on-site operation of stabilization pond activities from 1980-2005 and also in tributary of Bulasan creek which has been receiving untreated wastewater since 2017 (Figure 4.27).

In scope of the remediation works, a more detailed soil assessment will be done in order to understand the potential contamination at the site and determine the remediation techniques. Details of the remediation activities will be provided in Soil Management Plan to be prepared by the construction contractor.

4.1.7.2 Surface Water Quality

In order to describe the baseline surface water quality, one surface water sample was collected from the tributary of the Bulasan Creek on September 3th, 2020. As mentioned in above sections, this dry tributary has been used as receiving environment for untreated wastewater of Ilgin conveyed by existing collector line. Thus, it should be noted that the sampled surface water is the untreated domestic wastewater of Ilgin. The Bulasan Creek was dry at the time of assessment. Further, the wastewater in tributary could not flow to the junction due to ponding, infiltration and illegal irrigational use.

The map showing the Project area and the surface water sampling location is given in Figure 4.20. The sample information (ID, coordinates, sampling date and time) is given in Table 4-15 below.

Table 4-15 Surface Water Sampling Location and Timing

Sampling ID	Coordinates (UTM ED50)			Date	Time
	Zone	Easting	Northing		
Ilgin_SWS	36 S	410238	4237141	September 3 th , 2020	16:00

MUNICIPAL SERVICES IMPROVEMENT PROJECT

The assessment of surface water in Türkiye is based on the “Regulation on Surface Water Quality” 30.11.2012 dated and 28483 numbered. Table 2 in the Appendix-5 of the Regulation on Surface Water Quality gives the limit concentration values for the water quality classes.

The summary of the definitions of the classes are given below.

- **Class I – High Quality Water:**

Surface water with high potential for drinking water use;
Suitable for recreational purposes (dermal contact, including swimming);
Suitable for trout farming;
Suitable for animal husbandry and farming.

- **Class II – Slightly Contaminated Water:**

- Surface water with a potential for drinking water use;
- Suitable for recreational purposes;
- Suitable for fish farming except for trout farming;
- Suitable for irrigation, provided the irrigation water quality criteria are met.

- **Class III – Contaminated Water:**

- Can be used for industrial water supply with proper treatment except for industries such as food, textile etc. that require high-quality water.

- **Class IV – Heavily Contaminated Water:**

- Lower quality water where the quality parameters do not meet the Class III criteria and can be used only upon treatment to achieve higher quality classification criteria.

The results of the analysis were compared with the values stated in the Regulation on Surface Water Quality and are given in Table 4-16 below.

Table 4-16 Surface Water Quality

Water Quality Parameters	Water Quality Classes				İlgin_SWS
	I	II	III	IV	
Color (m ⁻¹)	RES 436 nm: ≤ 1.5	RES 436 nm: 3	RES 436 nm: 4,3	RES 436 nm: > 4,3	RES 436 nm: ≤ 3.1
	RES 525 nm: ≤ 1.2	RES 525 nm: 2.4	RES 525 nm: 3,7	RES 525 nm: > 3,7	RES 525 nm: ≤ 2.0
	RES 620 nm: ≤ 0.8	RES 620 nm: 1.7	RES 620 nm: 2,5	RES 620 nm: > 2,5	RES 620 nm: ≤ 1.3
pH	6-9	6-9	6-9	6-9	7.11
Electrical Conductivity (µS/cm)	< 400	1000	3000	> 3000	1,542
Oil and grease (mg/L)	< 0,2	0,3	0,5	> 0,5	<10
Dissolved Oxygen (mg O ₂ /L)	> 8	6	3	< 3	4.92
Chemical Oxygen Demand (COD) (mg/L)	< 25	50	70	> 70	100
Biochemical Oxygen Demand (BOD) (mg/L)	< 4	8	20	> 20	34
Ammonia as N (mg NH ₄ ⁺ -N/L)	< 0.2	1	2	> 2	16.2
Nitrate as N(mg NO ₃ ⁻ -N/L)	< 3	10	20	> 20	0.103
Total Kjeldahl Nitrogen as N (mg N/L)	< 0.5	1.5	5	> 5	17

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Water Quality Parameters	Water Quality Classes				İlgın_SWS
	I	II	III	IV	
Total Nitrogen (mg N/L)	< 3.5	11.5	25	> 25	31.4
Orthophosphate as P(mg o-PO ₄ -P/L)	< 0.05	0.16	0.65	> 0.65	0.15
Total Phosphorus (mg P/L)	< 0.08	0.2	0,8	> 0.8	2.3
Fluoride (µg/L)	≤ 1000	1500	2000	> 2000	480
Manganese (µg/L)	≤ 100	500	3000	> 3000	50
Selenium (µg/L)	≤ 10	15	20	> 20	<10
Sulphur (µg/L)	≤ 2	5	10	> 10	5,400
Total Suspended Solid (mg/L)	-	-	-	-	39

The concentrations of most of the parameters analyzed in the sample collected from the tributary of the Bulasan Creek are above the Class IV Surface water limits and others are around the concentration specified for Class II and Class III Surface waters. Therefore, the water is classified as “contaminated” for many parameters.

The surface water quality baseline for the drying channel would be expected to change depending on the season for some parameters due to precipitation or melting of snow. The Water Resources and Effluent Management Plan will be prepared prior to the construction works by the contractor and the surface waters will be monitored accordingly and also in compliance to the ESMP of this ESIA.

The Surface Water Quality Measurement Report (in Turkish) is presented in Annex 7.

4.1.7.3 Background Noise Levels

Noise measurements were carried out to determine the background noise levels around the Project area. The background noise measurements were conducted at two receptor points where are village houses with barns and farm machinery on September 2th-3th, 2020 with a duration of 24-hour. These points are selected based on their potential sensitivity to noise impacts generated during construction and operation phases.

The map showing the Project area and the noise measurement points is given in Figure 4.20. The information about noise measurement points (ID, coordinates, sampling date and time) is given in Table 4-17 below.

Table 4-17 Noise Measurement Points Location and Timing

Measurement Point ID	Coordinates (UTM ED50)			Date	Time
	Zone	Easting	Northing		
İlgın_NM_1	36 S	409149	4236425	September 2 nd -3 th , 2020	24-hour
İlgın_NM_2		407455	4236683	September 2 nd -3 th , 2020	24-hour

The results of the noise measurements are presented in Table 4-18.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 4-18 Background Noise Levels Measured

Measurement Points	Measurement Results (dBA)				
	Daytime ¹ (07:00-19:00)	Evening ¹ (19:00-23:00)	Nighttime ¹ (23:00-07:00)	Daytime ² (07:00-22:00)	Nighttime ² (22:00-07:00)
Ilgin_NM_1	58.1	44.8	44.6	58.2	44.8
Ilgin_NM_2	45.7	45.9	45.7	46.7	46.2
National Limit Value ³	60	55	50	-	-
Noise Level Guidelines of WBG ³	-	-	-	55	45

¹ Time durations for daytime, evening and nighttime are described in Turkish Regulation on Assessment and Management of Environmental Noise (RAMEN), Annex VII Table 4

² Time durations for daytime and night time are described in WBG's General EHS Guidelines - Environmental Noise Management.

³ See Section 5.3.5 for details.

The Project area itself is classified as “noise sensitive areas where education, culture and health facilities and recreation areas are densely located” regarding RAMEN which classification differs the national limit value. As it is seen in from the table above, day time noise levels are 58.1 and 45.7 and lower than 60 dBA- national daytime limit value. Evening measurements are 44.8 and 45.9 dBA while nighttime measurements are 44.6 and 45.7 dBA and these results are below the national limits of 55 dBA and 50 dBA, respectively.

The receptors around the Project area where the measurements were performed is classified as “residential” according to WBG’s General EHS Guidelines and the classification defines the limit values. The baseline measurements indicated that day time noise levels are 58.2 and 46.7 dBA and measured noise level at point Ilgin_NM_1 is above 55 dBA- WBG’s day time limit value. Night time measurements show lower noise levels than day time measurements as 44.8 and 46.2 dBA and measured noise level at point Ilgin_NM_2 is slightly above 45 dBA- WBG’s night time limit value.

As both receptor points are village houses with barns and farm machinery, due to the daily activities performed relating with agriculture or personal needs, the noise levels were measured relatively high.

The Background Noise Level Measurement Report (in Turkish) is presented in Annex 7.

4.1.7.4 Ambient Air Quality

The existing ambient air quality has been evaluated around the Project area for PM10 and PM2.5. The ambient air quality measurements for subject two parameters were conducted at two receptor points on September 2nd-3th, 2020 with a duration of 24-hour. These points are selected based on their potential sensitivity to air quality impacts generated during construction and operation phases.

The map showing the Project area and the measurement points is given in Figure 4.20. The information about measurement points (ID, coordinates, sampling date and time) is given in Table 4-19 below.

Table 4-19 Measurement Points Location and Timing

Measurement Point ID	Zone	Coordinates		Date	Time
		Latitude	Longitude		
Ilgin_PM10_1	36 S	409149	4236427	September 2 nd -3 th , 2020	24-hour
Ilgin_PM10_2		407456	4236685	September 2 nd -3 th , 2020	24-hour
Ilgin_PM2.5_1		409149	4236427	September 2 nd -3 th , 2020	24-hour
Ilgin_PM2.5_2		407456	4236685	September 2 nd -3 th , 2020	24-hour

Measurement results with respect to the relevant Turkish and International standards limits for ambient air quality are summarized in Table 4-20 below.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 4-20 PM10 and PM2.5 Measurement Results

Measurement Points	Measurement Results ($\mu\text{g}/\text{m}^3$)	National Limit Value- 24-hour* ($\mu\text{g}/\text{m}^3$)	WBG's Guideline Value- 24-hour** ($\mu\text{g}/\text{m}^3$)
Ilgin_PM10_1	23	50	50
Ilgin_PM10_2	23		
Ilgin_PM2.5_1	25	-	25
Ilgin_PM2.5_2	28		

* Industrial Air Pollution Control Regulation (IAPCR), Annex 2

** WBG's General EHS Guidelines – Air Emissions and Ambient Air Quality

As seen from the Table 4-20, measured PM10 values are lower than both the national limit value and the WBG's Guideline Value. The measured PM2.5 value at Ilgin_PM2.5_1 is identical with WBG's guideline value whereas measured PM2.5 value at Ilgin_PM2.5_2 exceeds the WBG's guideline value. Given that primary PM2.5 results from direct emissions of carbonaceous particles (elemental carbon, organic carbon) from combustion processes, but also from re-suspension of road dust, tire and brake wear, and agricultural sources¹³, the relatively high concentration at Ilgin_PM2.5_2 is evaluated as a result of diesel exhaust emissions and re-suspension of road dust with the effect of dominant wind during summer time since the roads at south and its side roads have been highly used by diesel engine agricultural vehicles and private cars.

The Ambient Air Quality Measurement Report (in Turkish) is presented in Annex 7.

4.2. Ecology and Biodiversity

Within the scope of ecosystem evaluation studies of the proposed WWTP project, it is aimed to prepare the ecosystem baseline and impact assessment related especially with terrestrial flora and fauna. The rapid ecological assessment has been conducted in accordance with World Bank's Environmental and Social Standard 6, which has been guided by the Convention on Biological Diversity.

Before the field survey, relevant available data and information as well as literature have been studied.

The specific objectives of this assessment are to:

- Assess baseline conditions regarding biodiversity in the study area,
- Research the relationships between protected areas, KBAs etc. and the Project site,
- Evaluate the potential positive and negative impacts of Project with regards to biodiversity throughout the construction and operation phases of the Project,
- Propose measures to be implemented throughout the construction and operation phases of the Project,
- Advise management and monitoring schemes of the proposed mitigation measures to enhance positive impacts and reduce or avoid negative impacts.

The receiving environment is a dry tributary of Bulasan creek having terrestrial features. The project has a positive impact on receiving environment due to the avoidance of untreated wastewater discharge to this dry tributary which is the existing situation.

There will be no construction in the dry creek that could adversely impact terrestrial flora and fauna in the creek. In 2017 with the completion of the construction of collector line, the untreated wastewater discharge to this dry creek was begun. Currently, the creek is carrying wastewater and as the farmers use this wastewater for irrigation, there is no continuous flow. Rather the ponding of wastewater is seen. Since there is no aquatic habitat in the dry creek, aquatic environment has been scoped out within the ecological studies.

¹³ Karagulian F. Et Al., Technical Report by the Joint Research Centre: Attribution of anthropogenic PM2.5 to emission sources, 2017.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

4.2.1 Assessment Methodologies and Data Sources

During the field trips, the EUNIS and Habitat Directive's Codes are considered when the habitat types and ecosystem components were assessed.

Before the field survey, relevant available data and information have been studied. In this regard, the focus of the field visits was to fill in data gaps and to have first-hand observations on site for assessment. It was measured any critical data gaps which need to be filled before any useful assessment can be made. Also, it was identified any data gaps which are not essential to fill but need to be taken into account when considering the reliability of the assessment.

The field survey has been carried out in July 2020. During the field survey, the rapid habitat assessment methods were taken into account. With regard to the Project site surface area, adjacent lands and discharge point, the walk-through surveys were preferred. On the other hand, buffer zone with 250 m width of the Project site were taken into account.

The methodology includes the working topics below;

Habitat and Vegetation Descriptions

Following the EUNIS and Habitat Directive's Codes, the habitat types were assessed. Also notes about the general vegetation structures of the project's related points were taken. Priority/representative areas during the survey were identified. Priority areas were selected based on type of vegetation/habitats/ecological communities. Any habitat/vegetation/community of particularly high conservation interest were definitely included, also tried to include representatives of all significant habitat types found in the assessment area. The natural and critical natural habitats given in WB's ESS6 were identified.

Whether there are any critical natural habitat areas in the project's "area of influence" were identified and if so, whether that project is needed to be eliminated from financing, or whether it is possible to design the project in a way that will ensure they are not negatively impacted and whether there will be any significant areas of largely intact natural habitat and if so, whether they would likely be significantly degraded by establishment of a waste water treatment. Both of the above would be involved identifying and assessing: presence (likely or known) of species of conservation priority, intactness of natural flora/fauna, types of habitats/communities present and their conservation significance (rare or widespread), quality (intactness) of the habitats – particularly any which are rare.

The quality and conservation value/priority of the area were assessed based on data available. Conservation value would be depended on the importance of the habitats/communities present (e.g., unique or rare types or particularly endangered habitats), and on the quality/ecological status of those habitats. The former would may be based on a national conservation strategy, regional or international priority lists and/or expert opinion. The results assessed through comparison with known good quality/healthy habitats of the same type, e.g., within well protected areas. This would serve as a baseline for comparison purposes to determine whether the habitat in the Project area is healthy or degraded.

As recommended in the Feasibility Study (Rodwell et al. 2013), the EUNIS habitat classification (Davies et al. 2004, EUNIS 2007) was used as a basis for the Habitat typology, the level 3 divisions pitched between the fine scale offered by the alliances of phytosociology and a broad classification of ecosystems. Mosaic habitat types (EUNIS group X) and highly anthropogenic habitats were omitted, except those thought to be threatened or of interest for their biodiversity. Salt marshes (grouped in EUNIS under marine habitats) were included with other coastal habitats. The existing EUNIS habitats were reviewed and revised, and definitions adapted where EUNIS types were ambiguous, overlapping or of a scale that was considered too broad for Red List assessment across Europe. Many of the proposed Red List habitats were also renamed. The resulting list consists of 233 terrestrial and freshwater habitat types. The resultant habitats for Red List evaluation were defined especially for this assessment task and were not intended as an official revision of EUNIS level 3.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

However, proposals were aligned with the emerging revision of by the European Environment Agency (Schaminée et al. 2012–2016). The final EUNIS typology aims to include all Europe, but some habitat types were not included in the Red List assessment, as these occur only in Ukraine, Belarus, Moldova, Russia, the Caucasus and/or European Türkiye, outside the scope of the Red List project. The description of each habitat provides the definition, which is accompanied by relationships to other classifications, like the Habitats Directive Annex I type and the EuroVeg Checklist alliances (Mucina et al. 2016, in print).

The Categories and Criteria applied in the European Red List of Habitat Types assessment are largely based on a protocol proposed in a feasibility study (Rodwell et al. 2013), combined with elements of the IUCN Red List of Ecosystems approach (Keith et al. 2013, IUCN 2019). The basis for this European Red List of habitats is a set of eight categories and five criteria that provide a method for assessing the risk of habitat collapse, a measure of degree of endangerment. The Red List Categories are: Collapsed (CO), Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concern (LC), Data Deficient (DD), and Not Evaluated (NE). The first six categories are ordered in decreasing risks of collapse, while categories DD and NE indicate that a level of risk cannot be or has not been identified. Habitats listed in any of the CR, EN or VU categories are referred to as 'threatened' (IUCN 2019). These categories are analogous to those of the IUCN Red List of Threatened Species (IUCN 2001) and current details of the categories are given in IUCN (2019).

Major Ecological and Environmental Features

The presence/condition of important ecological (and/or evolutionary) processes or land uses and directly/indirectly ecosystem services (e.g., used by migratory or aggregating species, water regulation, erosion control, forest fire barriers, grazing, agricultural uses etc.) were assessed. Also, the priority ecological features/parameters in the Project area would be identified.

Important Species

During the ecological field assessment; the common and important flora and fauna elements were watched. The more attention was given to the rare, vulnerable, endangered, critically endangered or similarly threatened flora and fauna elements, as indicated in the IUCN Red List of Threatened Animals, BirdLife World List of Threatened Birds, IUCN Red List of Threatened Plants, or other credible international or national lists accepted by the RESUs. But on the other hand, the other species' importance situations (nesting-feeding-breeding sites, migratory or aggregating areas) were assessed at the Project area and its influential environments.

Transects, random plots, bird sittings/hearings for the data collection methodology for assessment techniques would depend on the habitat types and parameters of the Project area were assessed.

Threats

Any sources of ongoing degradation or short/medium term threat (e.g., human use/encroachment, conflict with other sectors, forest fires risky areas, industrial investments, human settlements, wrong plantations, pollutions, invasive species, erosion and natural disaster risks etc.) were assessed. The presence of significant, possibly unavoidable threats might reduce the ability to avoid negative impacts from the Project.

4.2.1.1 International Agreements

The national and international legislation, standards and guidelines are considered in the course of the implementation of the biodiversity studies at the Project site and assessment of the results of terrestrial flora and fauna research studies.

Türkiye is party to several conventions related with biodiversity:

- The UN Convention on Biological Diversity (1997) and Cartagena Protocol on Bio-safety (2004);
- The Convention on Wetlands of International Importance especially as Waterfowl Habitat (RAMSAR) (1994);

MUNICIPAL SERVICES IMPROVEMENT PROJECT

- The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (1996);
- The Convention concerning the Protection of the World Cultural and Natural Heritage (1983);
- The Convention on the Conservation of European Wildlife and Natural Habitats (BERN) (1984);
- The European Landscape Convention (2001).

European Union (EU) Legislation

The Biodiversity Strategy prepared for 2020 was adopted to conserve and develop the status of biodiversity in Europe for the upcoming 10 years. Strategy sets out 6 targets that discuss biodiversity loss from various aspects:

- Target 1: Protect and restore nature
- Target 2: Maintain and develop ecosystems and their services
- Target 3: Achieve more sustainable agriculture and forestry
- Target 4: Achieve more sustainable use of water products
- Target 5: Combat invasive alien species
- Target 6: Help stop the loss of global biodiversity

Although not a member state, a program that includes horizontal legislation, water and air quality, waste management, nature protection, control of industrial pollution and risk management, chemicals and genetically modified organisms, noise and forestry and composes of more than 200 laws is currently in force in Türkiye to harmonize with the *acquis* of EU. Several regulations became effective; however, Türkiye's road for biodiversity and nature protection issues is rather long.

The Action 7 in Target 2 of EU Biodiversity Strategy for 2020 adopts the principle "no net loss of biodiversity and ecosystem services". Accordingly, two sub-actions were defined. According to Action 7a, "In collaboration with the member states, the Commission will develop a methodology for assessing the impact of EU funded projects, plans and programs on biodiversity by 2014" (European Commission, 2014b).

Bird Directive (2009/147/EC)

Bird Directive numbered 2009/147/EC is the directive of European Parliament and Commission for the protection of wild birds that was put into force in November 30, 2009 (as amendment of Directive 79/409/EEC). The Directive stipulates the protection of 194 detected bird species and sub-species that are threatened and require special protection measures. Distinct components are of concern for the application of the Directive (European Commission, 2014a):

- Designate "Special Protection Areas (SPAs)" for 194 threatened birds and all migratory birds given in Appendix-1 of Bird Directive.
- Ban all activities that directly threaten birds, such as their deliberate killing, capturing of birds, deliberate destruction of their nests, taking their eggs and trading them while alive or dead (except for several exceptions).
- Limit the number of birds that are listed in Appendix-III and allowed to be hunted (82 species and sub-species) and hunting period.

Habitat Directive (92/43/EEC)

Habitat Directive 92/43/EEC was put into force in 1992 with the main aim to promote the maintenance of biodiversity, taking account of the economic, social, cultural and regional requirements. Directive contributes to the general objective of sustainable development; whereas rare, threatened and endemic approximately 450 fauna and 500 flora species are aimed to be protected. 200 rare and special habitat types are included in the protection targets considering their features (European Commission, 2014a).

Appendix-I and Appendix-II of the Directive comprises the habitat types and species that require the designation of special protection areas. Some can be regarded as "priority" habitats or species (under extinction risk). Explanations on Habitat Directive appendices are:

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Appendix I: Natural habitat types included in Community Importance that requires the designation of special protection areas

Appendix II: Plant and animal species included in Community Importance that requires the designation of special protection areas

Appendix III: Selection criteria for the areas suitable to be designated as special protection areas regarding Community Importance

Appendix IV: Plant and animal species included in Community Importance that requires strict protection measures

Appendix V: Plant and animal species included in Community Importance that requires management measures for exploitation and taking in the wild

Bern Convention

The Convention was put into force in 1982 for the conservation of European wildlife and natural habitats. Flora and Fauna species protected by Bern Convention are listed in four categories:

Appendix I: Strictly protected flora species

Appendix II: Strictly protected fauna species

Appendix III: Protected fauna species

Appendix IV: Prohibited means and methods of killing, capture and other forms of exploitation

The aims of the Convention are "to conserve wild flora and fauna and their natural habitats, especially those species and habitats whose conservation requires the co-operation of several States, and to promote such co-operation. Particular emphasis is given to endangered and vulnerable species, including endangered and vulnerable migratory species."

Each contracting Party is obliged to take appropriate and necessary legislative and administrative measures to ensure the special protection of the wild fauna species specified in Appendices II and III.

Annex II: Strictly Protected Fauna Species

The Contracting Parties undertake to give special attention to the protection of areas that are of importance for the migratory species specified in Appendices II and III and which are appropriately situated in relation to migration routes, as wintering, staging, feeding, breeding or moulting areas.

The following activities are strictly prohibited:

Any kind of deliberate capturing- keeping and illegal methods of killing;
Deliberate damage and destruction of the breeding or sheltering areas;
Deliberately disturbing the wild fauna especially during their breeding, development and winter sleep seasons in a manner contrary to the intended purpose of this convention;
Collecting eggs from the wild or deliberately destructing such eggs or keeping such eggs even if they are empty;
Being in possession of or domestic trading of the fauna species either alive or dead.

Annex III: Protected Fauna Species

There is temporary or regional prohibition under appropriate conditions in order to ensure that the related wild fauna reach to the satisfactory population levels. There are closed hunting seasons and the other national principles according to the decisions of the Central Hunting Commission (CHC).

The related works and activities will not certainly lead to any negative impacts on the species specified in the fauna lists above and the other wildlife species such as hunting of such species, deliberate killing or keeping of such species, or damaging- destruction of their eggs, etc. protected duly by the Bern Convention.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

During the related works and activities, the decisions taken by the MoFWA, CHC for the season 2019-2020 and the decisions of the CHC to be declared in future years and the provisions of the Bern Convention shall be strictly followed.

Bern Convention's Chapter III – Protection of species

Article 7

Each Contracting Party shall take appropriate and necessary legislative and administrative measures to ensure the protection of the wild fauna species specified in Appendix III.

Any exploitation of wild fauna specified in Appendix III shall be regulated in order to keep the populations out of danger, taking into account the requirements of Article 2. (Article 2: The Contracting Parties shall take requisite measures to maintain the population of wild flora and fauna at, or adapt it to, a level which corresponds in particular to ecological, scientific and cultural requirements, while taking account of economic and recreational requirements and the needs of sub-species, varieties or forms at risk locally.)

Measures to be taken shall include:

closed seasons and/or other procedures regulating the exploitation;

the temporary or local prohibition of exploitation, as appropriate, in order to restore satisfactory population levels;

the regulation as appropriate of sale, keeping for sale, transport for sale or offering for sale of live and dead wild animals.

CITES

CITES is the Convention on International Trade in Endangered Species of Wild Fauna and Flora. CITES is an international agreement between 164 nations (including Türkiye) and its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival. CITES principles depend on the sustainable trade fundamental that is significant for protection of the ecologic resources (a vast array of wildlife products derived from a great quantity of live animals and plants, products additive to the food, exotic leather goods, etc.) in the future.

CITES works by subjecting international trade in specimens of selected species to certain controls. All import, export, re-export and introduction from the sea of species covered by the Convention has to be authorized through a licensing system. Each Party to the Convention must designate one or more Management Authorities in charge of administering that licensing system and one or more Scientific Authorities to advise them on the effects of trade on the status of the species.

The species covered by CITES are listed in three Appendices, according to the degree of protection they need.

Appendix I includes species threatened with extinction. Trade in specimens of these species is permitted only in exceptional circumstances.

Appendix II includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilization incompatible with their survival.

Appendix III contains species that are protected in at least one country, which has asked other CITES Parties for assistance in controlling the trade. Changes to Appendix III follow a distinct procedure from changes to Appendices I and II, as each Party's is entitled to make unilateral amendments to it.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

IUCN Red List of Threatened Species

International Union for Conservation of Nature (IUCN) Red List is published to draw attention to the species whose population is under risk or threatened. IUCN includes the species to the Red List after researching the reasons causing decrease in its population. IUCN Red List categories are given below:

EX (EXTINCT)	A taxon is Extinct when there is no reasonable doubt that the last individual is not exist.
CR (CRITICALLY ENDANGERED)	Severely endangered taxon. The population of the species in this category is facing high risk of extinction appearing nearly imminent.
EN (ENDANGERED)	Endangered taxon. The populations of the species in this category are not critically endangered; but are facing a risk of extinction in near future.
VU (VULNERABLE)	High risk of endangerment in the wild.
NT (NEAR THREATENED)	Likely to become endangered in the near future.
LC (LEAST CONCERN)	Lowest risk. Does not qualify for a more at risk category. Widespread and abundant taxa are included in this category.
DD (DATA DEFICIENT)	Not enough data to make an assessment of its risk of extinction
NE (NOT EVALUATED)	Has not yet been evaluated against the criteria

Red Book of Flora in Türkiye (Ekim et al., 2000), which is prepared as per the 1994 IUCN Red List Categories and Criteria, is used during the determination of risk status of the flora species in the study area.

4.2.1.2 Turkish Legal Requirements

Laws and regulations on biodiversity conservation are given below:

National Parks Law (Official Gazette: 09.08.1983; No: 2873)

Cultural and Natural Assets Protection Law (Official Gazette:23.07.1983; No: 2863)

Statutory Decree on Establishment of Environmental Protection Agency for Special Areas (Official Gazette:19.10.1989; No:383)

Land Games (Hunting) Law (Official Gazette:01.07.2003; No:4915)

Aquatic Products Law (Official Gazette: 04.04.1971; No: 1380)

Forestry Law (Official Gazette: 31.08.1956; No: 6831)

Animal Protection Law (Official Gazette: 24.06.2004; NO: 5199)

Regulation for the Protection of Wetlands (Official Gazette: 17.05.2005; No: 25818)

Regulation on Implementation of Convention on International Trade in Endangered Species of Wild Fauna and Flora (Official Gazette: 27.12.2001; No: 24623)

Regulation on Removal, Production and Export of Natural Flower Bulbs (Official Gazette: 19.07.2012; No: 28358)

Aquatic Products Regulation (Official Gazette:10.03.1995; No: 22223)

Regulation on Wildlife Conservation and Wildlife Development Area (Official Gazette: 08.11.2004; No: 25637)

In addition to the international conventions, other national environmental strategies are put forth through the following plans and programs:

National Environmental Action Plan (1998)

MUNICIPAL SERVICES IMPROVEMENT PROJECT

National Plan on In-situ Conservation of Plant Genetic Diversity (1998)
National Agenda 21 Program (2001)
National Wetland Strategy (2003)
National Forestry Program of Türkiye (2004)
National Science and Technology Policies 2003-2023 Strategy Certificate (2004)
National Action Program of Türkiye to Combat Desertification (2005)
National Environment Strategy (2006)
National Rural Development Strategy (2006)
National Biological Diversity Strategy and Action Plan (2007)

Central Hunting Commission

The categories classified according to the Central Hunting Commission decision for 2019-2020 are shown below:

1	Wild Animals under protection by the Central Hunting Commission
2	Wild Animals permitted for Hunting in Specific Periods

The national and international conservation status of the flora and fauna species identified at the Project site were also assessed during the literature research. The species forming the flora and fauna of the Project site and the conservation status of the species were evaluated according to the updated lists of the Bern Convention Annexes (Annex-II and Annex-III), most updated versions of the European Red List (ERL- 2008) prepared by the IUCN (International Union for the Conservation of Nature) and 2019-2020 Decisions of CHC of Ministry of Agriculture and Forestry. Additionally, for the Birds (= Aves), the RED DATA BOOK categories, "Turkish Birds Red List" (Kiziroglu, 2008), have been used for the determination of the conservation status and analyzing the threat levels that the bird species of Türkiye.

As a result of the field visit, literature searching and desktop studies conducted between June and July 2020, vegetation types, flora-fauna elements, and ecosystem properties were assessed and habitat types (semi-natural, natural, critical, modified such as, agriculture, irrigation, mining, energy etc.) of Project site was evaluated. Then with using the collected data from the field visit and relevant resources including literature, impacts on ecosystems and flora-fauna elements of the Project and relevant mitigation measures to be considered were assessed.

4.2.1.3 Standards and Guidelines

World Bank Environmental and Social Standard 6 (WB's ESS6) indicates the Bank to "be precautionary in its approach to the protection, conservation, management and sustainable use of living natural resources and will require relevant projects to include measures to safeguard and, where feasible, enhance ecosystems and the biodiversity they support." To help implement these commitments at the project level, the WB's Environmental and Social Framework (ESF) is used.

WB's Environmental and Social Standard 6 Biodiversity Conservation and Sustainable Management of Living Natural Resources recognizes that protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development and it recognizes the importance of maintaining core ecological functions of habitats, including forests, and the biodiversity they support. ESS6 also addresses sustainable management of primary production and harvesting of living natural resources and recognizes the need to consider the livelihood of project-affected parties, including Indigenous Peoples, whose access to, or use of, biodiversity or living natural resources may be affected by a project.

4.2.2 Ecological Surveys and Findings

In order to determine the flora elements, endemic and rare plant species and vegetation properties within the Project area and its vicinity, botanical surveys were coordinated by PhD Ecologist Okan Ürker.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

The results are supported by detailed literature survey. This section includes the ecological and botanical assessment, the flora inventory, characteristics of their vegetation and the conservation status.

4.2.2.1 Vegetation and Habitat Types of the Terrestrial Ecosystem

Ilgın WWTP area is located in the center of Türkiye on Central Anatolia region (Figure 4.21 Figure 4.21).

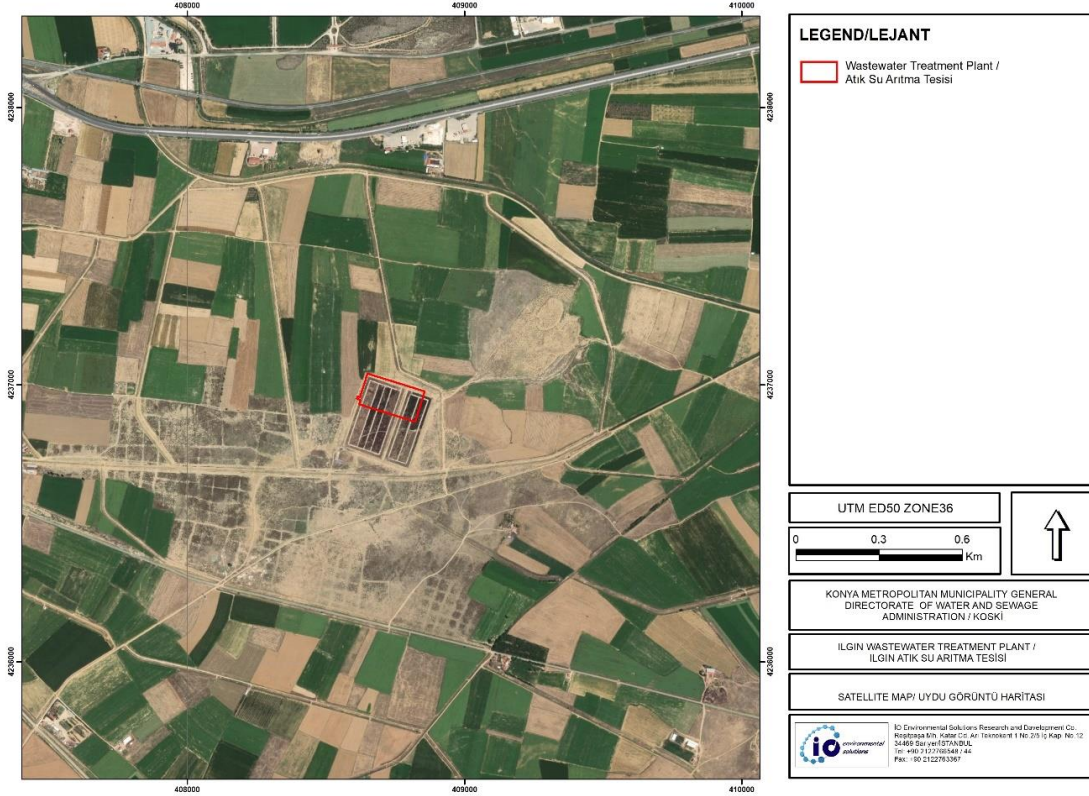


Figure 4.21 Satellite Map of the Ilgın WWTP Project

The terrestrial ecosystem in the Project area is represented mainly by agricultural ecosystem that is dominated by Poaceae species. This ecosystem is formed under the effects of Irano Turan Phytogeographic conditions and terrestrial climate. The main semi-natural ecosystem condition seen on the wastewater treatment plant area is dryland pastures.

In 1980, as a domestic wastewater treatment system, stabilization ponds were installed to an area of 67 ha land in Ilgın District, Şihbedrettin Neighborhood. However, for the past 15 years, this facility has not been working. The brownish rectangles in Figure 4.22 shows those obsolete stabilization ponds. As it can be seen from the photos that belong to the Project site, pasture seeds/plants grew on Project site as well as on the south, east and west sides of the Project site. Approximately 25 ha of this 67 ha is going to be used for proposed Ilgın WWTP. In Figure 4.22, light colored rectangle at the north of the stabilization ponds shows the proposed Ilgın WWTP area.

MUNICIPAL SERVICES IMPROVEMENT PROJECT



Figure 4.22 Satellite View of Stabilization Ponds and Project Site

Currently those large brownish rectangles is filled with mainly *Carduus sp.* plants as a Ruderal Vegetation (it is a kind of degraded steppes) (Figure 4.23) Once CORINE and EUNIS data and current land use activities such as grazing are taken into account, these areas also can be classified as dry pasturelands.



Figure 4.23 Ruderal Vegetation Grows up Inside the Obsolete Stabilization Pools

Around the planned Ilgın WWTP area, there are agricultural ecosystems (Figure 4.24). *Zea mays*, *Beta vulgaris*, *Poa sp.*, *Avena fatua*, *Medicago sp.* species dominated on the agricultural areas as domestic/artificial habitats.

MUNICIPAL SERVICES IMPROVEMENT PROJECT



Figure 4.24 The planned Ilgin WWTP Facility crossing with the agricultural ecosystems (left side; dry pasturelands-the facility, right side-the agricultural areas/*Beta vulgaris* fields)

Currently, the collector line completed in 2017 collects wastewater of Ilgin and conveys it to the proposed WWTP land. Since the WWTP has not been established yet, the collector line continues to the discharge point by passing at the north edge of the WWTP area in the east direction and then lies along the north-east of the WWTP area until to a tributary of Bulasan creek. This tributary is dry for all seasons (Figure 4.25).



Figure 4.25 Existing Discharge Point and Ilgin WWTP Area

Currently, untreated water discharge continues through the discharge point. Therefore, this arm, which is actually dry, is now filled with reeds due to wastewater (Figure 4.26). This area is dominated by *Phragmites australis* reeds and may be classified as degraded/broken habitat and modified habitat as per ESS6. At the downstream of creek, State Hydraulic Works' cleaning activity was encountered to clean the reeds and wastewater sediments (Figure 4.26). The upstream of the arm in question is completely dry from the discharge point (Figure 4.27).

MUNICIPAL SERVICES IMPROVEMENT PROJECT



Figure 4.26 General view of the Tributary of Bulasan Creek (650 m downstream) (Dominated by *Phragmites australis* reeds)



Figure 4.27 Upstream of the Discharge Point on the tributary of Bulasan Creek



Figure 4.28 Cleaned Section of Creek by State Hydraulic Works

The close vicinity of the Project area is generally represented by the agricultural lands etc. due to the soil properties and the demands of anthropocentric incomes. Moreover, this region is under the anthropogenic pressures such as grazing, agriculture and animal husbandry.

The close vicinity of the Project site has also Degraded Steppes (Irano-Anatolian Steppes), Inland Marshes, Natural Grasslands etc. (Figure 4.29).

MUNICIPAL SERVICES IMPROVEMENT PROJECT



Figure 4.29 Irano-Anatolian Steppes (See some mining activities on the limestone mountain steppe) at the far north of the Project area

But none of them are directly related with the Project's facilities (See the CORINE Map of the Project Site; Figure 4.30).

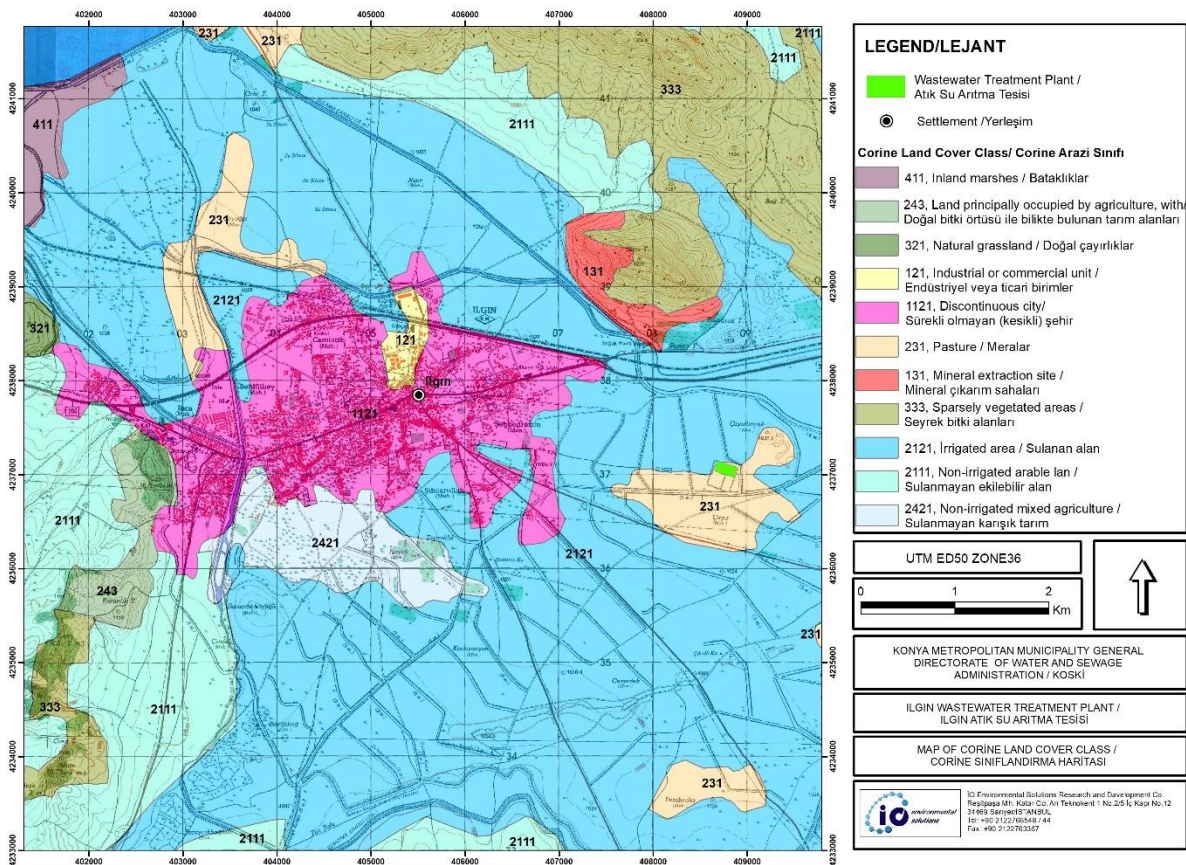


Figure 4.30 CORINE Map of the Project Site and its Close Vicinity

The EUNIS habitat classification is a comprehensive Pan-European system to facilitate the harmonized description and collection of data across Europe through the use of criteria for habitat identification. It is hierarchical and covers all types of habitats from natural to artificial, from terrestrial to freshwater and marine. An extensive review of the EUNIS habitat classification was initiated in 2012 based on European vegetation plot data.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

The first groups of the classification to be revised were forest and other wooded land and heathland, scrub and tundra. The review concerns codes, scientific names and descriptions. A new element of the revised classification is that indicator species are identified for level 3 habitat types.

In the eyes of the EUNIS Habitat Classification and the field trips, the Project site could be classified with two different habitat codes which are;

- E1 Dry Grasslands
- I1.3 Arable land with unmixed crops grown by low-intensity agricultural methods

The EUNIS Habitat Map is presented below (Figure 4.31).

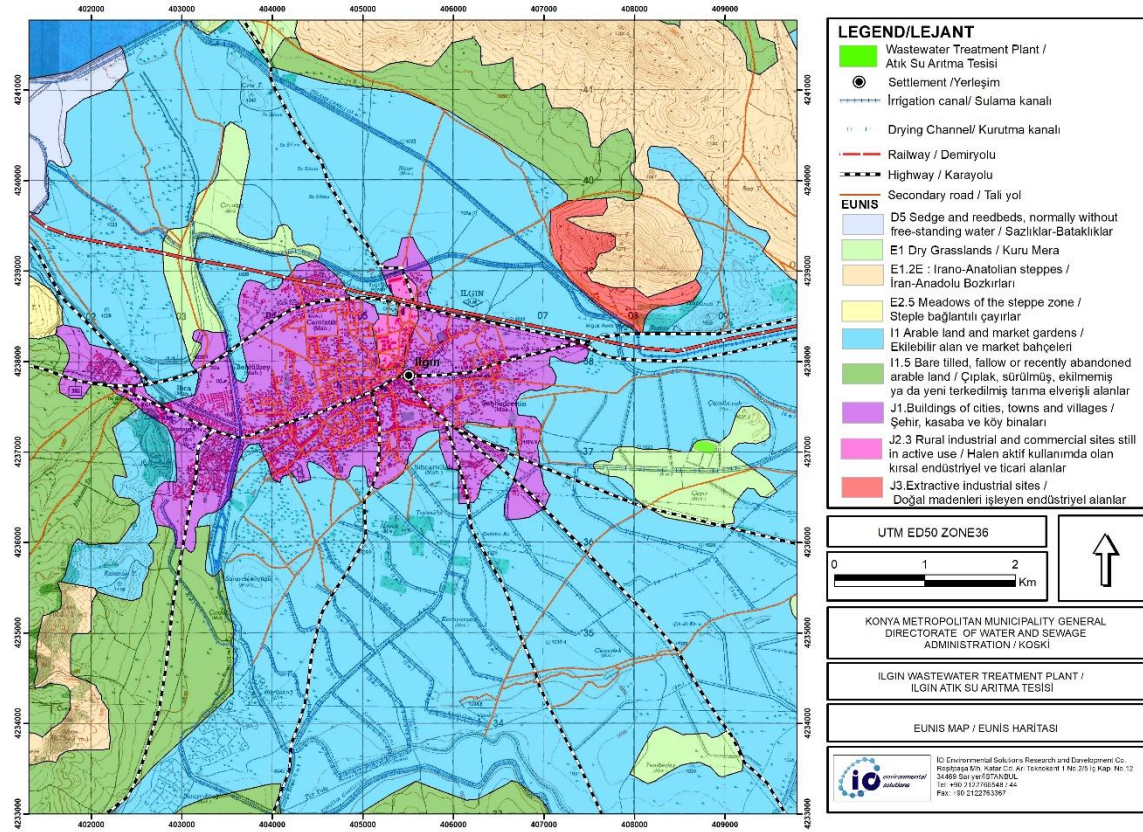


Figure 4.31 EUNIS Habitat Map of the Ilgin WWTP Project Site

E1 - Dry Grasslands: Well-drained or dry lands dominated by grass or herbs, mostly not fertilized and with low productivity. Included are *Artemisia* steppes. Excluded are dry Mediterranean lands with shrubs of other genera where the shrub cover exceeds 10%; these are listed as garrigue (F6).

I1.3 - Arable land with unmixed crops grown by low-intensity agricultural methods: Traditionally and extensively cultivated crops, in particular, of cereals, harboring a rich and threatened flora of field weeds including *Agrostemma githago*, *Centaurea cyanus*, *Legousia speculum-veneris*, *Chrysanthemum segetum*, *Calendula arvensis*, *Adonis spp.*, *Consolida spp.*, *Nigella spp.*, *Papaver spp.*

The vegetation cover is low and closeness ratio is very low. As a result of site visit and literature searching and desktop studies, the Project area acts as semi-natural and artificial. Although the anthropogenic pressure is present, some of the native plant and animal species still exist.

Critical Habitat

Critical Habitat is defined in 2016 version of WB's ESS6 as areas with high biodiversity value. The Project area were assessed as their habitat status by following criteria:

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Criterion 1: Critically Endangered (CR) and/or Endangered (EN) species; There is not any CR or EN species in and around the Project site.

Criterion 2: Endemic and/or restricted-range species; There is not any endemic and/or restricted range species in and around the Project site.

Criterion 3: Migratory and/or congregatory species; There is not any migratory and/or congregatory species in and around the Project site.

Criterion 4: Highly threatened and/or unique ecosystems; There is not any highly threatened and/or unique ecosystems in and around the Project site.

Criterion 5: Key evolutionary processes; The Project site has not any key evolutionary processes with regard to its geographical position and heavy land use activities around them.

The Project area could not be classified as Critical Natural Habitat due to there is not any legally protected area, officially proposed for protection, or unprotected but of known high conservation value in the immediate vicinity of the Project area. As a summary, the Project site is not classified as Critical Habitat if all criterions (were presented above) are taken into account.

4.2.2.2 Terrestrial Flora

Anatolia has been divided into three main phytogeographical regions: The European-Siberian (Black Sea), Iran-Turan (Central, Eastern and Southeastern Anatolia Regions) and Mediterranean (Aegean and Mediterranean Regions) Phytogeography (Atalay, 1994).

Ilgın WWTP Project area, represented with the red dot in Figure 4.32, is located in the center of Central Anatolia Part of Irano-Turanian Phytogeographical Zone in Anatolia and inside the C4 square of the plant grid system which is developed by P.H. Davis. That's why Irano-Turanian flora element is dominant through the Project site.

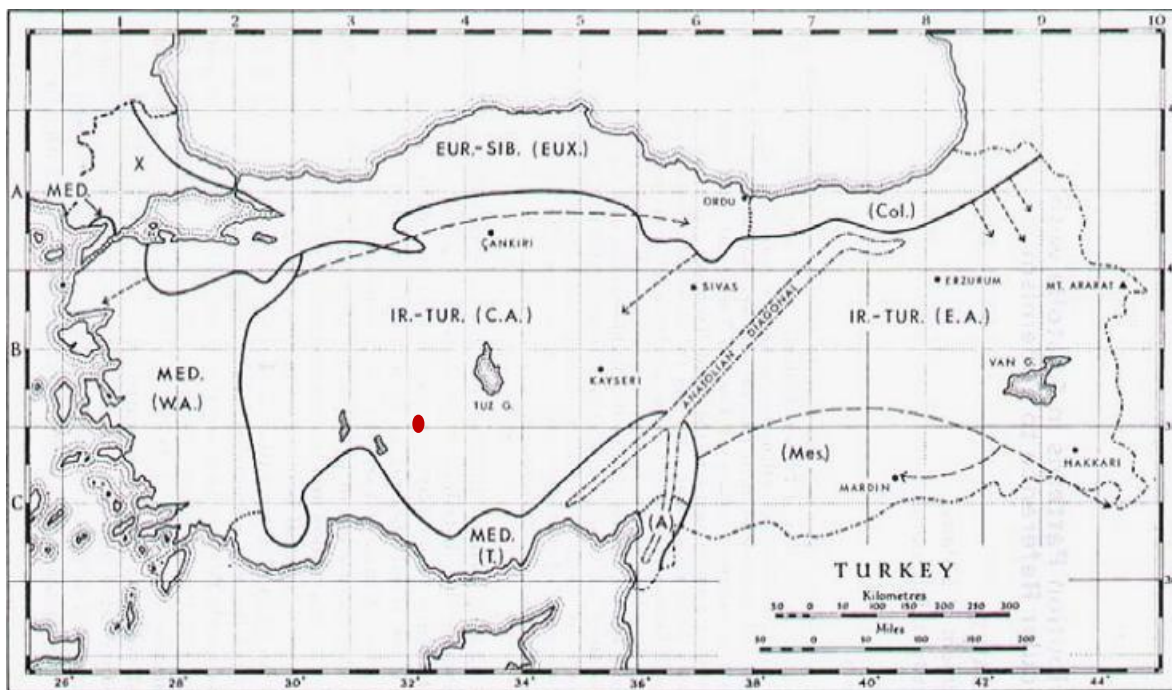


Figure 4.32 Project Area and Phytogeographical Regions of Türkiye

(Source: Davis P.H., Harper P.C. and Hege I.C. (eds.), 1971. *Plant Life of South-West Asia*. The Botanical Society of Edinburgh. (EUR-SIB.: European Siberian Phytogeographic Region, MED.: Mediterranean Phytogeographic Region, IR.-TUR.: Irano-Turanian Phytogeographic Region))

According to the field studies that were conducted in July 2020 and based on the literature survey, 95 species which belong to 25 families are expected (Table 4-21).

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There is not any endemic species observed inside the Project area.

As per IUCN Red List Categories; According to the current version of the list (ver. 2020.2), the distribution of the threat categories of the species is given below;

CR: 0 Species

EN: 0 species

VU: 0 species

LC: 4 species

DD: 0 species

NE: 91 species

As per Bern Convention; Flora species protected by Bern Convention are listed in one class as Appendix I: Strictly protected flora species. There are not any plant species in and around the Project land which are listed in Appendix I of Bern Convention.

As per CITES Convention; According to CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora), all species in *Euphorbiaceae* family are listed in Appendix II (includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilization incompatible with their survival.).

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 4-21 Flora List of Iğın WWTP Area and its Close Vicinity

No	Family and Scientific Name	Turkish Name	Habitat	Endemism/ Infrequency	Phytogeographic region	IUCN Red List	Bern	CITES	Local Population Density	Type of Record (Literature /Field)
RANUNCULACEAE										
1	<i>Nigella segetalis</i> Bieb.	Çöpleme	Road sides, agricultural lands	-	-	NE	-	-	Moderate	F
2	<i>Consolida orientalis</i> (GAY) SCHROD.	Mor çiçek	Fallow field	-	-	NE	-	-	Moderate	F
3	<i>Consolida scleroclada</i> (BOISS.) SCHROD. var. <i>scleroclada</i> (BOISS.) SCHROD.	Mor çiçek	Step	-	-	NE	-	-	Unknown	L
4	<i>Adonis aestivalis</i> L. subsp. <i>aestivalis</i> L.	Kan damlası	Broken step	-	-	NE	-	-	Moderate	F
PAPAVERACEAE										
5	<i>Glaucium corniculatum</i> (L.) RUD. subsp. <i>refractum</i> (NAB.) CULLEN	Boynuzlu gelincik	Step	-	Iran-Turan	NE	-	-	Low	F
6	<i>Roemeria hybrida</i> subsp. <i>hybrida</i>	Pıtpıt otu	Broken step	-	-	NE	-	-	Low	F
CRUCIFERAE										
7	<i>Sinapis arvensis</i> L.	Hardalotu	Roadsides	-	-	NE	-	-	Moderate	F
8	<i>Lepidium perfoliatum</i> L.	Gübreotu	Fields	-	-	NE	-	-	Low	F
9	<i>Thlaspi perfoliatum</i> L.	Çoban dağarcığı	Roadsides	-	-	NE	-	-	Low	F
10	<i>Alyssum dasycarpum</i> STEPHEN EX WILLD. var. <i>dasycarpum</i>	Kumarotu	Step	-	-	NE	-	-	Low	F
11	<i>Descurainia sophia</i> (L.) WEBB EX PRANTL	Sadırotu	Step	-	-	NE	-	-	Low	F
CARYOPHYLLACEAE										
12	<i>Gypsophila perfoliata</i> L. var. <i>perfoliata</i> L.	Helvacı çöveni	Step	-	-	NE	-	-	Low	F
13	<i>Silene cappadocica</i> BOISS. ET HELDLDR.	Sim otu	Rocky slopes	-	Iran-Turan	NE	-	-	Unknown	L
14	<i>Dianthus zonatus</i> FENZL var. <i>zonatus</i> FENZL	Yabani karanfil	Step	-	-	NE	-	-	Moderate	F
CHENOPODIACEAE										

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No	Family and Scientific Name	Turkish Name	Habitat	Endemism/ Infrequency	Phytogeographic region	IUCN Red List	Bern	CITES	Local Population Density	Type of Record (Literature /Field)
15	<i>Salsola kali</i> L.	Sodaotu	Salty step	-	-	NE	-	-	Low	F
16	<i>Beta lomatogona</i> FISCH. ET MEY.	Yabani pancar	Open (Bare) Area, Step	-	-	NE	-	-	Moderate	F
17	<i>Beta vulgaris</i> L.	Pancar	Agricultural areas	-	-	NE	-	-	Widespread	F
18	<i>Chenopodium album</i> L. subsp. <i>album</i> L. var. <i>album</i> L.	Sirken	Dry and salty step	-	-	NE	-	-	Widespread	F
	GUTTIFERAE									
19	<i>Hypericum elongatum</i> LEDEB. subsp. <i>microcalycinum</i> (BOISS. ET HELDR.) ROBSON	Ülserotu	Open (Bare) Area, Step	-	Iran-Turan	NE	-	-	Low	F
	MALVACEAE									
20	<i>Malva neglecta</i> L.	Ebegümeçi	Ruderal, crop area, step	-	-	NE	-	-	Moderate	F
	GERANIACEAE									
21	<i>Erodium ciconium</i> (L.) L'HERIT.	İğnelik	Ruderal, roadside, empty area	-	-	NE	-	-	Low	F
	ZYGOPHYLLACEAE									
22	<i>Peganum harmala</i> L.	Üzerlik	Salty step	-	-	NE	-	-	Moderate	F
	FABACEAE									
23	<i>Ononis spinosa</i> L. subsp. <i>leiosperma</i> (BOISS.) SIRJ.	Kayışkırın	Stony fields	-	-	NE	-	-	Low	F
24	<i>Astragalus microcephalus</i> WILLD.	Boz geven	Step	-	Iran-Turan	NE	-	-	Low	F
25	<i>Astragalus angustifolius</i> LAM. subsp. <i>angustifolius</i> LAM. var. <i>angustifolius</i> LAM.	Geven	Step	-	-	NE	-	-	Low	F

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No	Family and Scientific Name	Turkish Name	Habitat	Endemism/ Infrequency	Phytogeographic region	IUCN Red List	Bern	CITES	Local Population Density	Type of Record (Literature /Field)
26	<i>Trigonella astroites</i> FISCH. ET MEY.	Çemen	Step	-	Iran-Turan	NE	-	-	Low	F
	APIACEAE									
27	<i>Scandix iberica</i> Bieb.	Atkişnekotu	Juniper Bushes	-	-	NE	-	-	Moderate	F
28	<i>Eryngium campestre</i> L. var. <i>virens</i> LINK	Çakırdikeni	Degraded step, roadsides	-	-	NE	-	-	Widespread	F
29	<i>Echinophora tournefortii</i> JAUB. ET SPACH	Çördük	Step	-	Iran-Turan	NE	-	-	Widespread	F
30	<i>Echinophora tenuifolia</i> L. subsp. <i>sibthorpiana</i> (GUSS.) TUTIN	Çördük	Step	-	Iran-Turan	NE	-	-	Widespread	F
31	<i>Bunium ferulaceum</i> SM.	Topalak	Step	-	Mediterranean	NE	-	-	Low	F
32	<i>Torilis leptophylla</i> (L.) REICHB.	İnce dercikotu	Dry areas	-	-	NE	-	-	Low	F
33	<i>Turgenia latifolia</i> (L.) HOFFM.	Geniş yapraklı pırtlak	Dry areas	-	-	NE	-	-	Moderate	F
	CISTACEAE									
34	<i>Helianthemum nummularium</i> (L.) Miller ssp. <i>tomentosum</i> (Scop.) Schinz et Thellung	Gün gülü	Slope, Meadow, Rocky Area	-	-	NE	-	-	Low	F
	DIPSACACEAE									
35	<i>Scabiosa argentea</i> L.	Uyuzotu	Step	-	Iran-Turan	NE	-	-	Low	F
	ASTERACEAE									
36	<i>Xeranthemum annuum</i> L.	Dağ karanfili	Step, open fields	-	-	NE	-	-	Moderate	F
37	<i>Carduus pycnocephalus</i> L. subsp. <i>albidus</i> (BIEB.) KAZMI	Kangal	Rocky areas and fielgsides	-	-	NE	-	-	Widespread	F
38	<i>Carduus nutans</i> subsp. <i>nutans</i> L.	Eşekdikeni	Ruderal, step	-	-	NE	-	-	Widespread	F
39	<i>Xanthium spinosum</i> L.	Küçük pıtrak	Ruderal, step	-	-	NE	-	-	Widespread	F

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No	Family and Scientific Name	Turkish Name	Habitat	Endemism/ Infrequency	Phytogeographic region	IUCN Red List	Bern	CITES	Local Population Density	Type of Record (Literature /Field)
40	<i>Senecio vernalis</i> Waldst. et Kit.	Kanarya otu	Empty Areas, Slope	-	-	NE	-	-	Widespread	F
41	<i>Inula oculus-christi</i> L.	Andız otu	Slope, Forest Open Fields	-	Euro-Siberian	NE	-	-	Moderate	F
42	<i>Filago pyramidata</i> L.	Keçeotu	Step	-	-	NE	-	-	Unknown	L
43	<i>Filago arvensis</i> L.	Keçeotu	Step	-	-	NE	-	-	Low	F
44	<i>Anthemis tinctoria</i> L. var. <i>tinctoria</i> L.	Papatya	Step	-	-	NE	-	-	Widespread	F
45	<i>Achillea arabica</i> Kotschy.	Civanperçemi	Step	-	Iran-Turan	NE	-	-	Moderate	F
46	<i>Artemisia scoparia</i> WALDST. ET KIT.	Yavşan	Salty step	-	-	NE	-	-	Moderate	F
47	<i>Cirsium lappaceum</i> (BIEB.) FISCHER subsp. anatolicum PETRAK	Köygöçüren	Open Fields, roadsides	-	Iran-Turan	NE	-	-	Widespread	F
48	<i>Centaurea virgata</i> LAM.	Peygamberçiçeği	Open Fields, roadsides	-	Iran-Turan	NE	-	-	Widespread	F
49	<i>Centaurea solstitialis</i> L. subsp. <i>solstitialis</i> L.	Peygamberçiçeği	Open Fields, roadsides	-	-	NE	-	-	Widespread	F
50	<i>Crupina crupinastrum</i> (MORIS) VIS.	Mor benekli kantaron	Step	-	-	NE	-	-	Moderate	F
51	<i>Cichorium intybus</i> L.	Hindiba	Open Fields, roadsides	-	-	NE	-	-	Widespread	F
52	<i>Cardopatum corymbosum</i> (L.) Pers.	Kurtludiken	Salty step	-	E. Mediterranean	NE	-	-	Widespread	F
BORAGINACEAE										
53	<i>Echium italicum</i> L.	Engerekotu	Dry and broken areas	-	Mediterranean	NE	-	-	Widespread	F
54	<i>Heliotropium dolosum</i> De Not	Bambulotu	Dry and broken areas	-	-	NE	-	-	Moderate	F
55	<i>Moltkia coerulea</i> (WILLD.) LEHM.	Taşkesenotu	Step	-	Iran-Turan	NE	-	-	Low	F
56	<i>Anchusa leptophylla</i> ROEMER ET SCHULTES subsp. <i>leptophylla</i> ROEMER ET SCHULTES	Sığirdili	Salty step	-	-	NE	-	-	Moderate	F

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No	Family and Scientific Name	Turkish Name	Habitat	Endemism/ Infrequency	Phytogeographic region	IUCN Red List	Bern	CITES	Local Population Density	Type of Record (Literature /Field)
57	<i>Alkanna orientalis</i> L.	Sarı sormuk	Steppe, rocky areas	-	Iran-Turan	NE	-	-	Low	F
58	<i>Cynoglossum montanum</i> L.	Köpek dili	Juniperus Bushes	-	Euro-Siberian	NE	-	-	Moderate	F
59	<i>Onosma taurica</i> Pallas ex Willd. var. <i>taurica</i>	Emzik otu	Limestone Active Reefs, Pinus and Cedrus Forests	-	-	NE	-	-	Low	F
POLYGONACEAE										
60	<i>Rumex tuberosus</i> L. ssp. <i>tuberosus</i>	Kuzukulağı	Hillsides, Fields	-	-	NE	-	-	Low	F
PLUMBAGINACEAE										
61	<i>Plumbago europaea</i> L.	Kuduz otu	Salty step	-	Euro-Siberian	NE	-	-	Moderate	F
SCROPHULARIACEAE										
62	<i>Verbascum glomeratum</i> BOISS.	Sığırkuyruğu	Step	-	Iran-Turan	NE	-	-	Low	F
63	<i>Veronica multifida</i> L.	Yavşanotu	Step	-	Iran-Turan	NE	-	-	Low	F
LAMIACEAE										
64	<i>Marrubium parviflorum</i> FISCH. ET MEY. subsp. <i>parviflorum</i> FISCH. ET MEY.	Boz ot	Step	-	Iran-Turan	NE	-	-	Low	F
65	<i>Salvia viridis</i> L.	Zarif şalba	Maquies, frigana, rocky slopes	-	Mediterranean	NE	-	-	Low	F
66	<i>Phlomis pungens</i> Willd. var. <i>pungens</i>	Adaçayı	Roadsides, Dry Stony Slopes, Pinus greenwoods	-	-	NE	-	-	Low	F
67	<i>Ajuga chamaepitys</i> (L.) Schreber ssp. <i>chia</i> (Schreber) Arcangeli var. <i>chia</i>	Acıgıcı	Stony Slopes	-	-	NE	-	-	Low	F
68	<i>Teucrium orientale</i> L. var. <i>glabrescens</i> HAUSSKN. EX BORNM	Yavşanotu	Step	-	-	NE	-	-	Low	F
69	<i>Teucrium polium</i> L.	Yavşanotu	Step	-	-	NE	-	-	Moderate	F
70	<i>Acinos rotundifolius</i> PERS.	Güvercin otu	Step	-	-	NE	-	-	Low	F

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No	Family and Scientific Name	Turkish Name	Habitat	Endemism/ Infrequency	Phytogeographic region	IUCN Red List	Bern	CITES	Local Population Density	Type of Record (Literature /Field)
71	<i>Ziziphora capitata</i> L.	Anuk	Step	-	Iran-Turan	NE	-	-	Low	F
	RUBIACEAE									
72	<i>Galium verum</i> L. ssp. <i>verum</i>	Yoğurtotu	Rocky Slopes, Bushes, Cultivated Fields	-	Iran-Turan	NE	-	-	Low	F
	EUPHORBIACEAE									
73	<i>Euphorbia falcata</i> L. subsp. <i>falcata</i> L. var. <i>falcata</i> L.	Sütleğen	Step	-	-	NE	-	ANNEX- II	Low	F
74	<i>Euphorbia rhabdotosperma</i> <i>Radcl.-Sm.</i>	Bodur sütleğen	Step	-	Iran-Turan	NE	-	ANNEX- II	Low	F
	LILIACEAE									
75	<i>Allium scorodoprasum</i> L. subsp. <i>rotundum</i> (L.) STEARN	Yabani soğan	Fieldsides	-	Blacksea	NE	-	-	Unknown	L
76	<i>Gagea</i> sp.	Altınyıldız	Roadsides, meadows, dry steppes	-	-	NE	-	-	Low	F
77	<i>Asphodeline taurica</i> (PALLAS) KUNTH	Çiriş otu	Open forests, Stony meadows	-	E. Mediterranean	NE	-	-	Unknown	L
	IRIDACEAE									
78	<i>Crocus biflorus</i> Miller ssp. <i>tauri</i> (Maw) Mathew	Çiğdem	Rocky Slopes, Bushes, Dispersed Coniferous Coppice Forests	-	Iran-Turan	NE	-	-	Unknown	L
	POACEAE									
79	<i>Hordeum bulbosum</i> L.	Arpa	Step	-	-	LC	-	-	Moderate	F
80	<i>Aegilops cylindrica</i> HOST	Kirpikli ot	Step	-	Iran-Turan	NE	-	-	Moderate	F
81		Palak	Step	-	Euro-Siberian	NE	-	-	Low	F

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No	Family and Scientific Name	Turkish Name	Habitat	Endemism/ Infrequency	Phytogeographic region	IUCN Red List	Bern	CITES	Local Population Density	Type of Record (Literature /Field)
	<i>Stipa hohenackeriana</i> TRIN. ET RUPR. var. <i>hohenackeriana</i> TRIN. ET RUPR.									
82	<i>Koeleria cristata</i> (L.) PERS.	Adi parlak ot	Step	-	-	NE	-	-	Moderate	F
83	<i>Brachypodium pinnatum</i> (L.) P. Beauv.	Yalancı brom	Non-Shady Habitats	-	Euro-Siberian	NE	-	-	Moderate	F
84	<i>Trachynia distachya</i> (L.) LINK	Mor çimen	Agricultural fields	-	Mediterranean	NE	-	-	Moderate	F
85	<i>Aegilops biuncialis</i> VIS.	İkikilçık	Step, open fields	-	-	NE	-	-	Moderate	F
86	<i>Avena barbata</i> POTT EX LINK subsp. <i>barbata</i>	Yulaf	Agricultural fields	-	Mediterranean	NE	-	-	Moderate	F
87	<i>Briza media</i> L.	Küveli şıkırdak	Step, open fields	-	-	NE	-	-	Moderate	F
88	<i>Bromus tectorum</i> L.	Brom	Agricultural fields	-	-	NE	-	-	Moderate	F
89	<i>Cynodon dactylon</i> (L.) Pers. var. <i>villosus</i> Regel	Köpekdişi	Step, open fields	-	-	NE	-	-	Moderate	F
90	<i>Dactylis glomerata</i> L. ssp. <i>glomerata</i>	Domuz ayrığı	Agricultural fields	-	Euro-Siberian	NE	-	-	Moderate	F
91	<i>Poa bulbosa</i> L.	Yabani buğday	Step, open fields, agricultural lands	-	-	NE	-	-	Moderate	F
92	<i>Setaria viridis</i> (L.) P. Beauv	Sorguç otu	Step, open fields, agricultural lands	-	-	NE	-	-	Low	F
93	<i>Zea mays</i> L.	Mısır	Step, open fields, agricultural lands	-	-	LC	-	-	Widespread	F
94	<i>Phragmites australis</i> (Cav.) Trin. ex Steud.	Kamış	Wetlands, reeds	-	-	LC	-	-	Widespread	F
	JUNCACEAE									
95	<i>Juncus inflexus</i> subsp. <i>inflexus</i> L.	Sazak	Wetlands, reeds	-	-	LC	-	-	Moderate	F

MUNICIPAL SERVICES IMPROVEMENT PROJECT

4.2.2.3 Terrestrial Fauna

The fauna inventory was prepared based on conducted fieldwork and a review of literature. In addition to the literature research and site visits, the status of regional fauna was evaluated according to biological and ecological perspectives. Risk categories of fauna species was assigned according to the IUCN red list categories which were published in ver. 2020.2. In the provided fauna list, species are written with the family names to which they belong. The scale of IUCN risk categories has been provided below.

EXTINCT (EX),
EXTINCT IN THE WILD (EW),
CRITICALLY ENDANGERED (CR),
ENDANGERED (EN),
VULNERABLE (VU),
NEAR THREATENED (NT),
LEAST CONCERN (LC),
DATA DEFICIENT (DD),
NOT EVALUATED (NE),

In addition to needing to meet the requirements spelled out under the WB's ESS6, the project design must also be compliant with the applicable national laws. In this context, the BERN conventions should also be taken into account. Therefore, during the preparation of the fauna lists, the conventions listed here in were also adhered to.

For the fauna species taken under protection by Appendix II and III of the Bern Convention (especially the measures stated in Article 6 and 7), the followings should be avoided for the species listed in Appendix II in accordance with the 6th Article.

1. All forms of deliberate capture and keeping and deliberate killing,
2. The deliberate damage to or destruction of breeding or resting sites,
3. The deliberate disturbance of wild fauna, particularly during the period of breeding, rearing and hibernation, insofar as disturbance would be significant in relation to the objectives of this convention,
4. The deliberate destruction or taking of eggs from the wild or keeping these eggs even if empty,
5. The possession of internal trade in these animals, alive or dead, including stuffed animals and any readily recognizable part or derivative thereof, where this would contribute to the effectiveness of the provisions of this article.

According to Article 7, each contracting party shall take appropriate and necessary legislative and administrative measures to ensure the protection of the wild fauna species specified in Appendix III of Bern Convention. Any exploitation of wild fauna specified in Appendix III shall be regulated in order to keep the populations out of danger, taking into account the requirements of Article II. For the species listed in Appendix III, according to Article 7, the following measures shall be arranged:

Closed seasons and/or other procedures regulating the exploitation,
The temporary or local prohibition of exploitation, as appropriate, in order to restore satisfactory population levels,
The regulation, as appropriate, of the sale, keeping for sale, transport for sale or offering for sale of live and dead wild animals.

The species listed in Appendix II of the Bern Convention are strict regarding protection, whereas the species listed in Appendix III are only periodically under protection.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Based upon a review of literature regarding potential fauna which could be identified in the Project area and its surroundings and due to the fact that they are typically found in the immediate region, in total 69 vertebrate species could be identified. In order to complete the impact assessment, information such as the habitats of species (biotype) and risk status were also included. Endemic species are sensitive in terms of risk status. However, during the site visits it was found that the immediate area of the facility and the close environs are not used by any endemic species nor by target species listed in national and/or international lists.

Furthermore, the area would not serve as a good habitat for the fauna species presented below due to the habitat degradation and destruction. This situation can be testable with very poor population properties in terms of Amphibian and Reptile species (Table 4-22).

Table 4-22 List of Amphibian and Reptilian in the Ilgın WWTP Area and its Close Vicinity

Scientific Name	Common Name	Habitat	BERN	CITES	IUCN	CHC	Source*
<i>Bufo variabilis</i>	Variable Toad	Ponds, Orchards, near water courses, open fields, steppes	App-III	-	DD	-	F
<i>Testudo graeca</i>	Mediterranean Spur-thighed Tortoise	Dry lands	App-II	-	VU	-	F
<i>Trapelus lessonae</i>	Steppe agama	Step	-	-	LC	-	F
<i>Apathya cappadocica</i>	Cappadocian Lizard	Step	App-II	-	LC	-	F
<i>Parvilacerta parva</i>	Dwarf lizard	Step	App-II	-	LC	-	F
<i>Ophisops elegans</i>	Snake-eyed lizard	Step, open fields, rocky areas	App-II	-	LC	-	L
<i>Ablepharus kitaibeli</i>	Juniper skink	Step, open fields, rocky areas	App-III	-	LC	-	L

*Source; F: Fieldwork/L: Literature

On the other hand, in order to determine the bird species within the Project site and its vicinity, ornithological surveys were conducted by Ecologist PhD Okan Ürker. The results are supported by detailed literature survey. This section includes the ecological and ornithological assessment, the fauna inventory, characteristics of their habitats and the conservation status.

In scope of ornithological and ecological assessment there are additional field observations, interviews that have been performed with the local people and the literature surveys. The habitat information of the target species is indicated particularly also.

The species forming the avian fauna of the Project site and the conservation status of the bird species were evaluated according to the updated lists of the Bern Convention Annexes, the European Red List (ERL) prepared by the IUCN (International Union for the Conservation of Nature) and the national RED DATA BOOK categories, "Turkish Birds Red List" (Kiziroglu, 2008).

Türkiye ve Avrupa'nın Kuşları El Kitabı (Heinzel et al., 1995), *Songbirds of Türkiye: Atlas of Biodiversity of Turkish Passerine Birds* (Roselaar, 2000), *Türkiye'nin Önemli Doğa Alanları Kuş Verileri* (Doğa Derneği, 2004), TRAKUŞ 2019. (www.trakus.org), *State of World's Birds: Indicators for Our Changing World* (Birdlife International, 2008) are the important sources that are used in bird research.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Most of the bird species were recorded according to visual methods. During the field survey direct observations, point counts and transect counts were performed and the records are evaluated.

The remaining are identified from their calls. Not only the Project area, but the basin of the Project area is also evaluated. The equipment such as binocular, telescope and camera are used in the identification. Moreover, interviews with local people and shepherds were conducted.

Major bird species are listed at Table 4-23. Referring to the table, it can be indicated that 47 bird species from 21 different families potentially live, feed, migrate and/or breed in and around the Project area. There is not any endemic or rare bird species. The species which has high frequency ratio in the region are sky lark (tarla kuşu), greater short-toed lark (bozkır toygarı), crested lark (tepeli toygar), long legged buzzard (kızıl şahin), starling (sığırcık), northern wheatear (kuyrukkakan) and Eurasian magpie (saksığan) and are common for the Project area.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 4-23 Major Bird Species in and around Iğın WWTP Area

Scientific Name	Turkish Name	Habitat	RDB	IUCN	BERN	CHC	CITES	Regional Status	Source*
CICONIIFORMES									
CICONIIDAE									
<i>Ciconia ciconia</i>	Leylek	Inhabits open areas, generally avoiding regions with persistent cold, wet weather or large tracts of tall, dense vegetation such as reedbeds or forests, shallow marshes, lakesides, lagoons, flood-plains, rice-fields and arable and especially where there are scattered trees for roosting.	A.3.1	LC	App II	--	--	YZ	F
FALCONIFORMES									
ACCIPITRIDAE									
<i>Accipiter nisus</i>	Atmaca	Loose greenwoods, agricultural lands with trees	A.3	LC	App II	--	App II	KZ	F
<i>Milvus migrans</i>	Kara çaylak	Found ubiquitously throughout habitats, although avoiding dense woodland	A.3	LC	App II	--	App II	T	L
<i>Buteo rufinus</i>	Kızıl şahin	Open areas, particularly steppe and semi-desert, and has been recorded up to 3,500 m	A.3	LC	App II	--	App II	KZ	F
FALCONIDAE									
<i>Falco tinnunculus</i>	Bayağı kerkenez	Reefs, buildings	A.2	LC	App II	--	App II	Y	F
COLUMBIFORMES									
COLUMBIDAE									
<i>Columba livia</i>	Kaya güvercini		A.5	LC	App III	App II	--	Y	F
<i>Streptopelia decaocto</i>	Kumru		A.5	LC	App III	App I	--	Y	F
<i>Columba palumbus</i>	Tahtalı güvercin		A.4	LC	App III	App II	--	KZ	L
STRIGIFORMES									
STRIGIDAE									
<i>Athene noctua</i>	Kukumav		A.2	LC	App II	--	App II	Y	L
APODIFORMES									
APODIDAE									

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Scientific Name	Turkish Name	Habitat	RDB	IUCN	BERN	CHC	CITES	Regional Status	Source*
<i>Apus apus</i>	Ebabil		A.3.1	LC	App III	--	--	T	F
<i>Tachymarptis melba</i>	Akkarınlı ebabil		A.3.1	LC	App II	--	--	T	L
CORACIIFORMES									
MEROPIDAE									
<i>Merops apiaster</i>	Arıkuşu		A.3.1	LC	App II	--	--	T	F
UPUPIDAE									
<i>Upupa epops</i>	İbibik		A.2	LC	App II	--	--	YZ	L
PASSERIFORMES									
ALAUDIDAE									
<i>Galerida cristata</i>	Tepeli toygâr		A.3	LC	App III	App I	--	Y	F
<i>Melanocorypha calandra</i>	Boğmaklı toygâr		A.5	LC	App II	--	--	Y	F
<i>Calandrella brachydactyla</i>	Bozkır toygârı		A.3	LC	App II	--	--	YZ	F
<i>Alauda arvensis</i>	Tarlakuşu		A.4	LC	App III	App I	--	KZ	F
HIRUNDINIDAE									
<i>Hirundo rustica</i>	Kır kırlangıcı		A.5	LC	App II	--	--	YZ	F
<i>Hirundo daurica</i>	Kızıl kırlangıç		A.3	LC	App II	--	--	T	F
<i>Delichon urbicum</i>	Ev kırlangıcı		A.3	LC	App II	--	--	T	F
MOTACILLIDAE									
<i>Anthus campestris</i>	Kır incirkuşu		A.2	LC	App II	--	--	T	L
MUSCICAPIDAE									
<i>Muscicapa striata</i>	Benekli sinekkapan		A.3	LC	App II	--	--	T	L
<i>Saxicola torquatus</i>	Taşkuşu		A.3	LC	App II	--	--	YZ	F
<i>Phoenicurus phoenicurus</i>	Kızılkuyruk		A.3	LC	App II	--	--	T	F
<i>Oenanthe isabellina</i>	Boz kuyrukkakan		A.3	LC	App II	App I	--	YZ	F
<i>Oenanthe oenanthe</i>	Kuyrukkakan		A.3	LC	App II	App I	--	YZ	F
<i>Saxicola rubetra</i>	Çayır taşkuşu		A.3	LC	App II	--	--	T	F
TURDIDAE									

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Scientific Name	Turkish Name	Habitat	RDB	IUCN	BERN	CHC	CITES	Regional Status	Source*
<i>Turdus merula</i>	Karatavuk		A.3	LC	App III	App II	--	Y	L
SYLVIIDAE									
<i>Sylvia atricapilla</i>	Karabaşlı ötleğen		A.2	LC	App II	--	--	T	L
PARIDAE									
<i>Parus major</i>	Büyük baştankara		A.3.1	LC	App II	--	--	Y	F
<i>Parus caeruleus</i>	Mavi baştankara		A.2	LC	App II	--	--	Y	F
LANIIDAE									
<i>Lanius collurio</i>	Kızıl sırtlı örümcek kuşu		A.3	LC	App II	App I	--	YZ	F
CORVIDAE									
<i>Garrulus glandarius</i>	Ala karga		A.3.1	LC	App III	App II	--	Y	F
<i>Pica pica</i>	Saksağan		A.5	LC	App III	App II	--	Y	F
<i>Corvus monedula</i>	Cüce karga		A.5	LC	App III	App II	--	Y	F
<i>Corvus corone</i>	Leş kargası		A.5	LC	App III	App II	--	Y	F
<i>Corvus corax</i>	Kuzgun		A.5	LC	App III	App I	--	Y	F
STURNIDAE									
<i>Sturnus vulgaris</i>	Sığırcık		A.5	LC	App III	App I	--	KZ	F
PASSERIDAE									
<i>Passer domesticus</i>	Ev serçesi		A.5	LC	App III	App II	--	Y	F
<i>Petronia petronia</i>	Kaya serçesi		A.3	LC	App II	--	--	Y	L
FRINGILLIDAE									
<i>Fringilla coelebs</i>	İspinoz		A.4	LC	App III	App I	--	KZ	F
<i>Serinus serinus</i>	Küçük İskete		A.3	LC	App II	--	--	KZ	F
<i>Carduelis chloris</i>	Florya		A.3	LC	App II	--	--	Y	F
<i>Carduelis carduelis</i>	Saka		A.3.1	LC	App II	--	--	Y	F
EMBERIZIDAE									
<i>Emberiza hortulana</i>	Kirazkuşu		A.3	LC	App III	App I	--	YZ	F
<i>Emberiza melanocephala</i>	Kara başlı kirazkuşu		A.4	LC	App II	--	--	YZ	F
<i>Miliaria calandra</i>	Tarla kirazkuşu		A.4	LC	App III	App I	--	Y	F

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Scientific Name	Turkish Name	Habitat	RDB	IUCN	BERN	CHC	CITES	Regional Status	Source*
Abbreviations in the Table									
<u>RDB: Red Data Book for Birds of Türkiye</u>									
A.1.0= Species that are extinct and no more observed in the nature.									
A.1.1= Domestic species that are extinct in the wild or cannot be observed in nature at least last 15-25 year time, however, they live in cages and other artificial environment.									
A.1.2= Population of these species has decreased throughout Türkiye. They are found to be 1 individual-10 pairs (=1-20 individuals) where they are observed. They are considered to be facing a high risk of extinction; therefore, these species should be protected in Türkiye.									
A.2= Population of these species varies around 11-25 pairs (22-50 individuals). They are considered to be facing risk of extinction.									
A.3= Population of these species varies around 26-250 pairs (52-500 individuals). They are also considered to be facing a high risk of extinction.									
A.3.1= Population of these species has decreased in recent years. Population of these species varies around 251-500 pairs (502-1000 individuals) and has decreased comparing to the previous records.									
A.4= According to the criteria of IUCN, these species are not considered yet to be facing a high risk of extinction, but their populations have decreased locally and have potential of facing risk of extinction in time. Population of these species varies around 501-5000 pairs (1002-10000 individuals).									
A.5= There is no risk of extinction for these species and their populations have not decreased yet.									
A.6= There is inadequate information to make an assessment of its risk of extinction based on its distribution and/or population status. Since they are based on one or two observations, there is no chance to make a reliable assessment on these species. Therefore, they have to be well studied.									
A.7= It is not possible to make an assessment on these species, because the records of these species in Türkiye are not reliable.									
<u>(ERL) IUCN: European Red List, IUCN</u>									
LC= (Least Concern): A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.									
<u>BERN: Bern Convention</u>									
Appendix II: List of strictly protected fauna species									
Appendix III: List of protected fauna species									
<u>CHC: 2019-2020 Decisions of Central Hunting Commission</u>									
Appendix I (species protected by the CHC)									
Appendix II (species allowed to be hunted for a time period)									
<u>CITES: Convention on International Trade in Endangered Species of Wild Fauna and Flora</u>									
Appendix II includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilization incompatible with their survival.									
<u>Status of the Bird:</u>									
G: Breeding species-only summer birds; breeds regularly or irregularly									
Y: Breeding species- year birds-breeds regularly									
T: Invasion species; occurs irregularly but usually in great numbers									
KZ: Winter visitors									
YZ: Summer visitors									
<u>Source:</u> L: Literature, F: Field									

MUNICIPAL SERVICES IMPROVEMENT PROJECT

For mammal species, during the site visit it was found that the immediate area of the Project and the close environs are not used by any endemic species nor by target species listed in national and/or international lists (Table 4-24).

Table 4-24 List of Mammal Species in and around Iğın WWTP Area

Scientific Name	Common Name	Habitat	BERN	CITES	IUCN	CHC	Source*
<i>Erinaceus concolor</i>	Southern White-breasted Hedgehog	Various	-	-	LC	-	L
<i>Crocidura leucodon</i>	Bicolored shrew	Open fields, steppes	-	-	LC	-	L
<i>Microtus sp.</i>	Field Mice	Open fields, steppes	-	-	LC	-	F
<i>Allactaga williamsi</i>	Williams Jerboa	Step	-	-	LC	-	F
<i>Meriones tristrami</i>	Tristram's Jird	Step and agricultural lands	-	-	LC	-	L
<i>Meles meles</i>	Badger	Various	App-III	-	LC	App.I	F
<i>Nannospalax leucodon</i>	Lesser Mole Rat	Step and agricultural lands	-	-	DD	-	F
<i>Lepus europaeus</i>	Europaen Hare	Step, open fields, rocky areas	App-III	-	LC	App.II	F
<i>Spermophilus xanthoprymnus</i>	Ground squirrel	Step, open fields	-	-	LC	-	F
<i>Vulpes vulpes</i>	Red Fox	Various	-	-	LC	App.II	F
<i>Sus scrofa</i>	Wild Boar	Various	App-III	-	LC	App.II	F
<i>Canis lupus</i>	Wolf	Various	App-III	App-II	LC	-	L
<i>Pipistrellus pipistrellus</i>	Common Pipistrelle	Various	App-II	-	LC	-	L
<i>Pipistrellus kuhlii</i>	Kuhl's Pipistrelle	Various	App-II	-	LC	-	L
<i>Myotis myotis</i>	Greater Mouse-eared Bat	Various	App-II	-	LC	-	L

*Source: L: Literature/ F: Field

As per IUCN (European Red List); As a result of the evaluation made based on European Red List prepared by IUCN, among the terrestrial fauna species detected in the region, the category of *Testudo graeca* is VU: Vulnerable, *Bufo variabilis* and *Nannospalax leucodon* is DD: Data Deficient. All other faunistic species likely to be observed at the Project site are in "LC: Least Concern" category. Although, *Testudo graeca*'s IUCN Red List Category is VU (Vulnerable – A1cd ver 2.3), *Testudo graeca* (Tortoise) has a wide distribution under different geographic, climatic and ecological conditions, and is shown at areas with high morphological differences especially in the Asia (Middle Eastern, Türkiye and Caucasian). The latest global assessment had been made on August 1st, 1996 by IUCN. Nonetheless, considering the time elapsed from the last assessment, its current global population trend is considered as unspecified.

In Türkiye, there is a wide distribution for this specie. It can be seen in agricultural areas, steppes and forests of whole Anatolia except the southeastern parts. Due to the species' large population distribution trend in Türkiye and its wide habitat preferences, it was evaluated that they will not be exposed to adverse impact due to the Project and will adapt to new conditions.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

As per Bern Convention; As a result of the evaluation made according to the appended lists of Bern Convention, among the wild animal species determined as living at the Project area and in the close vicinity, 4 reptilian, 34 bird and 3 mammalian species are in Appendix II: "Strictly protected fauna species", 1 amphibian, 1 reptilian, 17 bird and 4 mammalian species are in Appendix III: "Protected fauna species", and remaining 3 fauna species are not listed in the appendices of Bern Convention.

As per CITES Convention; As a result of the evaluation made according to CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora), 5 bird and 1 mammalian species are in Appendix II (Includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilization incompatible with their survival). Remaining 63 terrestrial fauna species are not listed in the appendices of CITES Convention.

As per CHC (Merkez Av Komisyonu) Decrees; As a result of the evaluation made according to the latest protection lists that are prepared by Central Game Commission of General Directorate of Nature Protection and National Parks and updated for 2019-2020; 11 bird species and 1 mammal species are in Appendix-I (Wild Animals Protected by the Ministry of Forestry and Water Affairs of Türkiye), 8 bird species and 3 mammal species are in Appendix-II (Game Animals whose Hunting is Allowed for Certain Periods). Other species are not in game animal lists.

There are no critically endangered (CR) or Endangered (EN) terrestrial fauna elements nor Endemic and Restricted-Range Species. There are no lands at the Project area, where the soaring birds will perform thermal flights. Moreover, there is no wetland where the aquatic birds can breed and roost or that can be used as staging posts. There is not any Highly Threatened and/or Unique Ecosystems in and around the Project site.

Given that Türkiye is located at the junction of three distinct phytogeographical regions, it houses three of 25 hotspots that are significantly important in terms of biodiversity in global scale: Mediterranean Basin, Irano-Anatolian and Caucasian. Central Anatolia, where the study area is located, is not within the borders of the hotspots in Türkiye.

This suggests that the study area does not support key evolutionary processes. Therefore, it does not share the same level of isolation, spatial heterogeneity and wealth of environmental gradients. It also has not been subject to much higher levels of habitat loss and fragmentation.

4.2.2.4 Conclusion

In the eyes of the EUNIS Habitat Classification and the field trips, the Project site could be classified with two different habitat codes which are;

E1 Dry Grasslands

I1.3 Arable land with unmixed crops grown by low-intensity agricultural methods

The Project area could not be classified as Critical Natural Habitat, due to there is not any legally protected area, officially proposed for protection, or unprotected but of known high conservation value in the immediate vicinity of the Project area. As a summary, the Project site is not classified as Critical Habitat if all criterions (were presented above) are taken into account.

According to the study, there are no critically endangered (CR) or Endangered (EN) terrestrial flora and fauna elements nor Endemic and Restricted-Range Species and invasive alien species at the study area.

The Project area is not located in or adjoining any Legally Protected and Internationally Recognized Areas of High Biodiversity Value.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

4.3. Characteristics of Socio-Economic Environment

Economical and sociocultural features of Project area will be discussed in these sections. Within this context, information about population characteristics, household structure and economical activities will be provided for Konya Province, Ilgın District and the neighborhoods located in the Project AoI. In addition, general baseline characteristics of the nearest settlements is provided in Section 4.3.7 and details of the baseline conditions of the nearest settlements and potential environmental and social impacts are provided in Table 5-31.

4.3.1 Socio-economic Characteristics

Konya is an agricultural region where many field crops such as wheat, barley, sugar beet (leading by far in the country with the investments of TOR KU, a private company that produces sugar, candy, chocolate, bakery products, frozen products, modern greenhouse products, milk and dairy products, meat and meat products and vegetable oil, made in the region), dried beans, potatoes, sunflower, hash, corn, as well as many vegetable and fruit species such as carrots, cherries and sour cherries are produced. In recent years, Konya has been handling 40%¹⁴ of seed production of Türkiye while showing a progress in organic agriculture. In 2019, it was recorded that cereals and other field crops were grown on 1,460,354 hectares of land, vegetables in 28,226 hectares, fruits in 56,073 hectares and ornamental plants in 83 hectares of land in Konya. The area left for fallowing was 331.608 hectares¹⁵. Data about Konya's agricultural products is given in Table 4-25 which shows the province is one of the most important places for agricultural production in Türkiye.

Table 4-25 Agricultural Products Produced in Konya

Type	Product Name	Production (Tonnes)			Rate in Country National Production
		2017	2018	2019	
Cereals and other Herbal Products	Sugar Beet	6.031.734	5.536.267	5.647.249	31%
	Wheat	2.192.410	2.037.936	1.886.131	10%
	Barley	873.016	856.917	1.146.786	14%
	Haricot Beans	70.242	53.439	49.664	22%
	Corn (Grain)	621.884	1.104.538	1.345.064	22%
	Corn (Silage)	1.650.455	1.823.238	2.339.653	9%
	Potato	567.076	611.957	599.699	12%
	Pea	746	795	378	17%
	Hash	4.161	6.973	5.626	21%
	Safflower	6.809	3.853	2.425	11%
Chickpea	34.586	48.845	46.858	8%	
Vegetables	Carrot	355.652	424.636	425.241	64%
	Melon	151.604	148.026	146.877	8%
	Mushroom (Culture)	4.215	4.594	5.140	10%
Fruits and Ornamental Plants	Cherry	56.294	68.204	68.213	10%
	Sour Cherry	30.164	30.451	29.203	16%
	Cumin	7.290	10.980	8.073	40%
	Tulip (Piece)	44.000.000	40.000.000	40.000.000	99%

Source: Konya Ekonomi Raporu, 2019

¹⁴ Konya Ekonomi Raporu 2019, Konya Chamber of Commerce, 2020.

¹⁵ Konya Ekonomi Raporu 2019, Konya Chamber of Commerce, 2020.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Konya, which has contributed significantly to the country's production of sheep, goat, cattle, poultry, meat, milk and eggs, also provides significant contributions to the development of animal husbandry with its wide range of pastures and plant production areas. According to the TurkStat's data, Konya has maintained its leading position in the number of cattle in 2019. In 2019, the number of cattle in Konya increased slightly (0.6%) to 927,082 compared to the previous year¹⁶.

In Konya, the "number of enterprises in the industrial registry", which was 3,825 in 2014, increased to 7,779 at the end of 2019. Looking at the sectoral distribution of these enterprises, it is seen that the top 10 sectors are the leading main sectors with 80.9% (Figure 4.33). Major fields of activity in the industrial zones are automotive spare parts industry, machinery industry, agricultural machinery and equipment industry, plastic industry, furniture and wood industry, metal industry, casting industry, food industry, building construction materials and packaging industry¹⁷.

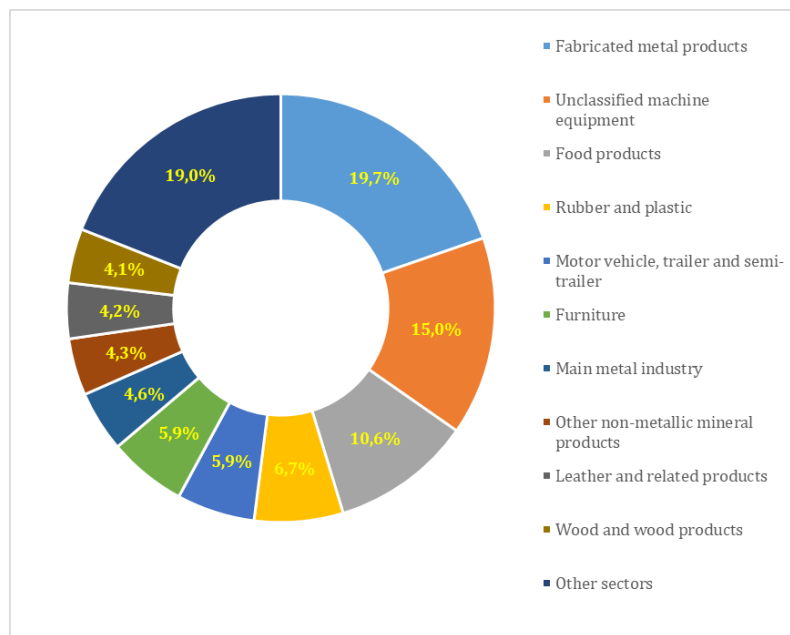


Figure 4.33 Distribution of Enterprises Registered in Konya Province Industrial Registry by Sectors (2019)

Source: Konya Ekonomi Raporu, 2019

Approximately three-quarters of the companies in Konya are micro-scale companies. While the total of small and medium-sized companies was 25.83 percent, the rate of large-scale companies was 0.6%¹⁸.

Also, Konya has an important role in foreign trade as export of the city has reached approximately \$2 billion in 2019. Export values of the city in last seven years were \$1.35, \$1.48, \$1.35, \$1.31, \$1.55, \$1.78, \$1.99 billion respectively. Konya's economy has been continuing to have foreign trade surplus for the last 11 years, except 2011¹⁹.

Today, Konya, has become a national leading city in the production of spare parts and these are manufactured in high quality of all kinds. Automotive subsidiary industry in Konya has started in small enterprises with the production of various parts, especially the bodywork. Both the Turkish Motor Industry and Trade Corporation (TÜMOSAN) to go in action in the city and developments in automotive sector in Türkiye have made the existing infrastructure in city approach to automotive subsidiary industry.

¹⁶ Konya Ekonomi Raporu 2019, Konya Chamber of Commerce, 2020.

¹⁷ Konya Ekonomi Raporu 2019, Konya Chamber of Commerce, 2020.

¹⁸ Konya Ekonomi Raporu 2019, Konya Chamber of Commerce, 2020

¹⁹ Turkish Statistical Institute, Export Statistics

MUNICIPAL SERVICES IMPROVEMENT PROJECT

The spare parts are produced for important automotive brands active in Türkiye as well as they are exported to many other countries. The most important engine piston and liner, valve, crank, gear and gasket factories are located in Konya²⁰.

According to the information from Mevlana Development Agency (MEVKA),²¹ education, retail trade, services for buildings, landscaping, transportation and production of food products are the economic activities in which most of the population is employed in the Ilgın District.

Main agricultural products in the district are cereals and other plants. In 2018, the total area of cereals and other herbal products is 531,396 decares. The following largest agricultural area is the fallow area. The fallow area in the district is 257.550 decares.

Barley is the most popular product among the cereals in the Ilgın District. The total plantation area of the product is 170.974 decares. Wheat was planted on an area of 125,099 decares in 2018. Apart from these, the most planted products are durum wheat on an area of 106,632 decares and sugar beet on an area of 30,700 decares, respectively.

Animal husbandry is another important economic activity in the district. At the end of 2018, approximately 64,900 sheep and 27976 dairy cattle was present in the district. Şihbedrettin, Orhaniye and Ağalar Neighbourhoods, which are included in the AoI of the Project, are rural settlements and main economic activities are agriculture and animal husbandry. Similar to Ilgın, the agricultural activities are based on grain production. In addition, animal husbandry, specifically sheep, is an important economic activity for the local residents.

4.3.2 Demographic Characteristics

Recent Turkish Statistical Institution (TurkStat) population results of Konya and Ilgın which are based on Address-Based Population Registration System (ABPRS) are summarized below.

Table 4-26 Population Results of Konya Province

Years	Population		Population by Age					Population Total	Yearly Increase Factor
	Male	Female	0-19	20-39	40-59	60-79	80+		
2015	1,056,540	1,074,004	727,296	652,821	481,813	233,399	35,215	2,130,544	-
2016	1,073,631	1,087,672	728,752	661,895	491,978	242,598	36,080	2,161,303	1.44%
2017	1,081,718	1,098,431	724,720	664,610	506,190	247,351	37,278	2,180,149	0.87%
2018	1,094,441	1,111,168	722,519	668,611	519,836	255,578	39,065	2,205,609	1.17%
2019	1,108,968	1,123,406	719,363	677,234	529,706	265,286	40,785	2,232,374	1.21%

Table 4-27 Population Results of Ilgın District

Years	Population		Population by Age					Population Total	Yearly Increase Factor
	Male	Female	0-19	20-39	40-59	60-79	80+		
2015	27,513	27,971	16,701	14,065	14,353	8,819	1,546	55,484	-
2016	27,427	27,780	16,461	13,885	14,173	9,119	1,569	55,207	-0.50%
2017	27,067	27,758	16,066	13,660	14,403	9,116	1,580	54,825	-0.69%
2018	26,963	27,659	15,731	13,480	14,498	9,297	1,616	54,622	-0.37%
2019	26,758	27,470	15,406	13,316	14,328	9,514	1,664	54,228	-0.72%

Source: ABPRS, TurkStat

²⁰ Konya Chamber of Commerce, www.kto.org.tr/one-cikan-sektorler-448s.htm

²¹ Ilgın İlçe Raporu, Mevlana Development Agency, 2019, <http://www.konyadayatirim.gov.tr/images/dosya/ILGIN.pdf>

MUNICIPAL SERVICES IMPROVEMENT PROJECT

According to the TurkStat 2020 data, total population of the Şihbedrettin, Orhaniye and Ağalar Neighbourhoods are 2,367, 1,054 and 626, respectively.

The male population in Konya has increased by 4.96% since 2015 and reached 1,108,968. The female population in Konya was recorded as 1,123,406 with an increase of 4.60%. While Konya is ranked 7th in terms of male population as in 2018, it ranked 6th in female population. The density of the population in Konya is currently 57 people/m² which ranks 49th in the country²².

Migration from Konya in 2019 was more than the migration it received, as in 2018. In 2018, 58,300 people migrated to Konya, while 60,571 people migrated. These numbers are recorded as 54,219 migrations received and 58,557 migrations from the province in 2019²³.

Meanwhile, the male population in district of Ilgın has decreased by 2.74% since 2015 and reached 26,758. The female population in Ilgın was recorded as 27,470 with a fall of 1.79%. While Ilgın is ranked 9th in terms of male population among other districts of Konya, it ranked 9th in female population, too²⁴.

Ilgın District has the potential to out-migrate due to its limited public and commercial services, limited social opportunities and low socio-economic development level. Economic activities, especially agricultural activities, carried out in the district reduce the population losses of the district to some extent. Considering the socioeconomic situation, it is seen that there are problems such as high land fragmentation, lack of active and entrepreneurial population, low education level, insufficient or no social facilities and areas in the district²⁵.

The arrival of Syrian immigrants to Konya at different times by escaping from the civil war environment in Syria has also created different socio-economic problems in the city. A 2016 study, of the 2014-2023 Konya-Karaman Region Plan conducted on this particular subject, found that the majority of the registered and unregistered Syrian immigrants, whose population is close to 50 thousand, come from Aleppo and belong to the middle and lower income groups²⁶. The up-to-date data given by Turkish Migration Administration states that there are 122,019 registered refugees in Konya whose rate to province's population is 5.49% as of 21st October 2021. The current data also shows that refugee population in Ilgın district is approximately 5,000²⁷.

Konya Social Analysis Report prepared by Mevlana Development Agency stated that, the most important integration problem for the refugees is the lack of opportunity to learn Turkish language. The lack of institutions and organizations which can provide Turkish language education to the immigrants is the main obstacle to immigrants' learning Turkish. Another point that draws attention in the study in question is the prejudice and distrust of the people in Konya towards immigrants partly caused by the arguments and events due to friction among the opponents and supporters of Syrian Regime between those who came through immigration and those who were already staying in the same settlements²⁸.

Syrians have affected the Turkish economy and in particular the local economy in certain aspects. Due to the increase in demand, especially in border provinces, basic foodstuffs, housing rents and house prices have increased. Higher rents have resulted in tenant turnover. as well as caused rise in rental prices, leading to existing tenants being replaced with new ones agreeing to pay higher rents. In other word, the cost-of-living has increased. Child labor has increased. The illegal employment of Syrians in industry, agriculture and small enterprises and as cheap labor force is another growing issue.

²² Konya Ekonomi Raporu 2019, Konya Chamber of Commerce, 2020

²³ Konya Ekonomi Raporu 2019, Konya Chamber of Commerce, 2020

²⁴ Turkish Statistical Institute, ABPRS

²⁵ Konya Sosyal Analiz Raporu, Mevlana Development Agency, 2016.

²⁶ Konya Sosyal Analiz Raporu, Mevlana Development Agency, 2016.

²⁷ Konya Water and Sewerage Administration General Directorate, Treatment Plants Presidency, April 2020.

²⁸ "Konya Sosyal Analiz Raporu", Mevlana Development Agency, 2016.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Especially in provinces where industry is relatively developed Syrians have become the unqualified new labor force accepting jobs that Turkish citizens do not prefer²⁹.

4.3.3 Tourism Potential

The number of tourists overnight stays in Türkiye is 450,561,752 people in 2017. Statistics show that this number increased by 8% in 2018 and 13% in 2019³⁰. Konya has hosted many different civilizations and bears the traces of a history dating back to 7000 BC. It has a rich historical heritage with its historical sites, archeological and natural sites, caves and examples of civil architecture. Handicrafts such as felt making, carpet making, spoon making, rifle making, pottery, ceramics and calligraphy in Konya also attract the attention of foreign tourists³¹.

Konya has a total of 11 museums, 7 in the center (Mevlana, Karatay Tiles, İnceminare, Sırçalı Madrasa, Atatürk, Ethnography and Archeology Museums), 4 in its districts (Çatalhöyük Ruins Museum, Ereğli Museum, Akşehir West Front Headquarters Museum and Akşehir Archeology Museum) are available. In addition, there is one archeological site in the UNESCO World Cultural Heritage List (Çatalhöyük Neolithic City) and 4 structures (Eşrefoğlu Mosque, Konya - Seljuk Capital, Anatolian Seljuk Madrasah and Eflatunpınar: Hittite Water Monument) in the World Cultural Heritage Temporary List. In the city, there is the Manuscript Library and the Yusufaga Manuscript Library where the national culture is preserved. In these libraries, there are a total of 91,621 books, 18,118 manuscripts and 73,503 printed books³².

In Konya Province, the total number of tourist overnight stays is recorded as 5,962,385 in 2017 and dropped by 3.7% resulting 5,744,023 in 2019 (Table 4-28).

Table 4-28 Data Recorded of Tourist Overnight Stays in Konya

Year	Tourist Overnight Stays	Yearly Increase Factor
2012	8,557,513	-
2013	7,279,279	-14.94%
2014	6,021,364	-17.28%
2015	6,167,639	2.43%
2016	5,871,510	-4.80%
2017	5,962,385	1.55%
2018	5,991,508	0.49%
2019	5,744,023	-4.13%

Source: TurkStat, Database

The Ilgın District subject to this ESIA has a potential of hosting tourists coming for thermal springs. According to data recorded by Turkish Culture and Tourism Ministry in 2017, a total of 16,625 tourists, 1,082 of whom were foreigners, stayed in the municipal certified accommodation facilities in the district. In total, 46,240 nights of stays were made. Looking at the average length of stay for tourists, it is seen that foreign tourists stayed for 2.92 days, while domestic tourists stayed for 2.77 days. The average length of stay of foreign tourists in Ilgın District was longer than domestic tourists. Occupancy rate in municipal certified accommodation facilities in the district was 19.55 in 2017. In the meantime, a total of 2,150 tourists, 104 of whom were foreigners, stayed in the business licensed accommodation facilities in the district in 2017. While foreigners stayed 397 nights, local tourists stayed for a total of 5,254 nights. The occupancy rate of the business licensed accommodation facilities in the district was 29.07% in 2017³³.

²⁹ Tunca H., Ö., Karadağ, A., "Suriye'den Türkiye'ye Göç: Tehditler ve Fırsatları", Science Journal of Turkish Military Academy, December 2018, Volume 28, Issue 2, 47-68.

³⁰ Turkish Statistical Institute, Database

³¹ www.konyadayatirim.gov.tr, Culture and Tourism

³² www.konyadayatirim.gov.tr, Culture and Tourism

³³ Ilgın İlçe Raporu 2019, 2019, www.konyadayatirim.gov.tr.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

4.3.4 Income and Production

Gross Domestic Product (GDP) of Türkiye

Türkiye's GDP in current prices, has increased by 51.41% within 6 years between 2013 and 2018. The highest growth rate was in 2018 (16.48%). The share of agricultural sector in GDP has dropped from 6.7% in 2013 to 5.8% in 2018. Industry sector share has increased from 27.7% in 2013 to 29.5% in 2018. Services sector remained relatively constant.

Table 4-29 Türkiye, Gross Domestic Product (million TRY) in Current Prices

Period	Agriculture	Industry	Services	Sectorial Total	Taxes-subsidies	GDP	Increase (%)
2013	121.71	501.22	962.40	1,585.33	224.39	1,809.71	
2014	134.72	576.44	1,097.02	1,808.19	236.28	2,044.47	11.48%
2015	161.45	652.58	1,246.70	2,060.73	277.92	2,338.65	12.58%
2016	161.30	735.17	1,402.42	2,298.90	309.63	2,608.53	10.35%
2017	189.19	908.46	1,659.11	2,752.64	353.89	3,106.54	16.14%
2018	216.67	1,097.68	2,020.86	3,335.21	389.17	3,724.39	16.48%

Source: TurkStat, Data Base

Table 4-30 Sectorial Percentages of GDP in Türkiye

Period	Agriculture	Industry	Services	Sectorial Total	Taxes-subsidies
2013	6.7	27.7	53.2	87.6	12.4
2014	6.6	28.2	53.7	88.4	11.6
2015	6.9	27.9	53.3	88.1	11.9
2016	6.2	28.2	53.8	88.1	11.9
2017	6.1	29.2	53.4	88.6	11.4
2018	5.8	29.5	54.3	89.6	10.4

Source: TurkStat, Data Base

GDP of Konya

Konya's GDP in current prices, has increased by 52.30% within 6 years between 2013 and 2018. The highest growth rate was observed in 2018 (16.30 %). The share of agricultural sector in GDP has dropped from 18.0 % in 2013 to 16.8% in 2018. Industry sector share has increased from 23.5% in 2013 to 27.2% in 2018.

Table 4-31 Konya, Gross Domestic Product (million TRY)

Period	Agriculture	Industry	Services	Sectorial Total	Taxes-subsidies	GDP	Increase (%)
2013	6.76	8.83	17.33	32.91	4.66	37.57	-
2014	7.88	10.79	20.19	38.86	5.08	43.93	14.49%
2015	8.96	12.63	22.59	44.19	5.96	50.15	12.39%
2016	8.99	14.40	25.70	49.09	6.61	55.70	9.97%
2017	10.78	17.77	29.87	58.43	7.50	65.93	15.51%
2018	13.20	21.42	35.93	70.54	8.23	78.77	16.30%

Source: TurkStat, Data Base

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 4-32 Sectorial percentages of GDP in Konya

Period	Agriculture	Industry	Services	Sectorial Total	Taxes-subsidies
2013	18.0	23.5	46.1	87.6	12.4
2014	17.9	24.6	46.0	88.4	11.6
2015	17.9	25.2	45.1	88.1	11.9
2016	16.1	25.9	46.1	88.1	11.9
2017	16.4	27.0	45.3	88.6	11.4
2018	16.8	27.2	45.6	89.6	10.4

Source: TurkStat, Data Base

Main economic activities in the Ilgın District and neighborhood close to the Project area is explained in Section 4.3.1, Şihbedrettin, Orhaniye and Ağalar Neighbourhoods, which are included in the AoI of the Project, are rural settlements and their main economic activities are agriculture and animal husbandry similar to the district.

4.3.5 Employment

Detailed, most actual statistics in terms of labor force participation and unemployment rates are available on the level of zones. Türkiye has been divided into 26 zones to make it easier to conduct the statistical analysis. Konya is included in the 52nd Zone of Türkiye together with Karaman. The unemployment rate as a whole in this zone compared to the unemployment rate in Türkiye has been generally low. Labor Force Participation is also low in this zone as per Türkiye ratio. Employment rate have been higher as compared to Türkiye. Women participation to work force have been significantly low in this region of Türkiye which shows lower employment figures for women when compared to Türkiye employment rates.

Table 4-33 Labor Force Participation, Employment and Unemployment Rates

Period	Türkiye vs Zone	Labor Force Participation - Men (%)	Labor Force Participation - Women (%)	Labor Force Participation (%)	Employment - Men (%)	Employment - Women (%)	Employment (%)	Unemployment (%)
2014	Konya and Karaman	73.3	25.7	49.1	69.6	23.8	46.4	5.6
	Türkiye	71.3	30.3	50.5	64.8	26.7	45.5	9.9
2015	Konya and Karaman	73.4	29.0	51.2	69.4	26.3	47.8	6.5
	Türkiye	71.6	31.5	51.3	65	27.5	46.0	10.3
2016	Konya and Karaman	73.3	27.4	50.0	69.6	25.0	46.9	6.1
	Türkiye	72	32.5	52.0	65.1	28	46.3	10.9
2017	Konya and Karaman	73.7	27.8	50.3	69.6	25.9	47.3	5.9
	Türkiye	72.5	33.6	52.8	65.6	28.9	47.1	10.9
2018	Konya and Karaman	72.8	29.8	50.7	69.0	27.7	47.7	5.9
	Türkiye	72.7	34.2	53.2	65.7	29.4	47.4	11
2019	Konya and Karaman	73.1	30.5	51.0	67.7	27.6	46.9	8.0
	Türkiye	72	34.4	53	63.1	28.7	45.7	13.7

Source: TurkStat, Data Base

According to the data given by TurkStat, total unemployment in Konya fluctuated between 2012, which was the year following the first refugee wave to Türkiye, and 2016 but in the later years the numbers rose sharply reaching 96,245 that is almost double of the value recorded in 2012 (Figure 4.34).

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Even though the unemployment numbers increased in Konya by the time, it is not fully related to refugees who emigrated to the province as there was a general increase between the years of 2012 and 2019 in Türkiye.

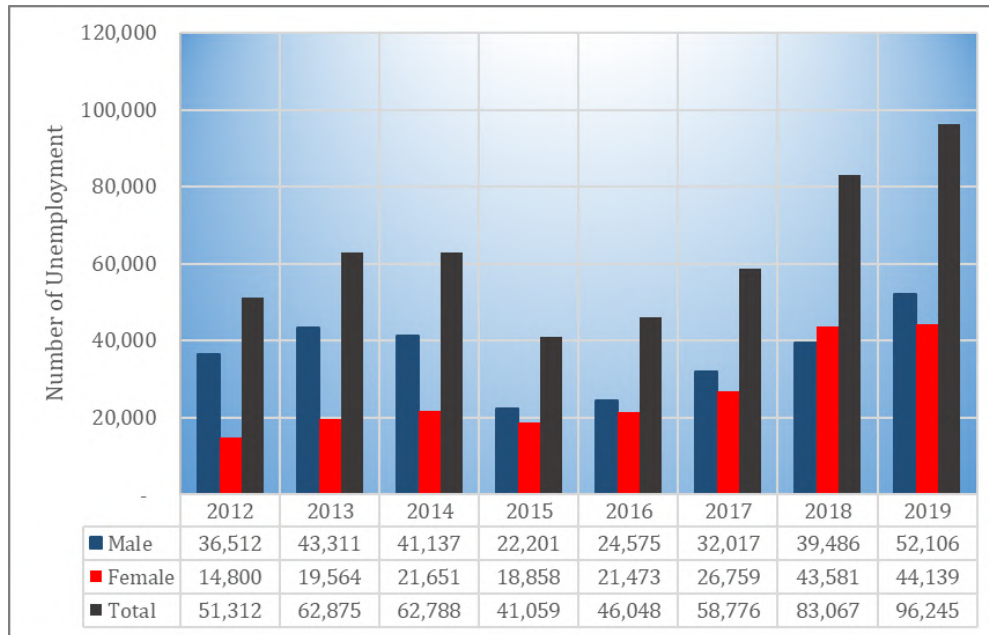


Figure 4.34 Number of Unemployed Population in Konya Province

Source: TurkStat, Database

As of 2018, there were 5,314 registered insured employees in the Ilgın District. When the total number of insured employees according to the sectors is examined, it can be observed that the highest number of employments can be seen in education sector (1,142 employees) The second sector is retail trade (574 employees) and building services and landscape follow these two sectors (492 employees).³⁴ Other leading sectors for registered employment are transportation, food production, construction and other services.

According to the information from Development Agency,³⁵ emigration of the young people from the Ilgın District due to unemployment is an important problem in the district.

Local people in the rural neighbourhoods close to the Project area are mainly engaged with the agricultural production and animal husbandry activities.

4.3.6 Education

Literacy is a key measure of a population's education in a country and affects the socio-economic conditions. Generally, in Türkiye for 2019, the percentage of illiterate people among all over 15-year-olds (illiteracy rate) is 3.3%, while it is 2.4% in Konya province and %4.4 in Ilgın District. While 1.0% of males is illiterate in the Ilgın District, this rate is 7.6% among the female population. This situation reveals gender inequality in education.

The following table provides a detailed review on education levels for male and female over the age of 15 in Ilgın District, Konya Province and Türkiye. The education rates for females are increased by years for Türkiye likewise for Konya Province and Ilgın District. The male's education level in terms of in high school is higher than the average for Türkiye and Konya whereas female's is significantly lower.

34 Ilgın İlçe Raporu, Mevlana Development Agency, 2019,
<http://www.konyadayatirim.gov.tr/images/dosya/ILGIN.pdf>

35 Ilgın İlçe Raporu, Mevlana Development Agency, 2019,
<http://www.konyadayatirim.gov.tr/images/dosya/ILGIN.pdf>

MUNICIPAL SERVICES IMPROVEMENT PROJECT

The rate of women having PhD degree has sharply decreased in 2018 in Ilgin. The share of Ilgin's female and male population having master's degree rates in Konya represents in a range of 1.29-1.62% in 2019.

Table 4-34 Education Level and Rates for Ilgin, Konya and Türkiye

Education Level	Year	Male (Over the age of 15)					Female (Over the age of 15)						
		Ilgin	Ilgin's Share in Province	Province Share in Türkiye	Gender's Share in Ilgin	Gender's Share in Province	Gender's Share in Türkiye	Ilgin	Ilgin's Share in Province	Province Share in Türkiye	Gender's Share in Ilgin	Gender's Share in Province	Gender's Share in Türkiye
Doctor's Degree	2015	11	0.36%	3.02%	50.00%	65.70%	60.01%	11	0.69%	2.36%	50.00%	34.30%	39.99%
	2016	11	0.36%	3.01%	50.00%	65.78%	59.77%	11	0.69%	2.32%	50.00%	34.22%	40.23%
	2017	12	0.33%	2.97%	48.00%	65.47%	59.49%	13	0.68%	2.30%	52.00%	34.53%	40.51%
	2018	13	0.36%	2.97%	56.52%	65.23%	59.31%	10	0.51%	2.31%	43.48%	34.77%	40.69%
	2019	13	0.35%	2.97%	56.52%	65.15%	59.06%	10	0.50%	2.30%	43.48%	34.85%	40.94%
Master's degree	2015	145	1.61%	2.43%	67.44%	63.14%	58.02%	70	1.33%	1.96%	32.56%	36.86%	41.98%
	2016	137	1.44%	2.45%	64.62%	62.70%	57.62%	75	1.33%	1.98%	35.38%	37.30%	42.38%
	2017	215	1.64%	2.61%	68.25%	61.53%	56.54%	100	1.22%	2.12%	31.75%	38.47%	43.46%
	2018	245	1.66%	2.63%	69.80%	61.61%	56.53%	106	1.16%	2.13%	30.20%	38.39%	43.47%
	2019	260	1.62%	2.66%	65.99%	60.70%	55.93%	134	1.29%	2.18%	34.01%	39.30%	44.07%
College or Faculty	2015	2,282	2.02%	2.45%	67.43%	59.20%	55.24%	1,102	1.42%	2.08%	32.57%	40.80%	44.76%
	2016	2,367	1.98%	2.45%	65.70%	58.44%	54.74%	1,236	1.45%	2.11%	34.30%	41.56%	45.26%
	2017	2,346	1.92%	2.43%	64.66%	57.66%	54.23%	1,282	1.43%	2.12%	35.34%	42.34%	45.77%
	2018	2,468	1.95%	2.41%	64.19%	56.66%	53.68%	1,377	1.43%	2.14%	35.81%	43.34%	46.32%
	2019	2,494	1.90%	2.40%	62.66%	55.82%	53.18%	1,486	1.43%	2.16%	37.34%	44.18%	46.82%
High School	2015	5,250	3.05%	2.31%	71.91%	58.14%	57.25%	2,051	1.66%	2.23%	28.09%	41.86%	42.75%
	2016	5,659	3.07%	2.37%	71.33%	57.50%	56.72%	2,274	1.67%	2.30%	28.67%	42.50%	43.28%
	2017	5,306	2.86%	2.34%	69.36%	57.06%	56.72%	2,344	1.68%	2.31%	30.64%	42.94%	43.28%
	2018	5,492	2.80%	2.34%	68.39%	56.80%	56.68%	2,538	1.70%	2.33%	31.61%	43.20%	43.32%
	2019	5,546	2.76%	2.32%	68.06%	56.63%	56.30%	2,603	1.69%	2.29%	31.94%	43.37%	43.70%
Secondary School	2015	2,876	3.12%	2.53%	64.04%	59.70%	57.81%	1,615	2.59%	2.34%	35.96%	40.30%	42.19%
	2016	3,161	2.93%	2.53%	61.15%	57.32%	56.23%	2,008	2.50%	2.42%	38.85%	42.68%	43.77%
	2017	3,352	2.97%	2.54%	61.07%	56.96%	56.09%	2,137	2.51%	2.45%	38.93%	43.04%	43.91%
	2018	3,414	2.73%	2.60%	58.43%	56.23%	55.28%	2,429	2.49%	2.51%	41.57%	43.77%	44.72%
	2019	4,681	2.48%	2.76%	54.27%	55.76%	55.49%	3,945	2.63%	2.73%	45.73%	44.24%	44.51%
Primary Education	2015	3,487	2.24%	2.93%	52.70%	54.60%	57.00%	3,130	2.42%	3.23%	47.30%	45.40%	43.00%
	2016	2,932	2.07%	2.87%	52.96%	55.83%	58.21%	2,604	2.32%	3.16%	47.04%	44.17%	41.79%
	2017	3,030	2.08%	2.89%	52.92%	55.68%	57.90%	2,696	2.33%	3.17%	47.08%	44.32%	42.10%
	2018	3,098	2.09%	2.93%	52.13%	55.57%	57.37%	2,845	2.40%	3.15%	47.87%	44.43%	42.63%
	2019	2,051	2.18%	2.90%	54.81%	55.83%	57.06%	1,691	2.28%	3.05%	45.19%	44.17%	42.94%
Primary School	2015	6,271	3.07%	3.20%	39.73%	40.12%	42.76%	9,514	3.12%	3.57%	60.27%	59.88%	57.24%
	2016	6,118	3.05%	3.28%	39.48%	40.02%	42.38%	9,379	3.12%	3.62%	60.52%	59.98%	57.62%
	2017	5,909	3.05%	3.25%	39.00%	39.55%	41.92%	9,243	3.12%	3.59%	61.00%	60.45%	58.08%
	2018	5,440	3.14%	3.24%	38.64%	38.48%	41.04%	8,639	3.12%	3.61%	61.36%	61.52%	58.96%
	2019	5,179	3.11%	3.28%	38.53%	38.16%	40.61%	8,264	3.06%	3.63%	61.47%	61.84%	59.39%
Literate without finishing any school	2015	625	3.73%	1.66%	19.62%	22.12%	29.03%	2,560	4.34%	2.40%	80.38%	77.88%	70.97%
	2016	579	3.75%	1.69%	19.00%	21.37%	27.86%	2,469	4.35%	2.39%	81.00%	78.63%	72.14%
	2017	531	3.76%	1.67%	18.37%	20.67%	27.04%	2,360	4.36%	2.37%	81.63%	79.33%	72.96%
	2018	478	3.84%	1.69%	17.56%	19.49%	25.75%	2,244	4.36%	2.42%	82.44%	80.51%	74.25%
	2019	432	3.76%	1.76%	16.89%	18.96%	24.91%	2,126	4.33%	2.49%	83.11%	81.04%	75.09%
Illiterate	2015	302	4.21%	1.72%	12.76%	14.34%	16.14%	2,064	4.82%	1.98%	87.24%	85.66%	83.86%
	2016	284	4.31%	1.71%	12.53%	13.88%	15.62%	1,982	4.85%	1.97%	87.47%	86.12%	84.38%
	2017	261	4.33%	1.69%	12.21%	13.45%	15.28%	1,877	4.84%	1.97%	87.79%	86.55%	84.72%

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Education Level	Year	Male (Over the age of 15)						Female (Over the age of 15)					
		İlgün	İlgün's Share in Province	Province Share in Türkiye	Gender's Share in İlgin	Gender's Share in Province	Gender's Share in Türkiye	İlgün	İlgün's Share in Province	Province Share in Türkiye	Gender's Share in İlgin	Gender's Share in Province	Gender's Share in Türkiye
	2018	235	4.24%	1.71%	11.60%	13.09%	14.80%	1,790	4.86%	1.97%	88.40%	86.91%	85.20%
	2019	205	4.14%	1.73%	10.96%	12.53%	14.15%	1,666	4.82%	1.99%	89.04%	87.47%	85.85%

Source: TurkStat, Data Base

4.3.7 Socio-Economic Conditions of the Nearest Settlements

In order to determine the socio-economical conditions of the nearest communities to the WWTP, interviews with the head of neighborhoods (mukhtars) are conducted. Due to the pandemic conditions, face to face interviews and focus group discussions have not been conducted and information about socio-economic baseline condition of the neighbourhoods has been obtained from mukhtar via phone calls. In addition to the general demographic structure of the neighbourhoods, information including PAPs (refugees, disabled people, woman-headed households), owners of the neighbouring lands to the Project area, infrastructure including healthcare facilities have been obtained from the mukhtars.

Details of the conversations are provided in Table 4-35 and the impacts are assessed in Section 5.5.

Table 4-35 Summary of the Interviews with Mukhtar

Information	Neighbourhoods		
	Şihbedrettin	Orhaniye	Ağalar
Number of households	~700	~300	~220
Source of Livelihood	Agriculture, animal husbandry and retirement salary	Agriculture, animal husbandry	Agriculture, animal husbandry
Number of Syrians under temporary protection and their source of livelihood	~50 people	25-30 people Agriculture workers	40-45 people (Afghan + Syrian)
Number of people benefit from social assistance and solidarity foundation supports	50-100 people	50-60 people	11 people <i>Coal aid is provided to these families.</i>
Number of physically or mentally disabled people and the parties that take care of them	5-10 people <i>Source of Livelihood: Social assistance, care-disabled benefit, citizen assistance</i>	2 people <i>Their families take care of them and the government pays for care.</i>	3-5 families <i>Their families take care of them and the government pays for care.</i>
Information on agricultural activities carried out in the lands close to the area where the WWTP will be constructed*	There are agricultural lands around the WWTP construction area and wheat, barley and beet are planted there.	There is not any agricultural land around the WWTP area.	There are some agricultural lands around the WWTP.
Schools	Since the settlement is a central neighbourhood of İlgün, the children can have education from primary school, secondary school and high school in the district.	There are primary and secondary schools in the neighbourhood. The high school students use school buses to go to the high schools in the districts.	There are primary and secondary schools in the neighbourhood. The high school students use school buses to go to the high schools in the districts.
Health care facilities and services	There is not any health center facility in the neighborhood, they use the health center of the nearby neighborhood. In addition, they use İlgün State Hospital. There is no contagious disease other than Covid.	Officially, there is no health center affiliated to the Ministry of Health. There is a small building built by the villager and a doctor comes once a week.	There is a health center, a family doctor comes every Tuesday.
Number of women-headed households	~10 households Aid from the mukhtar office is delivered to these families.	There are few but exact number is not known. Since they do not have small children, their children support the house.	There is not any.

**The owners of these agricultural lands have been and will be informed about the project activities and the existing GM of the Project on regular basis, to be able to closely follow potential impacts on the population.*

MUNICIPAL SERVICES IMPROVEMENT PROJECT

5 Environmental and Social Risks, Impacts and Mitigation Measures

5.1. Area of Influence

The Turkish EIA Regulation defines the area of influence as “the area affected by planned project before operation, during operation and after operation”. The area of influence may be different for different types of impacts and different environmental components (physical, biological, social)³⁶.

Area of influence is defined in the World Bank Group (WBG) International Finance Corporation (IFC) Performance Standard (PS) 1 Assessment and Management of Environmental and Social Risks and Impacts as follows:

“Where the project involves specifically identified physical elements, aspects, and facilities that are likely to generate impacts, environmental and social risks and impacts will be identified in the context of the project’s area of influence.

The Area of Influence (AoI) is to encompass the following as appropriate:

The area likely to be affected by:

- (i) the Project (e.g., Project sites, immediate air shed and watershed, or transport corridors) and the Project Sponsors’ activities and facilities that are directly owned, operated or managed (including by contractors) and that are a component of the project (e.g., tunnels, access roads, borrow and disposal areas construction camps);
- (ii) impacts from unplanned but predictable developments caused by the project that may occur later or at a different location; or
- (iii) indirect project impacts on biodiversity or on ecosystem services upon which Affected Communities’ livelihoods are dependent.

Associated facilities, which are facilities that are not funded as part of the project and that would not have been constructed or expanded if the project did not exist and without which the project would not be viable. Cumulative impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted.”

In this respect, a Project together with all of its components has been considered in an ESIA to the extent the level of information allowed. ***In this ESIA, Ilgın WWTP and its ETL is taken into consideration during the determination of AoI.***

The AoI is defined for each environmental and social component. ***The baseline data collection and impact assessment are focused on the geographical extends of the AoI and referred as Study Area in the context of the impact assessment methodology. The project area refers to footprint area of the Project.***

The Area of Influence identified for the assessment of potential physical, environmental and social, biodiversity, noise, odor and the cumulative impacts are summarized below and shown on the maps presented below.

- Direct physical impacts of the construction activities will be restricted to the Project area including ETL route.
- The biodiversity expert has conducted field survey within the study area identified within the boundaries of the **Biodiversity AoI**.
- Noise assessments concludes specific distances at which the noise limit is under limit value. The distances from the Project area (163 m), which noise limit value is complied, is considered as **Noise AoI** within this study (See Section 5.3.5).

³⁶ World Bank ESMAP, December 2012

MUNICIPAL SERVICES IMPROVEMENT PROJECT

- For the operation phase, **Odor AoI** is also defined within 305 m from the WWTP area (See Section 5.3.3).
- **Social AoI** is also defined according to where the community health and safety impacts and land acquisition impacts should be assessed. Furthermore, this AoI also includes the neighbourhoods to which the WWTP subject to this ESIA report serves.
- **Cumulative Impact Assessment (CIA) area** has been identified as a significantly larger area than the study areas identified for the assessment of Project-level impacts. The present and reasonably foreseeable developments and the valued environmental and social components (VECs) within 500 m from the Project area have been taken into account. The topographical structure has also been evaluated while defining the CIA study area providing that topography can diminish or suppress the impact significance of other developments (See Section 5.7).

MUNICIPAL SERVICES IMPROVEMENT PROJECT

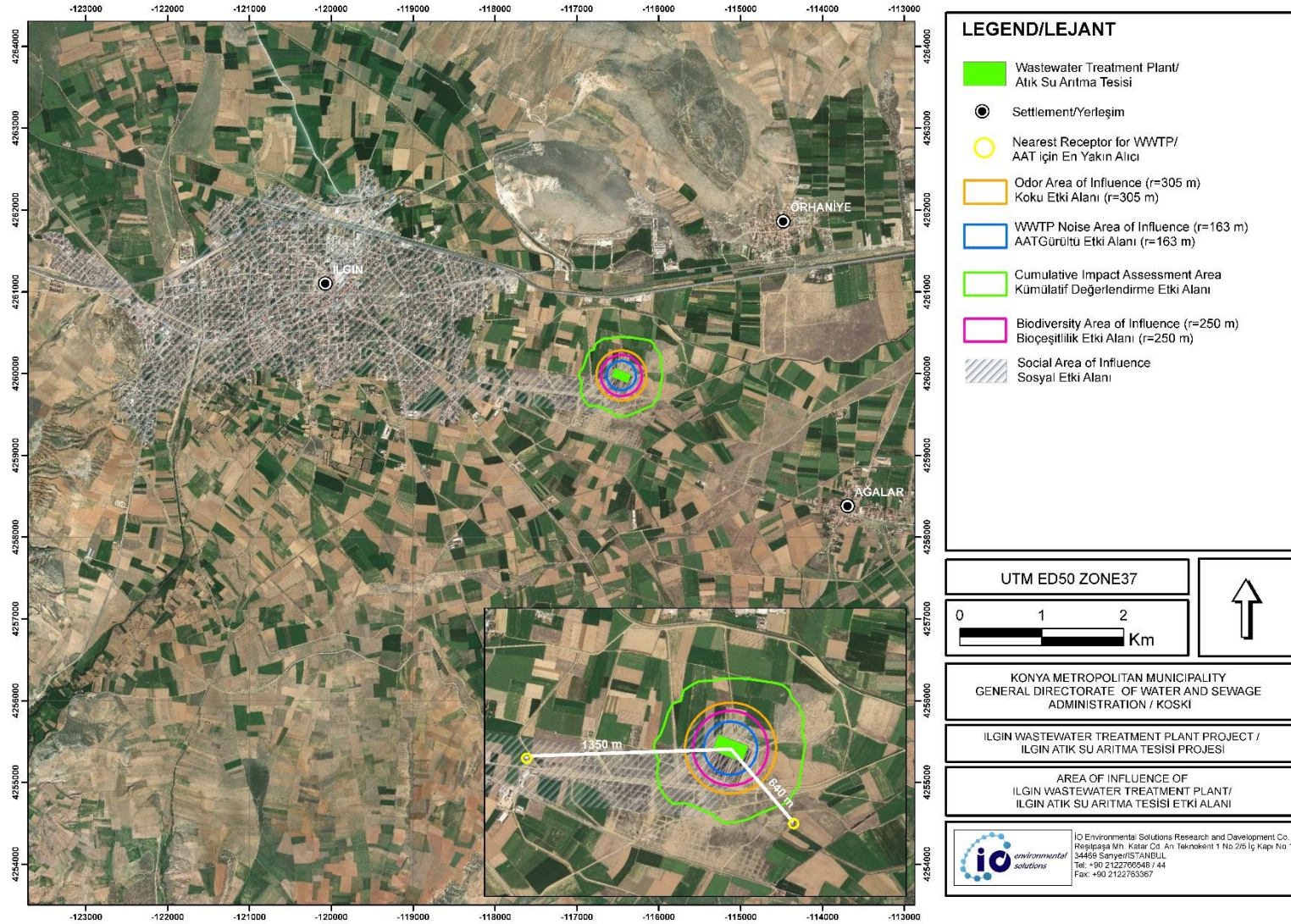


Figure 5.1 Ilgin WWTP - Project Area of Influence

MUNICIPAL SERVICES IMPROVEMENT PROJECT

5.2. Impact Assessment Methodology

The assessments of possible environmental and social impacts that the project should manage during the activities to be carried out in the land preparation, construction and operation phases and the measures to be taken against the possible effects are described in the following sections. Table 5-1 represents an interaction matrix that summarizes each environmental and social element discussed in the following chapters and the possible actions that might cause or potentially create benefits for these elements at different stages of the project. In the following sub-sections of Section 5,

- The environmental and social elements with which the project may interact,
- The impact assessment studies on these elements,
- The general approaches on preventive mechanisms to be established, and
- The mitigation measures planned to be taken according to the assessment outputs are presented.

The magnitude and severity of the impacts are taken into consideration when determining the significance of the impact in the impact assessment studies. By using quantitative and numerical methods in the evaluation within the scope of this ESIA study, the predicted magnitude of the impact is qualified for each appropriate environmental and social subject as wide, local and restricted; and the severity of the impact is considered as High, Medium and Low according to the sensitivity/value of the receiver/source exposed to the impact, as much as possible. Then, the significance of the impact is determined according to Table 5.2 (see also Table 5-3 for general criteria to be used in determining the magnitude of the impact and Table 5-4 for general criteria to be used in determining severity of the impact). In determining the magnitude and severity of the impact, residual impacts after the mitigation measures taken are also considered.

In terms of designing mitigation measures;

- Avoid (make changes so that the impacts are avoided altogether),
- Minimize (apply measures to reduce the size of the impacts),
- Repair (take action to repair and/or restore the affected environment) and
- Offset (implement measures to offset or compensate for the impact) mitigation hierarchy has been followed for the project.

Where the impact assessment identified impacts as potentially arising, further mitigation measures have been developed and the steps or actions to be taken were described. Once feasible mitigation measures were identified and agreed, potential impacts were reassessed, assuming the mitigation measures were effectively implemented as planned. Where a residual impact was considered of Medium or High significance, an iterative process has been undertaken to further investigate opportunities for mitigation.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 5-1 Matrix Representing Environmental and Social Impact Sources and Possible Interacts with Environmental and Social Components (Before Mitigation Measures Are Taken)

Impact Sources (Activities)	Environmental and Social Components															
	Physical							Biological		Social						
	Topography & Landscape	Soil Environment	Land Use	Geology	Air Quality	Noise Level	Surface Waters and Groundwater	Biological Environment	Protected Areas	Traffic Load	Socio-economic Conditions	Land Use	Community Health and Safety	Odor Nuisance	Quality of Life	Occupational Health and Safety
Land Preparation and Construction Phase																
Vegetation Clearing, Levelling Works and Construction of Facilities	■	■	■		■	■	■	■	■	■	■	■				■
Provision of Material, Equipment and Service					■					■	■		■			■
Water Supply and Use											■					■
Use of Energy					■											
Use of hazardous materials		■	■		■		■									
Generation of Domestic Wastewater and Disposal		■					■						■		■	■
Generation of Solid Waste (including hazardous) and Disposal	■	■					■						■		■	■
Employment of Workforce											■		■		■	
Operation Phase																
Operation of Facilities					■	■		■						■	■	■
Water Supply and Use (Domestic)											■					■
Generation of Domestic Wastewater and Disposal		■					■						■		■	■
Use of Energy					■											
Use of Hazardous Materials		■	■		■		■									
Generation of Solid Waste (including hazardous) and Disposal		■	■				■						■	■	■	■
Provision of Material, Equipment and Service										■	■		■			■
Employment of Workforce											■				■	
Possible Positive Impacts	■															
Possible Negative Impacts	■															

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 5-2 Interaction Matrix for Significance Assessment

		Severity of Impact		
		High (3)	Medium (2)	Low (1)
Magnitude of Impact	Wide (A)	High (A3)	Medium (A2)	Medium (A1)
	Local (B)	High (B3)	Medium (B2)	Low (B1)
	Restricted (C)	Medium (C3)	Low (C2)	Low (C1)
Significance of Impact	High	The significance of impact must be reduced absolutely; action cannot be continued without lowering the effect.		
	Medium	If possible, it can be reduced to a lower level by taking appropriate measures, if not lowered, risk can be accepted, and activity can be continued.		
	Low	As long as legal requirements and safety criteria are provided, activity can be continued without a need for an additional measure.		

Source: Adopted from World Bank, June 2012; L. Canter, 1993.

Table 5-3 Criteria for Determining the Magnitude of Impact

Magnitude of Impact	Description
Wide (A)	Beyond the Project Influence Area (regional)
Local (B)	Project Area of Influence (local)
Restricted (C)	Project Area (footprint)

Table 5-4 Criteria for Determining the Severity of Impact

Severity of Impact	Description
High (3)	Very sensitive and valuable receptor/source
Medium (2)	Sensitive and valuable receptor/source
Low (1)	Slightly sensitive and valuable receptor/source

5.3. Impacts on Physical Environment

This section provides examination of the impacts of the Project activities and components on the physical environment and the effects of the physical environment on the Project. All beneficial and adverse impacts are discussed in the following subsections considering the project phases such as pre-construction (land preparation) phase, construction and operation phases. The environmental impact analysis and assessment generally follow the outline of the previous chapter in order to address the impacts based on the baseline data provided.

5.3.1 Topography, Soil and Land Use

Direct impacts and associated risks on topography, soil and land use will be a concern mainly during the preconstruction and construction phases of the Project. Assessment of the impacts for the land preparation and construction and operation phases, in consideration of the baseline conditions is provided in the following headings.

5.3.1.1 Land Preparation and Construction Phase Impacts

The main construction impact on soil is due to topsoil stripping that will result in topsoil loss if topsoil will not be protected. Besides, mismanaged excavation material generated by excavation activities could lead topsoil and subsoil mixing that will also result in topsoil loss. The area of land to be disturbed is estimated as 25,125 m² and 10 m² for ETL poles. In addition, land will be used for the infrastructural services (potable water supply, sewerage line, telephone/internet line).

MUNICIPAL SERVICES IMPROVEMENT PROJECT

The WWTP area, three ETL poles and the area to be used for infrastructural services having steppe vegetation require adequate vegetation clearance and topsoil stripping before the construction. The topsoil stripped will be stored on a designated area on WWTP area until to be used for landscaping purposes. Construction vehicles and machinery will not go over or damage the topsoil pile in the course of construction works.

Following vegetation clearance and topsoil stripping, leveling works will begin on site. Following the leveling, excavation and filling works will be conducted. Total excavation amount will be 12,500 m³ from WWTP construction. The excavated subsoil will be temporarily stored on designated areas of WWTP land until to be used for backfilling purposes.

If there will be any excess excavated material, the excavation wastes will be sent to Municipality's permitted excavation material dump sites after taking relevant official documents and receipt. The transportation will be performed by licensed excavation trucks of Municipality. For all activities regarding excavation storage, transport and reuse provisions of Regulation on the Control of Excavation, Construction and Demolition Wastes will be complied.

During the land preparation and construction phase, different kinds of construction vehicles and machines will be used. These vehicles and machines can cause soil contamination as a result of oil and fuel leakages. Another reason of soil contamination can be the chemicals and hazardous materials leaks in case of uncontrolled storage and handling. Uncontrolled disposal of liquid or solid waste is another reason of soil contamination during these phases.

Significant erosion and sedimentation impact are not foreseen in the Project area due to the mitigation measures to be taken during stripping and excavation activities as well as particularly related to management of natural surface runoff and rehabilitation applications thereafter.

During the land preparation and construction phases of the Project, existing roads will be used. For the road opening requirements, which are not foreseen at the time of this ESIA, KOSKİ will apply to related Municipality for the obtainment of relevant permits and environmental and social impacts will be assessed and reported along with preventive and mitigation measures. Use of lands other than authorized ones for transportation, storage or trans-passing will cause additional soil and land use impacts. All Project activities will be implemented on authorized areas, roads and lands.

The closest neighborhoods to the Iğın WWTP is Şihbedrettin neighborhood -with a population of 2,367³⁷- which is at 2.5 km west and Orhaniye neighborhood -with a population of 1,054- at 2.5 km northeast. At the 3.1 km east of the Iğın WWTP area, Ağalar neighborhood -with a population of 626- is located. The nearest two settlements located in the surroundings of the WWTP Area are at 1,350 m west and at 640 m southeast in Şihbedrettin (See Figure 5.1). Those are farmhouses for farmers who are living with their families with a household population 4-6. At the north of WWTP area, agricultural lands are dominant and at the south, a pastureland with a large surface area is present (See Figure 4.21).

Damage to existing roads, community assets, dwellers' crops and assets during construction phase of the Project by construction machinery, trucks and vehicles is generally an unintentional adverse impact. Such impacts on individuals could result in livelihood losses as well. The estimated losses will be compensated by the construction contractor under the supervision of KOSKİ and the compensation will be structured in an extent that the impact is considered as reversible.

The WWTP land is belongs to treasury registered as WWTP land since 1980 with stabilization ponds on it and in 2014, with the Grand Municipality Law, the land was assigned as service area of KOSKİ; therefore, there is no land acquisition within the scope of the Project. At the southeast of the land owned by KOSKİ, where there will not be any construction activity, there is an old structure. This was the office of obsolete stabilization ponds.

³⁷ Population of the neighbourhoods is provided from TurkStat 2020 data.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

This structure is now used as barn by a farmer who is engaged with husbandry. KOSKİ representatives indicated that they communicated with the farmer in 2020 and the farmer informed that he was planning to move his husbandry (around 250 small ruminant) to his own land right after collecting the forage he planted on his land in autumn. According to the official letter submitted by the farmer to KOSKİ, the farmer left the building of his own accord on 2nd November 2021 (See Annex 9).

Referring to the energy transmission line (ETL) application project, the closest transformation station is on the adjacent public pastureland which belongs to treasury and 245 m overhead ETL with 31.5 kV will be constructed on this land through the Ilgin WWTP land. The overhead ETL will proceed within the Ilgin WWTP allocated land for 483 m reaching to Ilgin WWTP. On public pastureland, no agricultural activity including grazing was observed in June 2020 during the site visit conducted within the scope of this ESIA study and according to the consultation with the local people and mukhtar, there is not any known activity at this site. The public land is classified as pastureland and having a large surface area with 93,161 ha whereas the total area for three ETL poles to be erected is smaller than 10 m². Therefore, the total area of ETL poles is 0.00107% of total area of pastureland. Considering that the affected land ratio of pastureland is very small, construction timelines for the ETLs are very short and no evidence of agricultural production or grazing has been observed or learned from the local people at this area, the impacts of the ETL establishment on land use is negligible even if there would be an unpredicted agricultural or animal grazing activity.

Within the scope of described activities, potential impacts and possible risks on the soil environment and due to land acquisition in the case that necessary measures will not be taken during land preparation and construction phase of the project are summarized below:

- Topsoil loss due to lack of adequate stripping and protection,
- Mixing of soil layers as a result of stripping, excavation and filling activities,
- Soil pollution which may occur in case of uncontrolled storage or disposal of solid and/or liquid wastes to be generated within the scope of the Project,
- Soil contamination as a result of oil or fuel leaks or spillage that may result from incidents and unexpected event,
- Topsoil loss due to erosion and rainfall,
- Damage to existing roads and assets,
- Livelihood losses, which could arise by damage to dwellers' crops/assets and transfer of husbandry at the southeast of the land owned by KOSKİ, where there will not be any construction activity.

As the impacts on soil environment within the scope of the Project will occur only in the Project area, the magnitude of impact is evaluated as "restricted".

As described in the Section 4.1.4, the Project area is covered by alluvial soils and classified as Class III, which indicates that the area is easily cultivated by implementing proper agricultural methods. The WWTP land has none/very low erosion level.

Providing that the WWTP land is not used for any other purposes hereto and there is no facilities or structures on this land, soil contamination is not expected. Furthermore, KOSKİ noted that for cleaning purposes, a professional scraping work was performed in abandoned stabilization ponds up to the impervious material lied in ponds in 2015 where the scraped dry sludge was transported to Konya Centrum WWTP to be given for agricultural purposes. There is 5-6 cm soil on impervious layer in pond. During the field study, any contamination was not observed. Nevertheless, a soil sampling was conducted on September 2-3th, 2020 for the assessment of soil contamination as per Regulation on Soil Contamination and Point Source Contaminated Sites ("the Soil Regulation") Annex 2 Table 2 and as per the results, any contamination has not been identified (See Section 4.1.7.1) for details.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

During excavation and demolition of the existing stabilization ponds, soil samples will be collected in accordance with the requirements of the Soil Regulation and analysis of the samples will be done according to the Soil Regulation to ensure both adequate protection of construction workers and potential long-term soil and ground water contamination, and to check its possible contamination and whether any rehabilitation of the area/groundwater is required. All required rehabilitation and waste disposal actions will be done according to the Soil Regulation and Waste Management Regulation.

Significance of impacts determined in the light of the assessments made considering the magnitude of impact limited to the Project area and the severity of impacts identified for different impact issues in line with the specified properties of soil source are summarized in the following table. As the WWTP land has none/low level erosion level, the site is accepted to have “low” sensitivity (severity). The WWTP area has limited agricultural potential since it has been used as pastureland for years and then used for stabilization ponds. Therefore, the Project area is accepted to have “low” sensitivity in terms of topsoil loss.

The land acquisition impact is assessed in relation to livelihood losses of the informal user of the southeast of the land, who uses the structure of KOSKI as a barn. KOSKI representatives indicated that they communicated with the farmer in 2020 and the farmer informed that he was planning to move his husbandry (around 250 small ruminant) to his own land right after collecting the forage he planted on his land in autumn. According to the official letter submitted by the farmer to KOSKI, the farmer left the building of his own accord on 2nd November 2021 (See Annex 9). The severity of the impact is categorized depending on the livelihood loss of user. the severity of impact is determined as “low” since there is not any livelihood dependence of informal user upon this land, and he left the land voluntarily. In addition, the land acquisition will not require any new livelihood sources for the user. The magnitude of the impact is restricted, as the impact will arise within the Project area.

According to Resettlement Framework (RF) of MSIP, “If the land needed for expropriation is public land used informally, the project affected people, without formal title, will be compensated for the crops and any investment they have made on the land. In the case where land is needed on a temporary basis, owners will be compensated in full market rental price for the period during which the land is used, and the land will be given back to the owner in the same condition as before it was rented.” Therefore, all necessary compensation will be provided in scope of the Project. The following table provides the assessment of impacts on soil and land use presenting significance of impact.

Table 5-5 Assessment of Impacts on Soil and Land Use for the WWTP Project

Impact Issue	Magnitude of Impact	Severity of Impact			Significance of Impact
		High (3)	Medium (2)	Low (1)	
Agricultural Suitability Loss	Restricted (C)	Land Use Capability Class I-II-III-IV (lands suitable for agricultural soil cultivation)	Land Use Capability Class V-VI-VII (lands not suitable for agricultural soil cultivation)	Land Use Capability Class VIII (non-arable lands)	Medium (C3)
Erosion Potential		Erosion Level 3-4	Erosion Level 2	Erosion Level 1	Low (C1)
Topsoil Loss		Rich soils in terms of organic matter content	Medium-rich soils in terms of organic matter content	Poor soils in terms of organic matter content	Low (C1)
Livelihood Loss	Restricted (C)	Full or partial livelihood dependence upon acquired land which will require new livelihood sources for the	Partial livelihood dependence (upon acquired land which will	Low or no livelihood dependence upon acquired land which will not require any new livelihood sources	Low (C1)

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Impact Issue	Magnitude of Impact	Severity of Impact			Significance of Impact
		High (3)	Medium (2)	Low (1)	
		user after acquisition of the land.	not require any new livelihood sources for the user after acquisition of the land	for the user after acquisition of the land	

5.3.1.2 Land Preparation and Construction Phase Mitigation Measures

As the significance of the impacts on soil and land use are assessed as medium to low, an effective implementation of the below-described mitigation measures plays an important role for the further reduction in impacts resulting from WWTP and ETL construction works:

- Wastes and wastewater to be generated during the land preparation and construction phases of the Project will be stored and disposed in a controlled manner in accordance with the relevant regulations and in line with the management practices described in this ESIA. Thus, it will not be possible for the wastes and wastewater to be generated in the Project area interact with the soil environment and cause any impacts.
- The fuel required for the construction equipment and vehicles to be used within the site during construction phase will be supplied primarily from the nearest station; if deemed necessary, fuels that may possibly be stored at site will be stored in the areas where necessary impermeability precautions are taken.
- All oil and fuel leakages cause by construction machinery will be responded and collected with the soil contaminated. This contaminated soil will be stored in the hazardous waste collection area until the contamination rate will be analyzed for soil hazardousness categorization.
- Chemicals and hazardous materials will be stored in designated impermeable chemical and hazardous material storage areas.
- Spill response material will be placed to the chemical and hazardous material storage areas and distributed to project vehicles in order for timely response.
- Trainings for construction contractor staff will be conducted on spill response, safe chemical and hazardous material handling and storage.
- Measures to be taken in case of leaks and spills that may arise from construction machinery and vehicles due to fuel storage and unexpected accidents will be described in site specific Emergency Response Plan to be prepared by considering the framework (Annex 6) given in this ESIA.
- The provisions of the Regulation on the Control of Soil Pollution and Sites Contaminated by Point Sources shall be complied within the scope of the Project.
- The topsoil stripped will be stored on a designated area on WWTP land until to be used for landscaping purposes.
- Topsoil and subsoil storage areas will be designated and those will not be mixed in any case.
- The topsoil pile should be compacted slightly to minimize topsoil loss due to erosion.
- Construction vehicles and machinery will not go over or damage the topsoil pile in the course of construction works.
- The excavated subsoil from WWTP land will be stored on designated areas on WWTP land until to be used for backfilling purposes.
- The excavation wastes will be sent to Municipality’s permitted excavation material dump sites after taking relevant official documents and receipt.
- During the land preparation and construction phases of the Project, existing roads will be used. For the road opening requirements, which are not foreseen at the time of this ESIA, KOSKÍ will apply to related Municipality for the obtainment of relevant permits.
- All Project activities will be implemented on authorized areas, roads and lands.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

- In order to minimize the impacts on soil environment, the amount of soil that could be subject to compaction and contamination/pollution will be minimized by ensuring the use of only the designated work sites and routes for the construction machinery and equipment and field personnel.
- In case of any unforeseen damage to existing roads, community assets, individual's crops and assets during construction phase of the project, the construction contractor will compensate the losses by identifying damage in accordance with the WB's ESS5 with the supervision of KOSKÍ. KOSKÍ's grievance mechanism will be a tool to be used by affected people in the event of any damage or loss. KOSKÍ undertakes that any temporary or permanent damage or loss that may occur during the construction will be eliminated.
- The provisions of the Regulation on the Control of Excavation Material, Construction and Demolition Wastes shall be complied with during land preparation and construction phase of the Project.
- By establishing a suitable drainage system on the site, the potential impact of surface runoff will be minimized. In this context, drainage channels will be constructed in accordance with the topographical conditions of the site.
- The land users and owners of adjacent lands will be informed on their rights and related processes as well as Project's grievance mechanism by KOSKÍ. Their opinions and requests will be prioritized and if these could not be realized, the reasons will be conveyed to landowners with clear explanations.
- Community engagement will be performed timely and effectively with specific focus on vulnerable individuals and groups by KOSKÍ.
- Grievance response mechanism will be established by KOSKÍ.

5.3.1.3 Operation Phase Impacts and Mitigation Measures

The potential impacts and possible risks on the soil environment and the ones relating with the damage to assets will also be valid for the operation phase of the Project in the case that necessary measures will not be taken. These are summarized below:

- Soil pollution which may occur in case of uncontrolled storage or disposal of solid and/or liquid wastes to be generated within the scope of the Project,
- Soil contamination as a result of oil or fuel leaks or spillage that may result from incidents and unexpected event,
- Damage to existing roads and assets,
- Livelihood losses, which could arise by damage to individual's crops/assets.

Against those impacts and risk, the following measures implementation should continue for the operation phase.

- Wastes and wastewater to be generated will be stored and disposed in a controlled manner in accordance with the relevant regulations and in line with the management practices described in this ESIA. Thus, it will not be possible for the wastes and wastewater to be generated in the Project area interact with the soil environment and cause any impacts.
- The fuel required for Project vehicles will be supplied primarily from the nearest station. Only for repair and maintenance activities and if it is deemed necessary, fuels could be stored at site in the areas where necessary impermeability precautions are taken.
- All oil, fuel and chemical leakages will be responded and collected with the soil contaminated. This contaminated soil will be stored in the hazardous waste collection area until the contamination rate will be analyzed for soil hazardousness categorization.
- Chemicals and hazardous materials will be stored in designated impermeable chemical and hazardous material storage areas.
- Spill response material will be placed to the chemical and hazardous material storage areas.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

- Trainings for KOSKİ operation team will be conducted on spill response, safe chemical and hazardous material handling and storage.
- Measures to be taken in case of leaks and spills that may arise from machinery and vehicles due to fuel storage and unexpected accidents will be described in site specific Emergency Response Plan to be prepared by considering the framework (Annex 6) given in this ESIA.
- The provisions of the Regulation on the Control of Soil Pollution and Sites Contaminated by Point Sources shall be complied within the scope of the Project.
- The existing roads will be used.
- All Project activities will be implemented on authorized areas, roads and lands.
- In case of any unforeseen damage to existing roads, community assets, individual's crops and assets during operation phase of the Project, KOSKİ will be responsible to compensate the losses by identifying damage in accordance with WB's ESS5. KOSKİ's grievance mechanism will be a tool to be used by affected people in the event of any damage or loss.
- In the event of any repair or maintenance activity, KOSKİ will follow the mitigation measures listed for land preparation and construction phase.

5.3.1.4 Summary of Assessment and Residual Impacts

As it is clearly mentioned in Section 2.3.1, there is no need for land acquisition for the Project area and the associated facilities (ETL, water line, construction camp sites, site offices etc.). Therefore, any land acquisition and land use impact re not expected and a Resettlement Plan (RP) specific for this project has not been prepared. However, in case further land acquisition/expropriation is required during implementation, then a Resettlement Plan (RP) will be prepared in compliance with the Resettlement Framework prepared for MSIP.

Table 7-5 and Table 7-6 provides a summary of impact assessments made on soil environment. Significance of the identified impacts before and after the implementation of mitigation measures are also given in this table.

5.3.2 Air Quality

The potential impacts of the proposed project on air quality of its region are evaluated under this section. Within this scope, the construction and operation phases of the Project are taken into consideration and impacts are evaluated accordingly. This chapter includes the following topics:

- Assessment and quantification of potential emissions,
- Assessment of potential impacts on air quality,
- Mitigation measures regarding air quality,
- Residual impacts on air quality.

5.3.2.1 National Legal Framework

In addition to the Section 3 Legal and Institutional Framework, air-quality related legal framework is here outlined, and the objectives of the regulations are summarized together with the standards set.

Particles vary according to their size and composition. Standards for PM₁₀ (particles with aerodynamic diameter smaller than 10 µm) are defined for particles which are respirable by humans and therefore, PM₁₀ is the accepted measure of particles in atmosphere. In this context, both the Regulation on Assessment and Management Air Quality, and Industrial Air Pollution Control Regulation define the standards in terms of PM₁₀.

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

Regulation on Assessment and Management of Air Quality was put into force in Official Gazette dated June 6th, 2008 and numbered 26898. With this regulation, the Regulation on Protection of Air Quality was abolished.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

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

Industrial Air Pollution Control Regulation (IAPCR)

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

According to the regulation, threshold values based on mass flow rates are defined for the calculation of contribution to air pollution resulting from stack and non-stack sources according to the provisions of the regulation, the amount of contribution to air pollution should be calculated if the amount of emission exceeds these threshold values. These values are provided in Table 5-6.

Table 5-6 Threshold Values for Stack and Non-Stack Sources

Parameter	Mass Flow (kg/hour)	
	Stack	Non-Stack
Carbon monoxide (CO)	500	50
Nitrogen oxide (NO _x)	40	4
Sulphur Dioxide (SO ₂)	60	6
Dust	10	1

In this context, the amounts of emissions released as a result of the activities conducted in scope of the Project will be calculated and compared with the values provided as regulatory standards. If the calculated mass flow rates do not exceed the threshold values defined in the regulation, the amount of contribution to air pollution is considered as negligible.

The ambient air quality limit values are also provided in Annex 2 of IAPCR and presented below.

Table 5-7 Ambient Air Quality Limit Values – National Legal Limit Values

Parameter	Period	Unit	Year	
			2019-2023	2024 and later
SO ₂	Hourly (not to exceed over 24 in a year)	µg/m ³	350	350
	24 hours		125	125
	Long-term		60	60
	Yearly and winter season (October 1 - March 31) (for wildlife and ecosystem)		20	20
NO ₂	Hourly (not to exceed over 18 in a year)	µg/m ³	250	200*
	Annual		40	40
PM10	24 hours (not to exceed over 35 in a year)	µg/m ³	50	50
	Annual		40	40
CO	Max daily 8 hr average	mg/m ³	10	10

**The limit value will be reduced annually until the targets for 2024 are achieved.*

MUNICIPAL SERVICES IMPROVEMENT PROJECT

5.3.2.2 WBG's Standards

In addition to the national legislations, the ambient air quality limit values stipulated in the WBG's General EHS Guidelines are assessed. As per ESS1 Para 18, "When host country requirements differ from the levels and measures presented in the EHSGs, the Borrower will be required to achieve or implement whichever is more stringent." Therefore, WHO standards for SO₂, NO₂, and PM₁₀ parameters should be complied with, additionally only PM_{2,5} ambient air quality limit values provided in the WHO guidelines will apply to the Project due to absence of a limit value for this parameter in the national legislation.

Table 5-8 Ambient Air Quality Limit Values – WBG Standards Parameter	Duration	Guideline Value (µg/m ³)
SO ₂	10 minutes	500
	24 hours	40
NO ₂	Hourly	200
	24 hours	25
	Annual	10
Particulate Matter (PM ₁₀)	24 hours	40
	Annual	15
Particulate Matter (PM _{2,5})	24 hours	15
	Annual	5

Source: WHO global air quality guidelines: particulate matter (PM_{2.5} and PM₁₀), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide: executive summary - <https://apps.who.int/iris/handle/10665/345334>

5.3.2.3 Emissions during Land Preparation and Construction Phase and Assessment

5.3.2.3.1 Emissions from Earthworks

Dust will be the major emission source due to the nature of the Project's land preparation and construction activities including WWTP and ETL. The amount of dust emissions generated during construction phase of the Project is calculated with the emission factors defined in IAPCR. The emission factors are presented in the Table 5-9.

Uncontrolled emission factors in the table represent the case in which the activities are performed without any measures taken, while controlled emission factors represent the case when measures such as watering, usage of closed transportation systems, keeping the material moisturized and performing loading and unloading of materials without scattering are taken.

Table 5-9 Emission Factors to be used to Calculate Dust Emissions

Impact Issue	Emission Factors		Unit
	Uncontrolled	Controlled	
Dismantling/Excavation	0.025	0.0125	kg/ton
Loading	0.010	0.0050	
Unloading	0.010	0.0050	
Storage	5.800	2.9000	kg dust/ha.day
Transportation (total distance)	0.700	0.3500	kg/km- vehicle

Source: Industrial Air Pollution Control Regulation, Appendix 12

According to the Project schedule, construction activities are planned to last for two years and daily shifts will last for 10 hours. The ETL poles will occupy maximum 10 m² land area and the installation will last one week.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Construction will start with vegetation clearance and leveling works. It will be conducted gradually to minimize the ecosystem disturbance and the excavation work is expected to last for six months. A total of 12,500 m³ of excavation material will be generated from the WWTP area. It is assumed that 9,375 m³ will be sent to Municipality's permitted excavation material dump sites. The residual (3,125 m³) will be used for backfilling purposes; therefore, stored in the WWTP area. All excavated material from WWTP area will be loaded to trucks whereas only the amount to be used for backfilling will be unloaded on the WWTP land. The amount of dust emission expected as a result of the land preparation and construction activities of the Ilgın WWTP project have been calculated and presented in detail below.

Table 5-10 The Predicted Amount of Dust Emission for the Land Preparation and Construction Activities

WWTP Excavation Volume	12,500	m ³	Amount	18,750	ton
Density of Excavation Material	1.50	ton/m ³			
WWTP Excavation Material will be Reused (stored) Volume	3,125	m ³	Amount	4,688	ton
WWTP Excess Excavation Amount will be sent to Disposal	9,375	m ³	Amount	14,063	ton
Distance within the Plant	0.22	km			
Truck Capacity	26.00	ton			
Total Number of Trips	541	trips			
Number of Trucks	4				
Number of Trips per Truck	135	trips/truck			
Total Distance to be traveled (round trip)	13	km			
Excavation Time	150	days			
Work Hours in a Day	10	hours			
Hourly WWTP Excavation Material Amount	12.50	ton/hour			
Hourly WWTP Excavation Material Amount Transferred and Unloading within the WWTP area for Reuse	3.13	ton/hour			

Table 5-11 Uncontrolled and Controlled Dust Emissions Generated on Ilgın WWTP Area

Uncontrolled Dust Emissions		Controlled Dust Emissions	
Emission from excavation		Emission from excavation	
Excavation emission factor (uncontrolled)	0.0250 kg/ton	Excavation emission factor (controlled)	0.0125 kg/ton
Amount of PM ₁₀ emissions	0.3125 kg/hr	Amount of PM ₁₀ emissions	0.1563 kg/hr
Emission from loading		Emission from loading	
Loading emission factor (uncontrolled)	0.0100 kg/ton	Loading emission factor (controlled)	0.0050 kg/ton
Amount of PM ₁₀ emissions	0.1250 kg/hr	Amount of PM ₁₀ emissions	0.0625 kg/hr
Emission from unloading		Emission from unloading	
Unloading emission factor (uncontrolled)	0.0100 kg/ton	Unloading emission factor (uncontrolled)	0.0050 kg/ton
Amount of PM ₁₀ emissions	0.0313 kg/hr	Amount of PM ₁₀ emissions	0.0156 kg/hr
Emission from transportation activities		Emission from transportation activities	
Transportation emission factor (uncontrolled)	0.700 kg/ton	Transportation emission factor (controlled)	0.3500 kg/ton
Amount of PM ₁₀ emissions due to transportation within WWTP Area	0.0001 kg/hr	Amount of PM ₁₀ emissions due to transportation within WWTP Area	0.00005 kg/hr
Amount of PM ₁₀ emissions while transportation to disposal	0.0061 kg/hr	Amount of PM ₁₀ emissions while transportation to disposal	0.0030 kg/hr

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Emission from storage		Emission from storage	
Amount of excavation stored	3,125 m ³	Amount of excavation stored	3,125 m ³
Storage height	3 m	Storage height	3 m
Required storage area	0.10 ha	Required storage area	0.10 ha
Storage emission factor (uncontrolled)	5.8 kg/ha.d	Storage emission factor (controlled)	2.9 kg/ha.d
Amount of PM10 emissions	0.025 kg/hr	Amount of PM10 emissions	0.013 kg/hr
Total uncontrolled PM10 emissions	0.5001 kg/hr	Total Controlled PM10 emissions	0.2500 kg/hr

According to the calculations, the total amounts of uncontrolled and controlled PM₁₀ emissions on WWTP area are expected as 0.50 kg/hour and 0.25 kg/hour, respectively.

As stated above, these emission rates are calculated based on the worst-case scenario and it is found that the emission rates are lower than the threshold value defined for non-stack sources in IAPCR, which is 1 kg/hour. In this respect, the amount of contribution to air pollution is considered as negligible.

5.3.2.3.2 Emissions from Construction Machinery

Since there will be heavy construction machinery usage in the land preparation and construction phase of the Project, the exhaust emissions of these machinery will have some impacts on the air quality of region. Primary emissions from exhaust gases of vehicles are NO₂, CO, HC, SO₂ and PM. Emission characteristics depend on parameters such as age of the vehicle, engine speed, working temperature, ambient temperature and pressure, type and quality of fuel.

Emission factors (EF) developed by USEPA for gasoline and diesel fueled vehicles are presented in the following table (Table 5-12).

Table 5-12 Emission Factors (USEPA)

Pollutants	Emission Factor (g/km-vehicle)	
	Gasoline	Diesel Fuel
Nitrogen oxides (NO_x)	1.20	9.00
Carbon monoxide (CO)	39.0	15.0
Sulphur dioxide (SO₂)	0.08	1.50
Hydrocarbons (HC)	2.60	2.90
Particulate Matter (PM)	0.40	0.80

During the land preparation and construction activities of the Project; 4 trucks, 1 excavator, 2 loader, 1 mini loader, 1 crane, 1 sprinkler, 1 concrete pump and 1 concrete mixer is planned to be used. The machinery and equipment required is presented under Section 2.4. Exhaust emissions are estimated based on the machinery number and the distance that the machineries will make. The distance that all the project vehicles will make is taken as 15 km per day as a worst case scenario.

The emissions are calculated by using the following formula:

$$\text{Exhaust Emission (g/hr)} = \text{EF} \times \text{Working Hours/day} \times \text{Number of Machinery} \times d$$

EF: Emission Factor

d: distance that vehicles make in a day

NO_x exhaust emission is calculated by using the formula.

$$\begin{aligned} \text{NO}_x \text{ Exhaust Emission} &= 9 \text{ g/km-vehicle} \times 10 \text{ hr/day} \times 12 \text{ machinery} \times 15 \text{ km/day} = 162 \text{ g/hr} \\ &= 0.162 \text{ kg/hr} \end{aligned}$$

The following table (Table 5-13) presents the calculated amounts of exhaust emissions.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 5-13 Calculated Amounts of Exhaust Emissions

Emissions (kg/hr)				
NO _x	CO	SO ₂	HC	PM
0.162	0.27	0.027	0.052	0.014

According to the calculations made, exhaust emissions are quite below the IAPCR threshold values (given in Table 5-6) for all parameters expect for HC which has no threshold value defined.

5.3.2.3.3 General Assessment of Impacts

The amounts of uncontrolled and controlled dust emissions from land preparation and construction activities, which are planned to last for six months, are calculated as lower than 1 kg/hour for Ilgın WWTP and ETL. The total emissions will be even lower when the activities are carried out in a controlled manner by taking necessary dust suppression measures, such as establishment of an effective water spraying schedule etc. For these reasons, no impact is expected outside the Project area and the magnitude of impact is evaluated as “restricted”. Since, the anthropogenic activities around the Project area that can cause any emissions is in a moderate level referring to the baseline air quality measurements (Table 4-20) where two PM2.5 results are identical and slightly exceed the WBG’s guideline value, the ambient air quality is considered as moderate in the region. Therefore, the level of severity is identified as "medium". Therefore, the significance of foreseen impact due to dust emissions on air environment is assessed as "low".

Considering the exhaust emissions, no impact originating from the exhaust emissions is expected outside of the Project area and the magnitude of the impact is defined as “restricted”. Since the current ambient air quality in the region is good and calculated exhaust emissions are below the defined threshold values in IAPCR, the level of severity is identified as “low” accordingly. The significance of the anticipated impact due to the exhaust emission on air environment is assessed as “low”.

Table 5-14 Assessment of Dust and Emission Impacts on Air Environment

Impact Issue	Magnitude of Impact	Relevant Ecosystem Component	Severity of Impact			Significance of Impact
			High (3)	Medium (2)	Low (1)	
Dust Emissions	Restricted (C)	Air Environment	Environment where the existing air quality is bad (if the existing pollutant concentration exceeds the limit values of IAPCR)	Environment where the existing air quality is medium (if the existing pollutant concentration scarcely meets the limit values of IAPCR and/or WBG’s guideline value)	Environment where the existing air quality is good (if the existing Pollutant concentration meets the limit values of IAPCR)	Low (C2)
Exhaust Emissions	Restricted (C)	Air Environment	Environment where the existing air quality is bad (if the existing pollutant concentration exceeds the	Environment where the existing air quality is medium (if the existing pollutant concentration scarcely meets the	Environment where the existing air quality is good (if the existing Pollutant concentration meets the	Low (C1)

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Impact Issue	Magnitude of Impact	Relevant Ecosystem Component	Severity of Impact			Significance of Impact
			High (3)	Medium (2)	Low (1)	
			limit values of IAPCR)	limit values of IAPCR)	limit values of IAPCR)	

5.3.2.4 Mitigation Measures

The assessment made above does not indicate a significant impact on air quality but still some measures shall be applied to minimize the impacts on air quality for the construction phase for WWTP and ETL. These include:

- Application of dust suppression methods (watering, sweeping etc.) in sufficient frequency,
- Covering inner roads with materials to prevent dust and keeping these roads clean,
- Setting speed limit in and around the Project area,
- Keeping wind barrier trees and plantation of new ones,
- Loading/unloading without scattering,
- Covering the stored excavation materials,
- Regular controlling of the exhaust systems of the vehicles, and
- Erosion measures to be applied in vegetation clearance areas.

To reduce the emission amounts caused by the construction machinery to be operated at the construction phase and to ensure that these amounts do not exceed limit values, the provisions of Regulation on the Assessment and Management of Air Quality and the Industrial Air Pollution Control Regulation shall be complied.

In order to monitor the construction related air quality impact, PM₁₀ and PM_{2.5} measurements will be conducted before construction starts (to verify the baseline measurements) by the construction contractor and quarterly in the course of construction, particularly during excavation works, at two locations where baseline measurements have already been conducted within the scope of this ESIA.

A more complete and specific details will be provided in the Air Quality and Noise Management Plan related to the mitigation measure of application of dust suppression methods (watering, sweeping etc.) in sufficient frequency” and a more real-time dust monitoring program will be developed (Section 7) to ensure a real-time (rapid) response should increase PM levels occur.

5.3.2.5 Operation Phase Impacts

The operation phase of the Project is not expected to cause significant dust and exhaust emissions. However, as also stated in the WBG’s EHS Guidelines for Water and Sanitation, air emissions from wastewater treatment operations could include hydrogen sulfide.

Hydrogen sulfide (H₂S) will generate from physical treatment and sludge treatment systems of WWTPs in general. For both treatment systems, there should be an absorption system to catch H₂S which is critical to avoid odor emissions as well (see Section 5.3.3 Odor for details).

There will be chlorine to be used for disinfection process which is a volatile chemical. Specific OHS measures such as storage in closed containers, care during handling, management by trained personnel should be taken. In normal operation, there will be no direct contact of workers with chlorine solution since it is supplied as a solution and into the chlorine storage tank directly from supplier. Besides, chlorine dosing pumps will also be present. Once the chlorine contacts with water, it will be absorbed and will not be volatile anymore. Therefore, any adverse impact of chlorine is not foreseen. A more complete and specific details will be provided in Occupational Health and Safety Management Plan to be prepared for the operational phase.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Ilgın WWTP subject to this ESIA study will not generate methane since any process causing decay is not included in the design documents. However, there is a possibility of generation of methane under long term anaerobic conditions at pumping stations, sludge tanks and sludge cake containers unless adequate conditions for maintenance of these are met such as frequent cleaning, continuous aeration of sludge tanks and periodical removal of sludge cake. Under standard operational conditions, methane emission is not foreseen from the system.

Emission limits and requirements defined for emergency power generators in the Industrial Air Pollution Control Regulation shall be complied during operation of the Project.

Considering the impacts on air quality for the operation phase for Ilgın WWTP, the magnitude of the impact is defined as “local” since it is in the Project AoI. The severity of the impact is considered as low since there is not any emission generation unit specifically. Thus, the level of severity of impact is identified as “low” accordingly. Within that scope, the significance of the anticipated impact on air quality for the operation phase is assessed as “low”.

5.3.2.6 Summary of Assessment and Residual Impacts

Table 7-5 and Table 7-6 provides a summary of impact assessments made on air environment. Significance of the identified impacts before and after the implementation of mitigation measures are also given in this table.

5.3.3 Odor

Odor impacts could be observed during the operation phase of the WWTP. Any odor impact in the land preparation and construction phase is not anticipated.

During the operation phase, odor is generally generated in physical treatment and sludge units of WWTPs. Screens, aeration tanks, sedimentation tanks, sludge thickeners and dewatering units and operations performed within these units can result in generation of odor which may result in disruptive impacts around the treatment plants. In addition, wastewater discharge can create odor in the areas immediately downstream.

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

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

In Ilgın WWTP, with good operation conditions and relevant measures taken for deodorization, disruptive odors will be prevented.

5.3.3.1 General Assessment of Odor Impacts

The odor impacts might be majorly observed during the operation phase at WWTP. However, the enclosed structure of the pumping stations at WWTP will significantly lower the odor impacts. In Ilgın WWTP, the sludge dewatering unit will be in an enclosed building and the sludge concentration tank will also be closed to avoid odor nuisance. The dewatered sludge will be stored in closed and impermeable containers. The storage duration will be limited aiming to minimize the odor problem. The dewatered sludge will be sent to Konya Centrum WWTP for drying periodically (See Section 5.3.7 for details).

Establishing a buffer zone between the treatment plant and residential areas and isolating odor is the main method to prevent odor generated in the treatment plants to be dispersed to settlements. Suggested buffer zone distances between treatment plants units and residential areas are presented in the following table.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 5-15 Recommended Distances to Settlements against Odor Nuisance

Treatment Unit	Buffer Zone Distance (m)
Sedimentation Tank	122
Aeration Tank	152
Sludge Disposal Unit	305

Source: Tchobanoglous, 1991

In the assessment, the buffer zone distance for sludge disposal unit (given in Table 5-15) is taken and odor AoI is determined. The odor AoI is mapped on Figure 5.1

The odor impact is expected within the boundaries of odor AoI for Ilgin WWTP; therefore, the magnitude of the impact is defined as “local”.

The distance between the closest receptor and Ilgin WWTP is 640 m and this is at southeast and referring to Figure 5.1, there is no receptor within the odor AoI of Ilgin WWTP. Therefore, there will be no odor impacts due to the nearest receptor being 640 m away and based on the dominant wind direction. The severity of the odor impact is determined as “low”.

The dominant wind directions are also assessed while considering odor impact. The dominant wind directions are presented for Ilgin WWTP below.

Table 5-16 Dominant Wind Directions for Ilgin WWTP and Distance to Nearest Receptor at the Directions

Level of Dominancy	Dominant Wind Direction	Distance to the Nearest Receptor at the Wind Direction
1 st	Northwest (NW)	972 m
2 nd	Southwest (SW)	1,656 m
3 rd	North (N)	908 m

The nearest receptor for Ilgin WWTP on first dominant wind direction, which is 972 m away at northwest direction, is not considered to be affected in case of odor generated due to its distance. The nearest receptors at second and third dominant wind directions will not be under an odor impact considering the distances. Therefore, there will not be any significant odor impacts according to the above assessment and the severity of the odor impact is determined as “low”.

Table 5-17 Summary of Odor Impact Assessments for Ilgin WWTP

Impact Issue	Magnitude of Impact	Severity of Impact			Significance of Impact
		High (3)	Medium (2)	Low (1)	
Odor	Local (B)	The nearest residential /commercial area is in the buffer zone	The nearest residential / commercial area is close to the buffer zone	The nearest residential / commercial area is out of the buffer zone	Low (B1)

The significance of the impact is assessed as “low” and it will be reduced to negligible by enclosing the sludge treatment units and providing good operational conditions to avoid nuisance of the community who are engaged in agricultural activities around the WWTP area.

5.3.3.2 Mitigation Measures

One of the most effective mitigation measures against odor is enclosing the odor generating unit such as pumping stations, physical treatment units and sludge treatment system completely. The pumping stations, sludge concentration tank and sludge dewatering system will be enclosed including its sludge tank and sludge cake container. It is recommended that the physical treatment system, screens and chambers should also be enclosed.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

The other such as aeration tanks, sedimentation tanks and Bio-P unit are not expected to generate odor if the standard operation standards will be met. In case of any complaint, investigation on odor resources and the potential reasons will be conducted by KOSKİ. KOSKİ may consult to competent persons/institutions on that. The necessary measures identified as a result of researches will be taken and compliant will be informed in accordance with the grievance mechanism.

The impacts can be lowered through the proper implementation of mitigation measures together with ensuring the usual operation conditions. The proposed mitigation measures (first level measures) that should be implemented by İlgin WWTP are as follows:

- Planting trees around the Project Area and the buffer zone around the treatment plant for the prevention of odor distribution.
- Ensuring good operational conditions,
- Enclosing the pumping stations, physical treatment system and sludge treatment system,
- Prevention of wastewater influents which exceed treatment plant capacity,
- Decreasing activated sludge amounts by adequate operation of WWTP,
- Increasing disposal frequency of screenings,
- Enclosing storage of dewatered sludge all the time,
- Proper and timely disposing of dewatered sludge in order to prevent odor,
- Increasing aeration rate in biological treatment process,
- Addition of lime to activated sludge and dewatered sludge,
- Keeping water level under control in order to prevent turbulence as a result of instant decrease of water.

It can be concluded that odor can be successfully managed, and its formation can be prevented in the conceptual design phase and under good operational conditions. After all, if unwanted odor will be still generated, additional measures (second level measures) will also be taken. Specific objective criteria will be defined for the second level measures. These measures will be applied when odor from the WWTP is disruptive or complaints arise from neighborhoods:

- Addition of oxidizing material (such as hydrogen peroxide, sodium hypochlorite) (Oxidizing materials, prevent generation of especially hydrogen sulfide. Addition of sodium hydroxide can also be considered. Sodium hydroxide will dissolve hydrogen sulphur gas in water.),
- Preventing septic conditions with control of pH levels or disinfection,
- Oxidizing odorous compounds by the help of chemicals,

In addition, proactive odor measures including a strong ongoing information campaign with nearby residents/receptors, boundary and off-site monitoring program, and directly implementing a vegetation/tree boundary at the plant (this also may help with reducing light pollution impacts on nearby residents) will be included in Odor Management Plan to be prepared for the operation phase of the Project.

Significant odor related nuisances are not expected to be observed as a result of wastewater and sludge operations as long as the measures mentioned above are taken considering the locations of the settlements. In addition to abovementioned measures and actions, in the operation phase of the Project, necessary action shall be taken to comply with the provisions of Regulation on the Control of Odor-Causing Emissions. There are no mandatory numerical standards set in Türkiye for odor concentration in ambient air at the site boundary or at receptor locations. If a new regulatory limit value will be set in the future, the Project shall comply all the mandatory numerical standards.

As a general management measure, KOSKİ will establish an operating grievance mechanism and assign a community liaison officer for the management of odor related grievances.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

5.3.3.3 Summary of Assessment and Residual Impacts

Table 7-6 provides a summary of impact assessments related to odor for the operational term. Significance of the identified impacts before and after the implementation of mitigation measures are also given in this table. Even with good operation conditions and relevant measures taken for deodorization, odors could occur and could be worst when WWTPs have operation problems. If odor nuisance prevails after the proper implementation of required and other first level measures, the second level measures shall be taken.

5.3.4 Climate Change

Climate change is one of the main challenges for urban wastewater systems in the future decades. Due to increasing concentrations of greenhouse gases (GHG) in the atmosphere, temperatures are expected to rise between 3,4°C for Representative Concentration Pathway (RCP) 4.5 scenario and 5,9°C for RCP8.5 scenario in Türkiye by 2100 (ClimateWATER, 2016).

Climate change is affecting the hydrologic cycle in various ways. Precipitation patterns are changing (mostly decreasing except the northeast side of Türkiye), snow covers and ice sheets are melting, and atmospheric water vapor and evaporation is increasing as a result of increasing land and water surface temperatures. With the increased temperature, the water holding capacity of the atmosphere is increasing. As atmospheric moisture content directly affects precipitation, stronger rainfall events are expected with climate change (K.E. Trenberth, 1999).

Climate change is expected to be one of the challenges for urban wastewater systems in the next decades, and it is estimated that it will have a dual effect on wastewater treatment plants. The wastewater industry is addressing the challenges posed by climate change, including regulatory burdens, pressure to reduce emissions and the challenge of adapting to a changing climate (WEFTEC, 2008).

5.3.4.1 WWTP Affected by Climate Change

Wastewater Treatment Plants can be influenced by climate change. The main processes in a WWTP such as sedimentation, biological aeration of warm wastewater, processing of waste sludge and stabilization ponds are already begun to be affected by the climate change.

Temperature and precipitation changes play an important role in some biological treatment process, especially natural-based and non-mechanized plants. Warm temperatures decrease land requirements, enhance conversion processes, increase removal efficiencies and make the utilization of some treatment processes feasible. Some treatment processes, such as anaerobic reactors, may be utilized for diluted wastewater, such as domestic sewage, only in warm climate areas.

The frequency of the storm events is expected to increase. Heavy rainfall can cause flooding. With the onset of river flooding, many water utilities have become threatened by flooding which can have multiple negative consequences. Flooded wastewater facilities have the potential to release untreated waste into ecosystems, causing significant damage to the environment and human health. If the wastewater facility suffers structural damage, it may have to release untreated waste for an extended period of time until the facility can be repaired. Flood damage would be costly to municipalities both in terms of financial loss and in terms of threats to public health. Rising downstream water levels may make pumping effluent a requirement and increasing the facility's energy needs.

Climate change in drought-prone areas is likely to reduce the stream and river base flows. In the semi-arid and arid regions, wastewater reuse and desalination will possibly become important sources of water supply, in the future. More frequent heavy rainfall events will overload the capacity of sewer systems, water and WWTPs. An increased occurrence of low flows will lead to decreased contaminant dilution capacity which means higher pollutant concentrations, including pathogens. In the many semi-arid areas with overall decreased runoff, water quality will be even worse (Bates et al. 2008).

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Engineers should determine changes in climatic parameters with the local climatologist as they are designing wastewater treatment facilities and working with regulating agencies to determine the predicted impacts including any decrease in stream or river base flow predicted (O'Neill, 2010). Moreover, during the operation phase, the Municipality is responsible for identify any significant potential risks on the subject WWTP in accordance with the above-mentioned impacts in order to reduce climate changes long-term impacts.

5.3.4.2 Climate Change Affected by WWTP

The quantity of wastewater collected and treated is increasing in many countries in order to maintain and improve potable water quality, public health and environmental protection benefits. The wastewater treatment contributes to climate change itself, as during wastewater treatment anthropogenic GHG emissions, including carbon dioxide (CO₂) from aerobic (oxidation processes), methane (CH₄) from anaerobic processes and nitrous oxide (N₂O) associated with nitrification/denitrification processes, can be emitted to the atmosphere.

Urban sewage treatment plants play an important role in the abatement of water pollution, but they also produce gaseous emissions to atmosphere. The discharge of fugitive gases that contains low levels of chemical constituents may still lead to an excessive contribution to air pollution. Most centralized WWT methods consist of a combination of biological processes (activated sludge reactors, trickling filters, anaerobic digesters, etc.) that promote biodegradation of organic matters by microorganism and production of anthropogenic CH₄, and N₂O gaseous emissions. Methane (CH₄) production is directly resulting from anaerobic decomposition of the organic matter present in sewers. The methanogenesis or CH₄ production rate depends primarily on the concentration of the degradable organic material in wastewater measured by biochemical oxygen demand (BOD₅) and COD. The main environmental factors which influence methane production include; retention time, pH, temperature, presence of sulfate reducing bacteria and methanogens (Listowski et al., 2011 and Guisasola et al., 2008). The WWTP Project assessed within this ESIA study has not an anaerobic decomposition system such as anaerobic digesters to produce CH₄.

Nitrous oxide (N₂O) and nitric oxide (NO) production is associated with breakdown of nitrogen components that are common in wastewater, e.g., protein and urea. Biological nutrient removal processes have the ability to transform the ammonia and organic nitrogen compounds into nitrogen gas, which can be released to the earth's atmosphere. The two-phase process involves nitrifying bacteria (Nitrosomonas) that oxidize ammonia to create nitrate (aerobic phase), while denitrifying bacteria reduce nitrate, turning it into nitrogen gas, which is then released to the atmosphere (anoxic phase). N₂O and NO can be released during both of these processes; however, it is mainly associated with denitrification. In another words, aerobic treatment process produces relatively small emissions, whereas anoxic processes emission can increase by 50–80% (Listowski et al., 2011 and Park et al., 2000).

CO₂ production is attributed to two main factors; the treatment process and the electricity consumption. During anaerobic process, the BOD₅ of wastewater is either incorporated into biomass or it is converted to CO₂ and CH₄. A fraction of biomass is further converted to CO₂ and CH₄ via endogenous respiration. Short cycle or natural sources of atmospheric CO₂ which cycle from plants to animals and to humans as part of the natural carbon cycle and food chain do not contribute to global warming. Photosynthesis produced short-cycle CO₂, removes an equal mass of CO₂ from the atmosphere that returns during respiration or WWT. Digestion processes, either aerobic or anaerobic, emit also only short-cycle CO₂ (Listowski et al., 2011).

The hydrogen sulfide (H₂S) gas evolves from the anaerobic decomposition of organic matter or from the reduction of mineral sulfites and sulfates. H₂S gas mixed with the sewage gases (CH₄ + CO₂) is highly corrosive to sewer pipelines, manholes, concrete junction chambers, mechanical and electrical equipment (Listowski et al., 2011 and Park et al., 2000). In a WWTP, the physical treatment system and sludge treatment system are the main sources of H₂S. For those systems, installation of a filter for treatment of this gas is critical in order to adsorb gas and odor. Control of H₂S will result in increased life and lower maintenance cost for facilities and piping.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Volatile organic compounds (VOCs) emission occurs during entire wastewater cycle. A significant fraction of VOCs is released to atmosphere by gas-liquid mass transfer. VOCs production during wastewater transportation in sewers occurs during turbulent flow and air exchange between ambient atmosphere and wastewater. The transfer rate of emission is affected by physicochemical properties of chemicals, fluid and flow characteristics. There is a growing concern that several VOCs that are present in wastewaters, especially industrial effluents, find their way to the atmosphere. In particular VOCs such as benzene, chloroform, ethyl benzene, toluene, m-xylene and oxylene are found in refinery and petrochemical wastewaters in significant amounts as well as in many municipal wastewaters (Listowski et al., 2011, Bhattacharya et al., 1989 and Al-Muzaini et al. 1991).

The study of gaseous emission, climate change and air pollution are committed to physicochemical identification, inventories, measurement and assessment methods as well as to quantitative study of the actual anthropogenic sources and its direct contributions. In order to estimate the national inventories of anthropogenic emissions by sources and removals by sinks of GHG, guidelines are prepared by IPCC named as 'IPCC Guidelines for National Greenhouse Gas Inventories'.

In 2019, the IPCC refined the methodologies for calculating and reporting GHG emissions and removals upon the guideline prepared in 2006. Currently, Annex I countries of UNFCCC are using the 2019 refinement IPCC guidelines, while non-Annex I countries are still in the process of developing GHG emissions inventories, and typically refer to the available IPCC guidelines. The guideline will further help countries in developing and updating their GHG inventory-related methodologies and practices, as well as assisting in obtaining better national data for the achievement of better global data as a whole.

These IPCC guidelines play an important role in fostering the incorporation of scientific evidence into national climate policy mechanisms.

2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 5, Waste sector includes its sixth chapter on "Wastewater Treatment and Discharge".

This chapter provides detailed information on methane and nitrous oxides emission potentials of varied wastewater treatment systems and disposal methods. The subject WWTP of this ESIA study is considered as centralized treatment systems for treatment of domestic wastewaters. In these systems, the wastewater is sewerred to a centralized plant i.e., collected. As mentioned in the above sections, aerobic reactors are used for treatment of effluent. The CH₄ and N₂O emission potential of centralized aerobic wastewater treatment plants are listed below referring to the guideline:

- May produce limited CH₄ from anaerobic pockets.
- May also liberate CH₄ generated in upstream sewer networks during turbulent and/or aerobic treatment processes.
- Poorly designed or managed aerobic treatment systems produce higher CH₄ due to reduced removal of organics in sludge during primary treatment.
- Plants with nutrient removal processes are sources of CH₄ and N₂O.

As it was mentioned, the operation of wastewater treatment plants results in direct emissions, from the biological processes, of GHG such as carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), as well as indirect emissions resulting from energy generation. In 'Greenhouse Gases Emissions from Wastewater Treatment Plants: Minimization, Treatment, and Prevention' study executed by Campos et. al discuss and analyze three possible ways to reduce these emissions. These ways are (1) minimization through the change of operational conditions, (2) treatment of the gaseous streams, and (3) prevention by applying new configurations and processes to remove both organic matter and pollutants. In current WWTPs, to modify the operational conditions of existing units reveals itself as possibly the most economical way to decrease N₂O and CO₂ emissions without deterioration of effluent quality. Nowadays the treatment of the gaseous streams containing the GHG seems to be a not suitable option due to the high capital costs of systems involved to capture and clean them. The change of WWTP configuration by using microalgae or partial nitrification-Anammox processes to remove ammonia from wastewater, instead of conventional nitrification-denitrification processes, can significantly reduce the GHG emissions and the energy consumed.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

However, the area required in the case of microalgae systems and the current lack of information about stability of partial nitrification-Anammox processes operating in the main stream of the WWTP are factors to be considered.

It is concluded that for;

Minimization: N₂O and CO₂ emissions can be decreased by a good control of the operational conditions of the activated sludge system. N₂O emissions will depend mainly on the operational conditions (and O₂ concentrations) of the reactor systems. CH₄ emissions can be minimized if emissions from the different units of the sludge line are captured by hoods and burnt together with the biogas generated in the sludge anaerobic digester.

Treatment: Nowadays most of the technologies available to remove GHG are expensive or even not suitable to be applied to gaseous streams of the WWTPs. Biological systems treatment has low operating costs but their capital costs are high due to their size. The correct selection of the process to be installed in the plant will provide the best results as it is the case of the partial nitrification-Anammox process which is feasible in two units applied in the main stream of the plant but not for the treatment of the sludge line.

Prevention: The configuration of the next generation of WWTPs should maximize the anaerobic pathway for organic matter removal and the use of microalgae, if enough area is available, or partial nitrification-Anammox processes to remove ammonia.

For the subject WWTP Project, it is crucial to operate the systems in a good and controlled conditions to decrease the N₂O and CO₂ emissions. There is no anaerobic digester to emit CH₄ within the system designed. However, there is a possibility of generation of CH₄ under long term anaerobic conditions at pumping stations, sludge tank and sludge cake containers unless adequate conditions for maintenance of these are met such as frequent cleaning, continuous aeration of sludge tanks and periodical removal of sludge cake. Under standard operational conditions, CH₄ emission is not foreseen from the system.

An estimation for operation phase GHGs will be provided in the Air Quality and Noise Management Plan to be prepared prior to the operation. While the estimates may not be very high, some suggested mitigation measures will be added in the plan in particular related to ensuring efficient energy use.

In addition, activities which are subject to greenhouse gas monitoring, reporting and verification are presented under heading "Activities subject to monitoring, reporting and verification of greenhouse gas emissions" in Annex 1 of the Regulation on Tracking Greenhouse Gas Emissions and any of the components of the proposed project are not listed in Annex 1 of the Regulation.

5.3.5 Noise and Vibration

In this section, noise and vibration impacts of the land preparation and construction and operation phases of the Project are investigated.

5.3.5.1 National Legal Framework

Environmental noise in Türkiye is regulated by the Regulation on the Assessment and Management of Environmental Noise (RAMEN) which is published on 04.06.2010 in Official Gazette No: 27601. This regulation is intended to ensure that precautions are taken to prevent disturbance to peace and tranquility, and to ensure the physical and mental health of persons potentially exposed to environmental noise. For this purpose, the regulation sets out requirements regarding noise mapping, acoustic reporting, environmental noise assessment for determination of noise exposure levels and preparation and application of action plans to prevent or mitigate negative impacts of noise exposure on human being and environment. The noise limit values defined in the RAMEN Annex VII Table 4 are presented in Table 5-18.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 5-18 Environmental Noise Limits for Industrial Plants

Areas	L _{day} (dBA) (07:00-19:00)	L _{evening} (dBA) (19:00-23:00)	L _{night} (dBA) (23:00-07:00)
Educational, cultural and health facilities as noise sensitive areas, and places densely populated with summer houses and camp grounds	60	55	50
Areas densely populated with residences among the areas containing commercial structures and noise sensitive structures all together	65	60	55
Areas with dense work places among the areas containing commercial structures and noise sensitive structures all together	68	63	58
Industrial Areas	70	65	60

For construction activities noise limit values are defined in Table 5 Appendix VII of RAMEN and presented in Table 5-19.

Table 5-19 Environmental Noise Limits for Construction

Type of Activity (Construction, Demolition and Repair)	L _{day} (dBA)
Building	70
Road	75
Other Sources	70

5.3.5.2 WBG's Standards

Noise limit levels are described under, Environmental, Health and Safety (EHS) Guidelines, General EHS Guidelines: Environmental Noise. The noise limit values are based on World Health Organization Guidelines for Community Noise. According to WBG's General EHS Guidelines, noise impacts should not exceed the levels presented in Table 5-20, or result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site.

Table 5-20 Noise Level Guidelines of WBG

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

5.3.5.3 Land Preparation and Construction Phase Impacts

Noise will be generated from construction machinery and vehicles to be used during the land preparation and construction phase for WWTP and ETL.

The list of machinery and equipment, which is planned to be used during the land preparation and construction phase, including their numbers and noise intensity levels are presented below. The table provides maximum number of vehicles to be used in order to assess the worst case scenario.

Table 5-21 Machinery and Equipment and their Noise Intensity Levels (L_w)

Vehicle and Machinery	Numbers for WWTP	Noise Intensity Level (dB)
Truck	4	85
Excavator	1	115
Loader	2	115

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Vehicle and Machinery	Numbers for WWTP	Noise Intensity Level (dB)
Mini Loader	1	110
Crane	1	105
Sprinkler	1	85
Concrete Pump	1	105
Concrete Mixer	1	105

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

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

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

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

$$C_1 = 5 \times \log (d_o/d) \quad (3)$$

L_{wi} : Noise level of machinery

L_{wt} : Noise level at the source

L_{pt} : Noise level that reaches a defined distance

Q: Orientation coefficient/atmospheric reduction factor (assumed as 1)

r: Distance from the source

C_1 : Topographical noise absorption

d: Distance

L_{wt} is calculated accepting that all construction vehicles and machines given in the table above are used at the same physical location and non-stop at maximum noise intensity levels (worst case scenario) based on formula (1).

$$L_{wt} = 121.34 \text{ dBA}$$

The noise level that reaches to the nearest receptor (which is 640 m away from Ilgin WWTP area, see Figure 5.1) is calculated by formula (2) as follows:

Q is assumed as 1 considering minimum absorption.

$$L_{pt} = 121.34 + 10 \log (1/4 \pi 640^2) = 54.2 \text{ dBA}$$

$$L_{pt} (640 \text{ m}) = 54.2 \text{ dBA}$$

Topographical absorption for 640 m is calculated by formula (3) as:

$$C_1 = 5 \times \log (1/640) = - 14.03 \text{ dBA}$$

$$C_1 (640 \text{ m}) = - 14.03 \text{ dBA}$$

L_{pt} at 640 m taking the topographical absorption into account is calculated as:

MUNICIPAL SERVICES IMPROVEMENT PROJECT

$$L_{pt} (640 \text{ m}) \text{ with absorption} = L_{pt} (640 \text{ m}) + C_1$$

$$L_{pt} = 54.2 - 14.03 \text{ dBA} = 40.2 \text{ dBA}$$

The distribution of noise generated with respect to distance from the source (WWTP area) is presented in tabular format in the table below.

Table 5-22 Distribution of Noise Generated by WWTP Construction Relative to Distance

Distance (m)	Lpt (dBA)	Lpt with topographical absorption (dBA)	Distance (m)	Lpt (dBA)	Lpt with topographical absorption (dBA)
100	70.3	60.3	600	54.8	40.9
163	66.1	55.0	640	54.2	40.2
200	64.3	52.8	700	53.4	39.2
300	60.8	48.4	800	52.3	37.8
400	58.3	45.3	900	51.3	36.5
500	56.4	42.9	1,000	50.3	35.3

The closest receptor to Igin WWTP area is at 640 m southeast direction with an estimated 40.2 dBA noise level which is far below the limit value of WBG’s General EHS Guidelines (55 dBA). While selecting limit value, the stricter one is used which is determined from the WBG’s General EHS Guidelines.

As detailed under Section 4.1.7.3, the measured daytime background noise level at the subject receptor was above the WBG’s daytime limit value with 58.2 dBA since the receptor point has daily agricultural and personal activities. The estimated construction noise level is therefore considered including background noise level. With the addition of noise impact of WWTP construction, the noise level at the time of construction under worst case scenario is estimated as 58.27 dBA.

As mentioned earlier, WBG’s General EHS Guidelines implies that “noise impacts should not exceed the levels presented in Table 5-20, or result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site.” With respect to the latter one, the noise impact will be around 58.2 dBA which shows the acceptable noise level with the addition of allowed maximum increase.

Reviewing the estimated construction noise impact including background noise level at the receptor shows an exceedance in estimated limit value. Therefore, noise reduction measures indicated in Table 7-5 Land Preparation and Construction Phase Mitigation Plan will be strictly implemented to mitigate the noise impact.

The distribution of noise generated with respect to distance from the source (WWTP area) is presented graphically in the following figure providing a comparison with the selected limit value.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

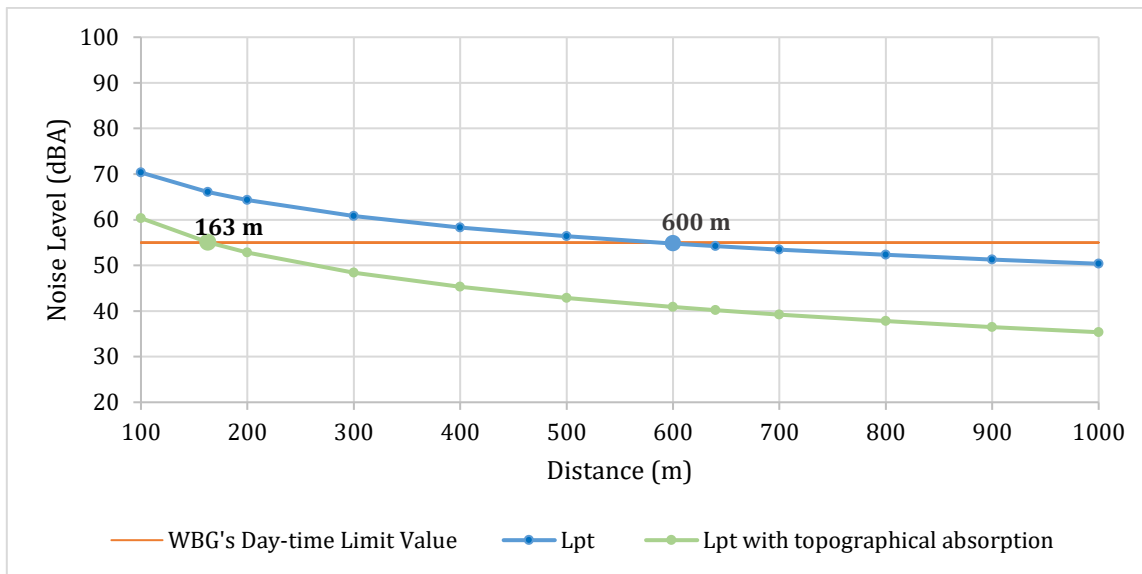


Figure 5.2 Distribution of Noise Generated by WWTP Construction with respect to Distance

As seen from the figure, under the worst case conditions, environmental noise level decreases below the limit value defined for construction activities (55 dBA) at a distance about 163 m from the source.

It should be noted that, it is unlikely in reality that all construction machinery and equipment are used at the same physical location and non-stop at maximum noise intensity levels (worst case scenario). As the construction activities will occur outdoors, it is expected that there will be a decrease in noise level depending on the distance due to the atmospheric reduction in real conditions which has been taken into account. Similarly, vegetation cover is among the factors that could reduce the impact during the spread of noise. According to these evaluations, it is expected that in real terms the noise level at the nearest receptor will be much lower than the calculated value during land preparation and construction activities of the Project including WWTP and ETL.

Considering that the noise to be generated as a result of the project activities during the land preparation and construction activities could have an impact beyond the borders of the Project area during certain times of the temporary land preparation and construction phase, the magnitude of the noise impact is defined as “local”.

In determining the severity of impact, the areas defined in RAMEN Annex-7 have been taken into account and the sensitivity of receptor has been identified as “high” since the WWTP area lies on lightly populated areas. Accordingly, the significance of noise impact is assessed as “high”. However, there is no receptor within the noise AoI of the WWTP (See Figure 5.1 of Noise AoI of Ilgin WWTP). Even though that, noise level will be mitigated by implementation of basic level measures.

Table 5-23 Assessment of Noise Impact for WWTP Project

Impact Issue	Magnitude of Impact	Severity of Impact (Sensitivity of Receptor)			Significance of Impact
		High (3)	Medium (2)	Low (1)	
Noise	Local (B)	Educational, cultural and health facilities as noise sensitive areas, and places densely populated with summer houses and camp grounds and lightly populated areas	Areas densely populated with residences among the areas containing commercial structures and noise sensitive structures all together	Areas with dense work places among the areas containing commercial structures and noise sensitive structures all together and industrial areas	High (B3)

MUNICIPAL SERVICES IMPROVEMENT PROJECT

5.3.5.4 Operation Phase Impacts

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

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

In scope of the Project, during landscaping activities, additional natural noise barriers will be established to decrease potential noise impacts. Noise intensities of equipment will be taken into consideration during selection and procurement. Also, relevant standards and criteria will be complied with.

Project activities will be performed in accordance with the provisions of RAMEN and the environmental noise limit values defined in the regulation and WBG's General EHS Guidelines will be complied with (Table 5-18 and Table 5-20).

In addition to noise, construction equipment, engines, pumps, mixers and agitators used during construction and operation phases of the project will cause vibration. Abovementioned equipment will be located inside closed buildings. Hence, vibration is not expected to be effective outside the building. Project operations will be in compliance with the relevant provisions of RAMEN.

To conclude, the significance of noise and vibration impacts during operation phase would be "low".

5.3.5.5 Land Preparation and Construction Phase Mitigation Measures

The machinery and equipment to be used during the land preparation and construction activities will not be operated at the same point/location. However, they are homogeneously distributed on the WWTP site and ETL poles. This will enable noise level to be at reasonable levels and not to exceed related limit values defined in WBG's General EHS Guideline during the land preparation and construction phase of the Project. In order to minimize the noise that will be generated within the scope of the WWTP project; the maintenance of the construction machinery and equipment will be carried out regularly and speed limitations will be defined and obeyed for construction vehicles. KOSKI will designate a community liaison officer within the scope of its grievance mechanism for the evaluation of the complaints and where necessary, for the planning and implementation of corrective actions. Furthermore, the construction contractor is obliged to assign a community liaison officer who is going to work with KOSKI's community liaison officer. In the selection of equipment, sound power levels of the equipment will be taken into account and the equipment with minimum sound level will be used.

During the land preparation and construction phase of the Project, noise monitoring activities will be performed according to the monitoring plan and the impact of noise on the settlements in the vicinity will be controlled/monitored. If monitoring activities indicates any inconsistency with the relevant selected noise limit values, corrective actions shall be taken in order to decrease the noise level to limit values. In order to record the ambient noise levels for the comparison with the construction related noise impact, noise level measurements will be conducted before construction starts (to verify the baseline measurements) by the construction contractor and quarterly during construction phase at two locations where baseline measurements have already been conducted within the scope of this ESIA.

It will be ensured that significant noise generating construction activities be performed during daylight hours, and noise monitoring program include both on-site (for worker OHS risks), and at property boundary and nearby receptors for noise impact.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

5.3.5.6 Operation Phase Mitigation Measures

Although any operational noise impact is not expected, a noise modelling study will be conducted in the Community Health and Safety Management Plan to be prepared for the operation phase. A more complete noise monitoring program is recommended to be completed at start of WWTP operations (e.g., over first 6 months) to provide a more complete and accurate assessment (including WWTP boundary, nearby receptors, etc.), and as necessary, implementation of actions as needed.

KOSKİ will take into account the sound power levels of the equipment given in the technical specifications/data sheet, in the selection of pump, blower and other equipment. Moreover, relevant provisions and limit values of WBG's General EHS Guideline as it is the more stringer one when compared to national legislation will be complied with during the operation of the Project.

Plantation of trees along the borders of the WWTP area should also be considered both for visual improvement, odor management and for absorption of potential noise.

5.3.5.7 Summary of Assessment and Residual Impacts

Table 7-5 and Table 7-6 provides a summary of noise impact assessments. Significance of the identified impacts before and after the implementation of mitigation measures are also given in this table.

5.3.6 Water and Wastewater

5.3.6.1 Water Supply Plan

Domestic water and water required for dust suppression will be supplied to the Project area by water tankers during construction phase of the Project. There will be adequate water tanks filled by tankers periodically for the land preparation and construction phase. During the operation of the Project, water will be supplied to the Project area through water supply network of Ilgın District which will pass on zoning roads. Bottled water will be used for drinking.

5.3.6.2 Water Supply during Land Preparation and Construction Phase

During the land preparation and construction phase for WWTP and ETL, employees' needs and dust suppression will create water supply requirement. The total amount of daily water requirement is calculated based on the multiplication of number of employees will be working at the peak time of the subjected phase and the daily water requirement for a person, which is assumed as 0.17 m³. The maximum number of employees work for Ilgın WWTP is considered as 30 for the water consumption estimation. Therefore, the daily water requirement of employees during the land preparation and construction phase is estimated as follows:

$$30 \text{ employees} \times 0.17 \text{ m}^3/\text{employee.day} = 5.1 \text{ m}^3/\text{day}$$

Together with the amount of water required for dust suppression, which is predicted to be in a range of 5-7 m³/day, the maximum total water requirement during the land preparation and construction phase will be 12.1 m³/day for Ilgın WWTP. Bottled water will be used for drinking.

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

5.3.6.3 Water Supply during Operation Phase

During the operation phase of the Project, some portion of the water supply requirement will arise due to employee needs. The water will be provided from the Ilgın Municipality water supply network which has a sufficient capacity. It is planned that there will be 10 employees working during the operation phase of the Project. Thus, the daily water requirement will be:

$$10 \text{ employees} \times 0.17 \text{ m}^3/\text{employee.day} = 1.7 \text{ m}^3/\text{day}$$

MUNICIPAL SERVICES IMPROVEMENT PROJECT

The Project's water requirement according to its phases is summarized in Table 5-24.

Table 5-24 Water Requirement of the Project

Project Phase	Intended Use	Source	Water Requirement	
			m ³ /day	m ³ /year
Land Preparation and Construction	Drinking water / Tap water	Bottled water / Water tankers	5.1	1,836
Land Preparation and Construction	Dust Suppression	Water tankers	7.0	2,520
Operation	Drinking water / Tap water	Bottled water / Water supply network of Ilgin District	1.7	621
Operation	WWTP's Landscaping Area Irrigation	Water supply network of Ilgin District	40	14,600

For the garden irrigation purposes in the operation phase of the Project, the current plan is to supply the need from the water network of Ilgin District. Although the wastewater treated in the WWTP will be discharged without any use according to the current design, the reuse of the treated effluent for irrigation purpose can be considered in the future. If it is decided to do so, the quality of the effluent will be assessed through laboratory analysis and ensured that the provisions on the reuse of treated wastewater of Communiqué on the Technical Procedures of Wastewater Treatment Plants and the WBG EHS Guidelines are complied.

5.3.6.4 Construction Phase Impacts

In the construction phase of the Project, the water requirement will be very low. Since the water demand/requirement within the scope of the Project will be provided/supplied by water tanks and purchased from market, a direct impact on surface water or groundwater within the AoI of the Project is not expected.

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

Domestic wastewater generated within the scope of the Project will be temporarily collected/stored in toilet cabins or leak-proof septic tanks and transferred from site to the closest operational WWTP (Akşehir District WWTP) by sewage trucks in compliance with the relevant legislation. Therefore, there will not be any impact on the quality of surface water or groundwater (water resources) in and around the Project area resulting from wastewater discharge.

To conclude, the significance of impacts on water resources during construction phase would be "low".

5.3.6.5 Operation Phase Impacts

In 2017, the construction of collector line collecting the wastewater of Ilgin was completed. At present, this existing collector line collects the wastewater from Ilgin and convey it to the Ilgin WWTP area and then it carries the wastewater to the dry tributary of Bulasan creek. The wastewater is discharged to this tributary of Bulasan creek from the discharge point at the end of the collector line.

In the operation phase, this collected wastewater by the collector line will be connected to the Ilgin WWTP and treated. Afterwards, it will be conveyed to the subject tributary of Bulasan creek by the existing collector line which have been used for discharge.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

The discharge will be performed in accordance with the provisions of related regulations. Thus, the untreated wastewater discharge to receiving environment will be avoided and with the establishment of the Project, treated wastewater discharge will be initiated.

5.3.6.6 Discharge of Treated Effluent

The WWTP project will discharge treated effluent during the operation phase. Domestic wastewater discharge criteria to the receiving bodies are regulated under Water Pollution Control Regulation (WPCR) Table 21 “Domestic Wastewater Discharge Criteria”. This table is divided into four tables according to the pollution loads and populations. Each table set different discharge criteria. According to the Project’s calculated pollution load and estimated population (=10,000-100,000), the pertinent table from the Regulation is Table 21.3. The discharge limits given in the WPCR are presented below (Table 5-25).

Table 5-25 WPCR Table 21.3 Domestic Wastewater Discharge Criteria

Parameter	Unit	Composite Sample (2-hour)	Composite Sample (24-hour)
BOD₅	mg/L	50	45
COD	mg/L	140	100
TSS	mg/L	45	30
pH	-	6-9	6-9

In Türkiye, urban domestic wastewater discharge criteria to the receiving bodies are regulated under Urban Wastewater Treatment Regulation (UWTR). The Urban Wastewater Treatment Regulation entered into force on January 8th, 2006. This regulation provides lower discharge limits (Table 5-26) than the limits given in WPCR and require total phosphorus and total nitrogen reduction to given limit values (Table 5-27) for the areas named as “sensitive areas” which are subject to eutrophication as identified in Annex 4 of UWTR. The discharge requirements for urban wastewater plants are presented in the tables below.

Table 5-26 UWTR Annex 4 Table 1 Urban Wastewater Secondary Treatment Discharge Criteria

Parameter	Concentration	Minimum Percentage of Reduction
BOD₅ at 20 °C without nitrification	25 mg/L	70-90 40 (referring to Clause 8 (c))
COD	125 mg/L	75
TSS	35 mg/L (more than 10,000 P.E.)	90 (more than 10,000 P.E.)

Table 5-27 UWTR Annex 4 Table 2 Urban Wastewater Advanced Treatment Discharge Criteria

Parameter	Concentration	Minimum Percentage of Reduction
Total Phosphorus	2 mg/L (more than 10,000 P.E.)	80
Total Nitrogen	15 mg/L (more than 10,000 P.E.)	70-80

The WBG’s EHS Guideline on Water and Sanitation indicates the selected treatment technology should achieve effluent water quality consistent with applicable national requirements or internationally accepted standard e.g., European Union: Council Directive 91/271/EEC of 21 May 1991 Concerning Urban Wastewater Treatment. The Directive remarks discharge limits which are identical to the UWTR. This means that the UWTR requirements, which shall be applied for the Project as project specification, are as stringent as the Directive.

For Ilgın WWTP, UWTR requirements for sensitive areas were taken into account. Therefore, the Project shall apply both Table 1 and Table 2 of Annex 4 of UWTR. The WWTP effluent pH shall be 6-9 referring to WPCR.

The selected discharge limits for Ilgın WWTP are tabulated below.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 5-28 Selected Discharge Limits for Ilgın WWTP

Parameter	Concentration
BOD₅ at 20 °C without nitrification	25 mg/L
COD	125 mg/L
TSS	35 mg/L
Total Phosphorus	2 mg/L
Total Nitrogen	15 mg/L
pH	6-9

In the operation phase of the Project, the wastewater that will be generated as a result of the operation activities such as from decanters, from thickening and dewatering of sludge, from cleaning of the plant, and from the activities of employees, will be sent to the inlet of the facility for treatment. Thus, in the operation phase of the Project, there will be no wastewater discharge to environment.

As mentioned earlier, the collected wastewater from Ilgın is discharged to the tributary of Bulasan creek without any treatment since there is no WWTP for treatment of collected wastewater. With the implementation of the Project, this effluent will be treated and then discharged to the receiving environment. Therefore, the operation phase impacts of the Project are found to be positive on water resources.

The contractor will develop Sub-management plans including Soil Management Plan, Water Resources and Effluent Management Plan and will conduct a pre-construction survey for determination of any requirement for remediation works before the commencement of construction works.

5.3.6.7 Mitigation Measures

Within the scope of the measures to be taken in order to protect the water resources in the region, the limited amount of domestic wastewater generated at site will be collected in the container of toilet cabins to be established or leak-proof septic tanks to be constructed in the Project area during construction phase and will be disposed within the scope of the protocols of KOSKİ to the operational WWTP at Akşehir. No discharge will be made to water resources in the land preparation and construction within the scope of the Project.

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

The units of the Project that are in touch with water, wastewater and chemicals will be constructed with using concrete with appropriate cement ratio and durability in order to provide basement impermeability. Thus, no leakages to soil and groundwater will occur during the operation phase of the Project.

In the operation phase of the Project, the following measures will be taken:

- KOSKİ will minimize bypass of the treatment system as much as possible.
- The effluent water quality of the wastewater treatment plant will be consistent with applicable national requirements or internationally accepted standards including heavy metals, organic compounds, and pharmaceuticals (from human use).
- KOSKİ will ensure compliance to required discharge limits specified as project specifications.
- System overflows will be prevented as much as possible by using level-meters.
- As it is explained in 2.3, there is a separate storm water collection system in the district, therefore storm water in the district will not be diverted to the WWTP. However, leakages from groundwater and storm water into the sewage system is added to the projected domestic wastewater amount in scope of the design calculations, which is assumed to be 10% of the total domestic wastewater.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

In all phases, the Project will follow the provisions of the national legislation together with WBG's EHS Guidelines and good international practices.

With the implementation of mitigation measures for the construction phase, the significance of residual impact will be negligible.

5.3.6.8 Summary of Assessment and Residual Impacts

Table 7-5 and Table 7-6 provides a summary of impact assessments made on water resources. Significance of the identified impacts before and after the implementation of mitigation measures are also given in this table.

5.3.7 Wastes

Due to utilization from resources, construction and operation/maintenance activities as well as domestic requirements of the personnel, different types of wastes will be generated throughout the life of the Project.

All generated wastes during the land preparation, construction and operation phases of the Project are required to be properly managed in line with the requirements of national waste management legislation and international good practice in order to avoid impacts on soils, nearby water resources, flora and fauna elements. This section identifies the wastes to be generated in this context and evaluates the impacts associated with waste generation. Waste management measures to be applied in accordance with relevant Turkish regulations and international standards (i.e., WBG's General EHS Guidelines) are also described in this section. The potential impacts on the physical, biological and socio-economic environment during land preparation, construction and operation phases of the Project, as well as measures to prevent/minimize these effects will be discussed in detail.

The possible sources that will generate various type of waste are listed below:

- Municipal solid waste,
- Packaging waste such as wood, paper, cardboard, and plastic etc.,
- Hazardous and special wastes that may be generated within the scope of the land preparation and construction and operation phases of the Project can be listed as contaminated containers, cloths and slags, waste batteries and accumulators, waste oils etc.,
- Excavation and construction wastes, and
- Final sludge.

5.3.7.1 Land Preparation and Construction Phase Impacts

During land preparation and construction phase of the WWTP and ETL, activities such as vegetation clearance, levelling, construction and installation of main operation and auxiliary units, procurement, transportation and assembly of units and equipment will be carried out.

Solid waste types expected to be generated within the scope of these activities are; municipal wastes, packaging wastes of system equipment (e.g., wood, cardboard, plastic, etc.), hazardous wastes, special wastes, excavation and construction wastes (e.g., scrap metal, wood, concrete waste, etc.), and waste system equipment (panels, cables, electronic components). Hazardous and special wastes might contain chemical substances (e.g., paint, solvent) or packaging materials and cloths contaminated with oils, waste oils resulting from operation and maintenance of machinery and vehicles, solvents, accumulators, batteries, filters, machine parts.

Table 5-29 lists the types of wastes and their waste codes, according to the waste lists given in the annexes of the National Regulation on Waste Management that can be generated during the land preparation and construction phase of the Project. A more detailed list will be prepared in the Waste Management Plan to be prepared prior to the construction works.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 5-29 List of Possible Waste Types to be generated during Land Preparation and Construction Phase of the Project

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

Municipal wastes within the scope of the National Regulation on Waste Management are referred to domestic wastes or commercial, industrial and institutional wastes similar to domestic wastes in terms of its content or structure, which are defined with waste code of 20, in the Waste List given in Annex 4 of the Regulation and of whose management responsibility belongs to the municipality.

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

$$30 \text{ people} \times 1.08 \text{ kg/person} = 32.4 \text{ kg/day}$$

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

The general composition of the municipal waste in Türkiye is as demonstrated in Figure 5.3 according to the results of the solid waste composition determination study made within the scope of the Solid Waste Master Plan Project. Approximately 34% of municipal waste consists of kitchen wastes. Separately collectable and recyclable fractions such as paper, cardboard, bulk cardboard, plastic, glass and metal constitute 25% of municipal waste.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

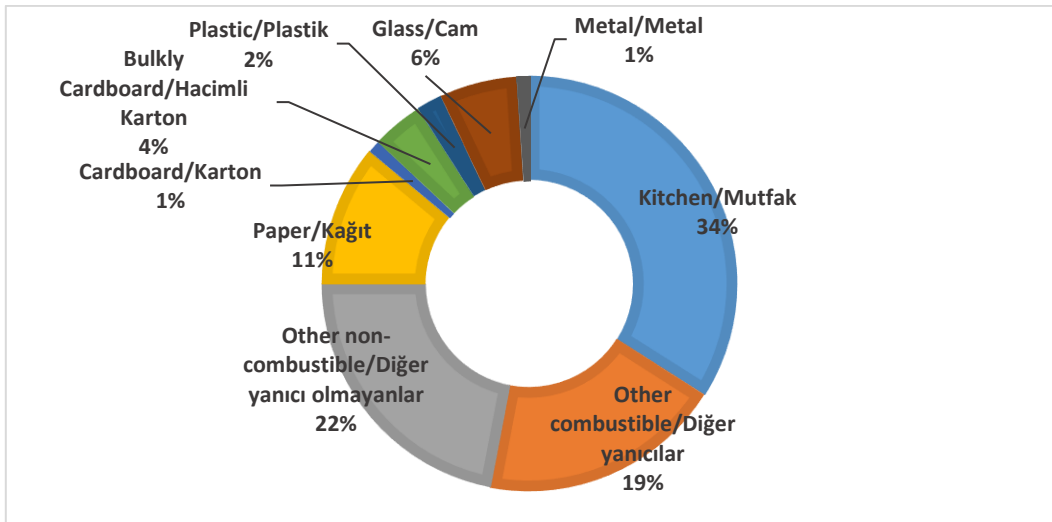
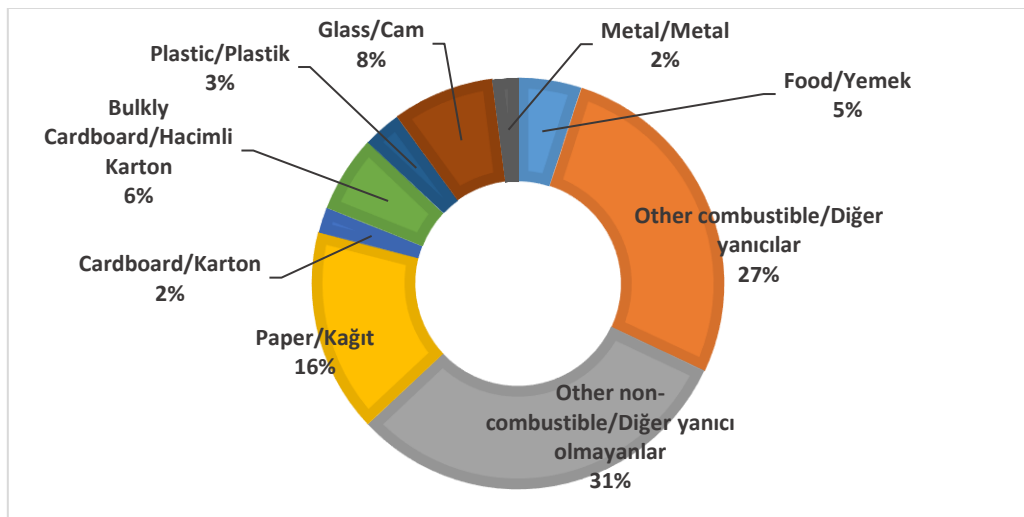


Figure 5.3 Composition and Classification of Municipal Waste

The information provided in Figure 5.3 is also valid for the municipal wastes to be generated within the scope of the Project. The only difference will be the kitchen waste percentages since there will be no kitchen/cafeteria in the Project. By reflecting this and the assumption of only 5% food waste, the composition of the municipal waste is assumed as given in the following graph.



Now, it can be said that approximately 1.62 kg of food wastes and 12 kg of separately collectable and recyclable wastes will be generated daily during the land preparation and construction phase of the Project.

Waste vegetable oil will not be generated at site during the land preparation and construction activities as meals for the staff will be provided by catering companies. Waste tire generation and storage will not take place due to the fact that the tire changes of the construction machines and other vehicles to be used at this stage will be carried out at the facilities in the region providing service for this purpose. Besides, there will not be any significant amount of medical waste generation at site within the scope of the Project, as there will no infirmary in the Project site and nearest health center will be used for possible medical interventions in case of an unexpected accident during the activities. The negligible amount of medical waste generation might happen as a result of the first-aid applications.

Vegetation clearing and levelling works will be carried out at certain locations in order to flatten the area during the land preparation and construction phase of the Project. The amount of excavation wastes to be generated within the Project is given in the Section 5.3.2.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

For all activities regarding excavation storage, transport and reuse; the provisions of Regulation on the Control of Excavation, Construction and Demolition Wastes will be complied.

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

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

Hereinbefore, no significant impact resulting from waste generation is expected due to the nature and scale of the Project. Therefore, the significance of the impact during land preparation and construction phase would be "low". However, mitigation measures will be proposed in the following sections in order to prevent and/or minimize likely impacts.

5.3.7.2 Operation Phase Impacts

In the operation phase of the Project, 10 employees will work. Thus, the municipal waste generation amount will be 10.8 kg/day and by using the same approach as in the land preparation and construction phase calculations, the amounts of food waste and recyclable waste portion of the municipal waste will be 0.54 kg/day and 4 kg/day, respectively. In addition to the municipal recyclable waste, it is expected that additional recyclable waste generation will be observed such as packaging wastes, paper, cardboard, plastic, and scrap metals.

There might be waste generation resulting from damaged, malfunctioned or end-of-life equipment and material that could be replaced or controlled during maintenance and repair activities to be performed periodically or in case of a breakdown. Also, procurement of new equipment, pieces and other needed materials will also result generation of packaging waste. Besides, personal protective equipment, clothes and rags used during maintenance and repair activities might result a limited amount of waste generation.

In the operation phase, due to the oil change needs of equipment such as blowers, there will be limited amount of waste oil generation. There will be no other chemical foreseen to be wasted.

Table 5-30 lists the types of wastes and their waste codes, according to the waste lists given in the annexes of the Regulation on Waste Management that can be generated during the operation phase of the Project. A more detailed list will be prepared in the Waste Management Plan to be prepared prior to the operation works.

Table 5-30 List of Possible Waste Types to be generated during Operation Phase of the Project

Waste Code	Definition of Waste Code
13	Oil Wastes and Liquid Fuel Wastes
13 02	Waste Engine, Transmission and Lubrication Oils
13 03	Waste Insulation and Heat Transmission Oils
15	Waste Packages, Unspecified Absorbents, Wipes, Filter Materials and Protective Clothing
15 01	Packaging Wastes (Including Packaging Wastes Separately Collected by the Municipality)
15 02	Absorbents, Filter Materials, Cleaning Cloths and Protective Clothing
16	Wastes Not Specified Otherwise in the List
16 02	Waste Electrical and Electronic Equipment
16 06	Batteries and Accumulators
19	Wastes Generated from Waste Management Facilities, Wastewater Treatment Plants Outside the Facility and Water Preparation/Treatment Facilities for Human Consumption and Industrial Use
19 08	Other Waste Water Treatment Plant Wastes

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Waste Code	Definition of Waste Code
20	Municipal Wastes Including Separately Collected Fractions (Domestic and Similar Commercial, Industrial and Institutional Wastes)
20 01	Separately Collected Fractions (Except 15 01)
20 03	Other Municipal Wastes

The most important waste that will be generated as a result of the activities of the WWTP is sludge, together with the screenings. The solid content of the sludge that will be generated will be increased from 1% to 20-25% through sludge concentration tank and sludge dewatering unit. The water that will be extracted from the sludge cake will be sent back to the inlet of the WWTP for treatment. After dewatering, the sludge cake will be transferred to a covered and appropriate container through the belt conveyor. These containers will be impermeable and labelled adequately as well as placed in an enclosed area. The dewatered sludge cake is estimated to be generated as 12.9 m³/day referring to the Application Project Dossier, 2018. The disposal methods of sludge are detailed in the following section.

In order to manage the process adequately, KOSKİ will prepare a Sludge Management Plan that includes procedures to be followed and will make the management plan available before the commencement of the treatment plant. It will also include test/monitoring (frequency, etc.) methods to ensure that it meets the acceptable criteria for use on agriculture lands.

No significant impact resulting from waste generation is expected due to the nature and scale of the Project. Therefore, the significance of the impact during operation phase would also be "low". However, mitigation measures will be proposed in the following sections in order to prevent and/or minimize likely impacts.

5.3.7.3 Mitigation Measures

Wastes to be generated in the scope of Project activities of WWTP and ETL will be managed in accordance with the waste management hierarchy as given in Figure 5.4. In this respect, waste generation will be avoided/prevented at the source. In cases where prevention is not possible at the source, respectively; minimization of waste generation, selection of materials that will not cause generation of hazardous waste as much as possible, separate collection of wastes according to their type (hazardous, non-hazardous, recyclable, etc.), reuse of generated wastes at site as much as possible, assessment of alternatives such as recycling and energy recovery for wastes (where reuse is not possible) will be considered. The final step in the hierarchy of waste management involves the final disposal of wastes in accordance with relevant regulations, where reuse, recycling and energy recovery options are not possible.

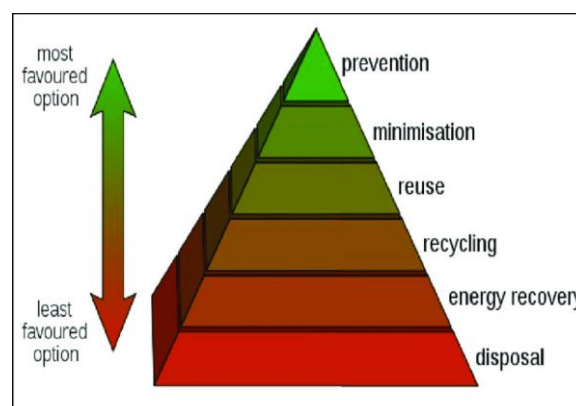


Figure 5.4 Waste Management Hierarchy

The wastes to be generated within the scope of the Project during land preparation and construction and operation phases such as recyclable wastes, hazardous wastes etc. will be collected in closed containers suitable for the type of waste before the final disposal and stored in the Temporary Waste Storage Area to be established on the site. The final sludge generated in the operation phase will be stored in impermeable containers and in an enclosed area.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

By these means, wastes will be protected from external conditions (e.g., wind, rain, heat, etc.). Containers will be labeled appropriately for storage purposes. The general principles to be taken as a basis in the management of wastes to be generated in the plant are summarized below:

- Wastes will only be temporarily stored on site and final disposal will be carried out outside the facility.
- Waste recycling, transport and disposal will be carried out by means of licensed companies and/or related municipalities.
- Incineration or burying of wastes by any means at site and/or dumping of wastes to nearby roads or water resources will absolutely not be in question.
- All kinds of implementations that may threaten personnel or public health will be avoided in all activities involving collection, temporary storage, transport and disposal of wastes throughout the Project.
- Wastes to be temporarily stored on site will be delivered to licensed transport vehicles appropriate to the type of waste for disposal. Information related to the operations in this context will be recorded and the records will be kept in the administrative building.

Some amount of hazardous or special wastes likely to be generated (e.g., filters, protective clothes, rags, packages contaminated with chemical substances such as paint/solvent or oils) within the scope of the Project will be stored in special compartments in the Temporary Waste Storage Area allocated for this purpose, in containers, separated from the non-hazardous wastes. This area will have an impermeable base/ground and will be protected from the surface flows and rain. Additionally, necessary drainage for the area will be provided.

In operation phase, the generated sludge cake will be transferred to a covered and appropriate container through the belt conveyor. These containers will be impermeable and labelled adequately as well as placed in an enclosed area. It is estimated that a 50 m³ sludge container will be filled up eight times in a month. The enclosed sludge containers will be transferred to Konya Centrum WWTP by specific trucks used for transportation of such containers within the specified periods. The collected sludge in the Konya Centrum WWTP will be further dried in the drying area of this WWTP before sent to agricultural lands as compost which is preferred practice of KOSKİ. Requirements related to use of sludge at agricultural lands are provided in 03.08.2010 dated and 27661 numbered Regulation on Using Domestic and Urban Treatment Sludge in Soil. The sludge of Konya Centrum WWTP itself has been used for agricultural purposes for the agricultural lands in its operation period with the permit it has obtained; therefore, this is an applied and approved procedure for KOSKİ. In the case that the sludge does not meet the legislative requirements for reuse, then the sludge will be sent to sanitary landfill. According to the KOSKİ representatives, Konya Centrum WWTP has enough capacity for management of the sludge generated from Ilgin WWTP.

In all phases, hazardous or non-hazardous inscription, waste code, stored waste amount and storage date will be indicated/labeled on wastes temporary stored by classifying according to their properties. The reaction of wastes with each other will be prevented by the measures taken in the Temporary Waste Storage Area. Permission regarding storage of wastes (e.g., hazardous and other special wastes), except municipal and packaging wastes, in the Temporary Waste Storage Area will be obtained from the PDoEUCC.

Management (including disposal) of hazardous wastes (including fuel and oils) is recommended to be further defined in the Waste Management Plans to be prepared.

The applicable legislation will be complied with at the time of temporary storage of wastes, transport of wastes to disposal facilities and final disposal of wastes. The wastes to be generated within the scope of the Project will be managed in accordance with the relevant legislation and the current relevant legislation on waste management is listed below:

- Regulation on the Control of Packaging Wastes
- Regulation on the Control of Waste Electrical and Electronic Goods
- Waste Management Regulation

MUNICIPAL SERVICES IMPROVEMENT PROJECT

- Regulation on the Control of Waste Batteries and Accumulators Regulation on the Control of Waste Oils
- Regulation on the Control of Excavation Materials, Construction and Demolition Wastes Regulation on the Control of Waste Tires Regulation on the Dredging and Environmental Management of Dredging Material

5.3.7.4 Summary of Assessment and Residual Impacts

Table 7-5 and Table 7-6 provides a summary of waste impact assessments. Significance of the identified impacts before and after the implementation of mitigation measures are also given in this table.

5.3.8 Protected Areas

The primary aim in the project development is not to have any significant impact on any protection area or area of environmental, social and cultural importance mainly through proper site selection, and to decrease the pollution stress on the environment caused by the discharge of urban wastewater without treatment.

As mentioned previously in Section 4.1.5 Protected Areas, there is not ecological linkages between the Ilgin WWTP and any protected areas neither KBAs.

Considering the impact on protected areas for Ilgin WWTP including ETL, the severity of the impact is evaluated as low considering that the project does not lie on any protected areas. Within that scope, during the construction phase for Ilgin WWTP, the significance of the anticipated impact relating with the protected areas is assessed as “low”. The severity of the impact is evaluated as low considering that Ilgin WWTP does not coincide to any archeological site. Within that scope, during the construction phase and operation phases for Ilgin WWTP, the significance of the anticipated impact is assessed as “low”.

However, as required with Article 4 of Law on the Conservation of Cultural and Natural Properties (2863 Numbered Law), chance finds procedure will be implemented during land preparation and construction works. In this context, related Civilian Authority or Museum Directorate will be informed latest in three days in case of finding any movable or immovable cultural asset by chance during construction works. Construction works will be stopped immediately. In case of result of any damage on protected areas or cultural assets due to the Project during construction and operation phases, the damage will be compensated by KOSKİ. In case of a chance find, the communication with the relevant stakeholders will be performed. In addition to the national legislation, the provisions of WB’s ESF will be followed and complied during all phases of the Project.

5.3.9 Landscape

Considering the impacts on landscape, the magnitude of the impact is defined as “local” since it is in the Project AoI. As described under Section 4.1.4, there is not any unique landscape or visually important area in the vicinity of the Project area. Thus, the level of severity of impact is identified as “low” accordingly. In this regard, with the realization of the Project, it can be easily said that there will be no significant potential impacts on landscape. Within that scope, during the construction and operation phases, the significance of the anticipated impact due to the transportation activities is assessed as “low (B1)”.

In addition, there are some good practices to be implemented. After the completion of construction works, topsoil will be spread to the reclamation areas of treatment plant site, grass cover growth will be ensured, and improvement of the landscape features of the area will be ensured. Types of trees and shrubs to be used for landscaping purposes shall be selected in accordance with the existing flora. Tall plants and trees will be used along the borders of the treatment plant area to reduce the noise and odor impacts.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

5.4. Impacts on Biological Environment

5.4.1 Construction Phase Impacts

Construction activities that may cause environmental impacts include ground clearing (removal of vegetative cover), grading, excavation, trenching, backfilling, vehicular and pedestrian traffic, construction and installation of pipelines and facilities. Potential impacts from these activities are presented below, by the affected ecological resources.

Ecological resources that could be affected include vegetation and wildlife, and their habitats. Vegetation and topsoil would be removed for the development of the WWTP and ETL. This would lead to a loss of wildlife habitat, reduction in plant diversity, potential for increased erosion, and potential for the introduction of invasive or noxious weeds. The recovery of vegetation following reclamation would vary by community or the type of plant community desired (e.g., the Project site would be kept devoid of vegetation or allow only low-growth grasses and forbs depending on the reclamation scope). Indirect impacts to vegetation would include increased deposition of dust, spread of invasive and noxious weeds, and the increased potential for wildfires. Dust settling on vegetation may alter or limit plants' abilities to photosynthesize and/or reproduce. Although the potential for an increase in the spread of invasive and noxious weeds would occur during the construction phase due to increasing traffic and human activity, the potential impacts could be partially reduced by reclamation and implementation of mitigation measures.

Adverse impacts to wildlife could occur during construction from:

- Erosion and runoff;
- Fugitive dust;
- Noise;
- Introduction and spread of invasive vegetation;
- Modification, fragmentation, and reduction of habitat;
- Mortality of biota (i.e., death of plants and animals);
- Exposure to contaminants; and
- Interference with behavioral activities.

Possible impacts on air quality can arise from the use of construction and earthmoving machinery and from trucks and cars used for WWTP and ETL construction. Impacts will be mainly air pollutants from combustion engines and dust generation/release.

Construction activities will affect air quality mainly through emissions of dust from excavation, storage and transport of soil and vehicle traffic on unpaved roads. There will also be particulates from vehicle exhausts (mainly diesel engines) and from stationary sources such as power generators. Emissions of gaseous pollutants, particularly NO_x and SO₂, will be from vehicle and machinery exhausts.

The Project will change the current landscape with the placement of WWTP. During construction of the WWTP, there will be small amount of excavated material since it will be constructed on the existing obsolete stabilization ponds and the topsoil stripped from the land, will be spread over the Project's landscaping areas for landscaping purposes.

The existing wildlife would be most affected by habitat reduction within the Project site. Wildlife within surrounding habitats might also be affected if the construction activity (and associated noise) disturbs normal behaviors, such as feeding and reproduction.

The Project has a positive impact on receiving environment due to the avoidance of untreated wastewater discharge to environment. There will be no construction in the receiving environment causing any adverse impact. Due to the fact that, there is no aquatic habitat within the wastewater ponding/flowing, aquatic environment has been scoped out within the scope of ecological studies.

Dust Generation

MUNICIPAL SERVICES IMPROVEMENT PROJECT

It is also anticipated that dust will be generated during the construction phase in which excavation, transportation and disposal activities take place. Precipitation of dust has a major impact on the development of flora and fauna because of the amount and in particular in the period of vegetative development. Dust generation could cause major impact on flora species if no mitigation measures are taken.

Habitat Loss and Fragmentations

As explained in above sections, there are some semi-natural dry pasturelands, degraded steppes, reeds, freshwater bodies and agricultural fields in and around the Project area. As it was mentioned above there are two EUNIS Habitat Types. "E1-Dry Grasslands" have semi-natural habitat properties and the other artificial habitat type is "I1.3-Arable land with unmixed crops grown by low-intensity agricultural methods" inside the Project site. Totally 0.09 hectares agricultural land (I1.3) and 2.42 hectares dry pastureland (E1) habitats will be lost due to the project.

There will be habitat loss impact due to the development of the Project. Medium tracts of dry pasturelands will be disturbed and natural plant species will be cleared due to establishment of the plant.

Endemic Species Loss

As mentioned in the earlier sections of this report, a total of 95 terrestrial flora and 69 terrestrial fauna species and subspecies were expected within the Project area. Although none of them is endemic or rare, the mitigation measures should be taken for the natural flora and fauna elements.

Critical Habitat

The Project area cannot be classified as Critical Habitat if all criterions are taken into account. The details of the assessment are provided under Section 4.2.2.1.

5.4.2 Operation Phase Impacts

Operation activities that may cause environmental impacts include operation of the Project facility and associated maintenance activities. Typical activities during the operation phase include WWTP processes and associated repair and maintenance activities that would require vehicular access and heavy equipment operation when components are being replaced. Potential impacts from these activities are presented below, by the affected ecological resources.

During operation, adverse ecological effects could occur from (1) disturbance of wildlife by equipment noise and human activity; (2) site maintenance (e.g., plant control); (3) exposure of biota to contaminants; and (4) unforeseen pollutions. During operation of the facility, wildlife could still be affected by unforeseen pollutions related with the uncontrolled facility management. In addition, the presence of the Project may temporarily increase human use of surrounding areas, which in turn could impact ecological resources in the surrounding areas through:

- Introduction and spread of invasive vegetation,
- Disturbance,
- Mortality of wildlife from vehicles,
- Increase in hunting (including poaching), and
- Increased potential for fire.

The presence of the Project could also interfere with migratory and other behaviors of wildlife.

The Project has a positive impact on receiving environment due to the avoidance of untreated wastewater discharge to environment since there is untreated wastewater discharge currently.

5.4.3 Decommissioning & Site Reclamation Phase Impacts

The decommissioning and site reclamation phase is important for biodiversity features. The impacts at these phases will be similar to the construction phase impacts for other environmental and social components.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Decommissioning and site reclamation activities that may cause environmental impacts include facility removal, land recontouring, and revegetation. Typical activities during the project's decommissioning and site reclamation phase include facility removal, breaking up of concrete pads and foundations, recontouring the surface, and revegetation. Potential impacts from these activities are presented below, by ecological resources.

Impacts to biological resources from decommissioning activities would be similar in nature to impacts from construction, but of a reduced magnitude. There would be temporary increases in noise and visual disturbance associated with the removal of the project facilities and site reclamation. Negligible to no reduction in wildlife habitat would be expected, and injury and mortality rates of vegetation and wildlife would be much lower than they would be during construction. Removal of the project components would eliminate impacts associated with wildlife interactions. Following site reclamation, the ecological resources at the Project site could eventually return to pre-project conditions, depending on the end use selected for the Project area and ongoing successional periods. Grasses and forbs may be initially more plentiful during early years of reclamation than existed prior to project development. This could increase forage for some wildlife species.

5.4.4 Mitigation Measures

This section discusses mitigation measures in general terms, based on the general discussion of impacts described under Section 5.4.1 and 5.4.2. Generally, although there is some overlap, these mitigation measures should be viewed as being over and above the requirements of applicable laws and regulations.

5.4.4.1 Construction Phase Mitigation Measures

The mitigation practices specific to construction phase are as follows:

- Prior to the land preparation phase, definite working areas will be set up where activities (e.g., vegetation clearing, vegetation removal, leveling and construction) will be established.
- Project construction site will be separated from other areas with appropriate signboards, signs and fences. Therefore, staff and vehicle access to the area will be limited to the construction site.
- Habitat disturbance will be reduced by keeping vehicles on access roads and by minimizing foot traffic in undisturbed areas.
- Damages to the steppes elements, agricultural lands and structures, pastures, livestock facilities will be avoided. In case of any damage, peaceful compensation will be applied immediately.
- Care should be given not to pollute water resources during all phases of the Project.
- Dumping and throwing any waste to environment is forbidden and should be avoided.
- Workers should be trained regarding the occurrence of important resources in the area and the importance of their protection, including the appropriate regulatory requirements.
- Employees, contractors, and site visitors should be instructed to avoid harassment and disturbance of wildlife, especially during reproductive (e.g., courtship and nesting) seasons.
- Construction work will be done gradually so that it will have enough time to escape for possible fauna species to be found.
- If any critical species is observed on the Project site, disturbance of species should be avoided during critical periods of the day (e.g., night) or year (e.g., periods of mating , breeding, nesting, lambing, or calving).
- If there is a nest of fauna species, the nest should be marked with a safety strip about 3 meters in diameter and an expert ecologist should be informed.
- Noise-reduction devices (e.g., mufflers) will be maintained in good working order on vehicles and construction equipment.
- Dust emissions will be avoided/minimized by lightly watering the immediate surroundings of construction sites and wetting the stored material.
- Dust abatement techniques should be used on unpaved, unvegetated surfaces to minimize airborne dust.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

- Spill prevention practices and response actions should be applied in refueling and vehicle-use areas to minimize accidental contamination of habitats.
- Spills should be addressed immediately per the appropriate spill management plan, and initiate soil cleanup and soil removal if needed.
- All unnecessary lighting should be turned off at night to avoid attracting fauna species.
- Local flora elements should be used during landscaping activities related with the Project (plant applications, greening efforts etc.).
- Herbicide/pesticide use should be limited to nonpersistent, immobile herbicides/pesticides and apply only in accordance with label and application permit directions and stipulations for terrestrial and aquatic applications.
- Erosion controls will be applied that comply with local, regional or national standards.
- The spread of invasive nonnative plants is avoided by keeping vehicles and equipment clean. Disturbed areas will be reseeded with native plants during reclamation.
- Precautionary measures regarding fire risks should be taken.
- Project workers will not be allowed to bring any live animals or plants into the construction site to avoid the risk of pest/invasive species establishing in the Project area.

5.4.4.2 Operation Phase Mitigation Measures

The mitigation practices specific to operation phase are as follows:

- Observations of potential wildlife problems, including wildlife mortality should be reported to the appropriate wildlife agency.
- Care should be given not to pollute water resources during all phases of the Project.
- Dumping and throwing any waste to environment is forbidden and should be avoided.
- Workers should be trained regarding the occurrence of important resources in the area and the importance of their protection, including the appropriate regulatory requirements.
- Employees, contractors, and site visitors should be instructed to avoid harassment and disturbance of wildlife, especially during reproductive (e.g., mating and nesting) seasons.
- If there is a nest of fauna species, the nest should be marked with a safety strip about 3 meters in diameter and an expert ecologist should be informed.
- Spills should be addressed immediately per the appropriate spill management plan, and initiate soil cleanup and soil removal if needed.
- All unnecessary lighting should be turned off at night to avoid attracting fauna species.

5.4.4.3 Decommissioning/Site Reclamation Measures

Operation lifetime is determined as 35 years for the WWTP project. However, it is predicted that the operation lifetime of the Project can be longer with necessary maintenance, repair, improvement, and retrofit works.

Activities in closure phase will be those below when operation is ended;

- Disassembly of aboveground units to reuse or disposal
- Demolition of structures and related foundations
- Disassembly of underground pipelines, valves and related units
- Disposal of wastes that generated after these activities in accordance with related Regulations
- Backfill any foundations, pits and trenches, preferably with excess excavation material generated during prior ground-disturbing activities.
- Levelling preparation (rough grade) of the land before restoration phase
- Use topsoil removed during the beginning of the Project or during decommissioning activities to reclaim disturbed areas.
- Reestablish the original grade and drainage pattern to the extent practicable.
- Implement the site reclamation plan. For example:
 - Reclaim all areas of disturbed soil using weed-free native shrubs, grasses, and forbs.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

- Restore the vegetation cover, composition, and diversity to values commensurate with the ecological setting.
- Review reclamation efforts and weed control periodically until the site is determined to have been successfully reclaimed.

After closure phase, roughly graded land will be formed to a new land use or natural conditions. In this context, roughly graded land will be graded to provide a natural drainage system. Then existing topsoil in the area will be spread. Topsoil will be vegetated with commercial seeds and land will have a good land cover condition.

In case of selecting a different land use than natural conditions, proper works will be realized in accordance with opinions of local people and authorities.

It will be ensured that the closure of the Project will not cause any soil contamination on the Project Area.

In order to manage a possible closure in the future; Closure Management Plan and Land Rehabilitation Management Plan will be prepared by KOSKİ before the closure phase.

5.4.5 Significance of Impacts and Residual Impacts

Residual impacts of the project can be summarized as below,

Habitat Loss and Habitat Fragmentation: The severity of impact will be “low” during the construction phases due to the fact that only the Project area habitat will be lost and there is no endemic species or critical habitat in the Project site. The magnitude of the impact will be “restricted” to the Project area. Therefore, the significance of the impact is evaluated as “low (C1)”. With implementation of mitigation measures, adequate landscaping on reclamation sites of WWTP area and planting natural species, the magnitude of impact will be reduced to a lower level. In this sense, the residual impact significance for the Project on habitat loss and habitat fragmentation will be “negligible”.

The land will be rehabilitated during Decommissioning & Site Reclamation Phase with the help of advance site reclamation procedures.

Vegetation Disturbance: The severity of impact will be “low” during the construction phases due to the fact that only the Project area vegetation will be lost and there is no endemic species or critical habitat in the Project site. The magnitude of the impact will be “restricted” to the Project area. Therefore, the significance of the impact is evaluated as “low (C1)”. With implementation of mitigation measures, adequate landscaping on reclamation sites of WWTP area and planting natural species, the magnitude of impact will be reduced to a lower level. In this sense, the residual impact significance for the Project on vegetation loss/disturbance will be “negligible”.

The land will be rehabilitated during Decommissioning & Site Reclamation Phase with the help of advance site reclamation procedures.

Disturbance on Aquatic Environment: The project has a positive impact on degraded/broken aquatic environment which was formed as a result of discharge of untreated wastewater due to the avoidance of untreated wastewater discharge to environment. There will be no construction in the receiving environment causing an adverse impact. Therefore, any adverse impact on aquatic environment is not anticipated during both the construction and operation phases.

An adverse impact on aquatic environment could occur if the construction constructor dumps any excavated material or trash to water bodies during the construction phase. The severity of impact is considered as “medium” and the magnitude of impact could be “wide” or “local” pursuant to the dump location. Thus, the significance of impact is evaluated as “medium”. Dumping and throwing any waste to aquatic environment is forbidden by law and should be avoided in any phases of the Project. With the implementation of measure, the significance of residual impact will be negligible.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Disturbance on Fauna Species: The severity of impact will be “low” during the construction phases due to the fact that, fauna species frequency on the Project area is minimum due to the diminished habitat quality (nesting, roosting, breeding has not been observed during the field study within the WWTP area) and there is no endemic species or critical habitat in the Project site. The magnitude of the impact will be “restricted” to the Project area. Therefore, the significance of the impact is evaluated as “low (C1)”. With implementation of mitigation measures, adequate landscaping on reclamation sites of WWTP area and planting natural species, the magnitude of impact will be reduced to a lower level. In this sense, the residual impact significance for the Project on habitat loss and habitat fragmentation will be “negligible”.

Invasive nonnative species introduction is considered with a low severity rate since the project transportation is not anticipated to cause any invasive transportation. The magnitude of impact is estimated as local. Hence, the significance of impact is low. With the implementation of measures, it is expected to be avoided to a negligible rate.

Environmental impacts resulting from the construction phase of the Project will include habitat loss and some wildlife stress conditions which cannot be mitigated completely. However, these sources of potential nuisance are temporary in nature and limited to construction phase. In order to prevent nuisance to the surrounding environment, habitats and wildlife, KOSKİ will take all necessary precautions.

5.4.6 Biodiversity Monitoring

Monitoring is a fundamental component of biodiversity management and requires thorough planning to identify key indicators, establish baseline conditions prior to development and assess biodiversity changes through the life of the project.

Monitoring studies for flora, fauna, wildlife and bird movements should be conducted during the construction phase and first one year of the operation phase (during DLP) of the Project.

During the construction phase, the mitigation measures implementation given in this ESIA will be monitored semi-annually by a biologist. If a protected species is found on site and its close environs, specific enhancements should be made during the monitoring period, this species should be surveyed at least semi-annually at a suitable time of year to check its status (providing that this doesn't result in disturbance to the species).

During the operation phase, key elements of biodiversity, including mountain steppes, degraded steppes, reeds and dry pasturelands in and/or around Ilgın WWTP area and success of landscaping activities should be monitored semi-annually for the first one year of the operation in order to assess whether there is any loss in the habitat quality as a result of the Project activities and since these are semi-natural habitats.

For habitat monitoring during the operation phase, it is usually advisable to identify a small number of indicator species. Monitoring will be conducted by a qualified biologist with training in the species or habitat of interest. A Biodiversity Management/Monitoring Plan (BMMP) will be prepared including monitoring requirements by the biologist. All habitat enhancements will be checked regularly to ensure they are working properly.

5.5. Impacts on Socio-Economic Environment

In this chapter, potential impacts of the Project on socio-economic environment of the region are assessed. In order to evaluate the impacts on socio-economic environment, desktop and field studies have been performed. This section includes potential social impacts of the Project, mitigation measures, and summary of assessment and residual impacts.

The Stakeholder Engagement Plan (SEP) for KOSKİ was prepared and will be the basis for meaningful consultation and communication with the Project's stakeholders. KOSKİ will through the SEP inform the stakeholder about the project and its risks/impacts/mitigation measures and register and respond to their concerns.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

As it is described in Section 5.1, the AoIs of the WWTP project include the settlements around the WWTP location during both construction and operation phase of the Project. General baseline characteristics of the AoI is provided in Section 4, and details of the baseline conditions of the nearest settlements and potential environmental and social impacts are provided in Table 5-31.

As it can be observed from Table 5-31, the settlements are not located close to the Project area. However, the Project area is located in a rural area and surrounded by agricultural lands to be used by local people. Therefore, owners of these lands which lives in the nearest settlements mentioned in the below table will be the vulnerable individuals who can be affected from the Project works. According to the interviews with the mukhtars (See Section 4.3.7), agriculture is not the only source of livelihood for most of these people. Since the Project area is still occupied by the stabilization pond and the wastewater is diverted to the channel without treatment, the potential adverse impact on these lands will continue till to commissioning of WWTP. Impacts during operation phase of the Project proposed to be positive after construction of the WWTP since operation of the WWTP will prevent discharge of the wastewater without treatment.

The land user and owners of adjacent lands will be informed on their rights and related processes as well as Project's active grievance mechanism by KOSKI. Their opinions and requests will be prioritized and if these could not be realized, the reasons will be conveyed to landowners with clear explanations. Community engagement will be performed timely and effectively with specific focus on vulnerable individuals and groups by KOSKI.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 5-31 Sensitive Receptors, Baseline Conditions and Possible Social Impacts

Settlement	Baseline Conditions ³⁸	The Closest Sensitive Building and Distance*	Potential Impacts
Şihbedrettin Neighborhood	Population: 2,367 Economic activities: agriculture, animal husbandry, industry, trade	Residential buildings: ~640 m (SE direction) and 1,350 m (W direction) Petroleum Station and commercial facilities: ~800 m School (Şehit Ziya Mert Secondary School): ~2,300 m Mosque: ~2,500 m Hospital:	Air pollution Landscape and visual impacts Noise and vibration Impacts on lands Community health and safety Traffic Procurement
Orhaniye Neighborhood	Population: 1,054 Economic activities: Animal husbandry, agriculture, industry	Residential buildings: ~2,000 m School (125. Yıl Secondary School): ~2,300 m School (Selçuk University Department): ~2,500 m Ilgın Sugar Factory: ~3,800 m	Landscape and visual impacts Community health and safety Procurement
Ağalar Neighborhood	Population: 626 Economic activities: Animal husbandry, agriculture	Residential building: ~1,400 m School (Şehit Murat Doğru Secondary School): ~2,300 m	Landscape and visual impacts Community health and safety Procurement

*Distances are calculated via Google Earth tool

5.5.1 Transport Network

5.5.1.1 Impacts

There is a public earth road about 600 m length reaching to the Project area from the asphalt road at the south. This road is going to be used during the construction phase of the Project including ETL. Improving the existing roads is not foreseen within the scope of the Project unless otherwise is required as a result of any damage to existing roads. The current road infrastructures are sufficient to realize the Project. In the event of any road improvement, KOSKİ will take adequate environmental and social measures conforming to WB's ESF.

Land preparation and construction phase of the Project will be last for 24 months, hence; vehicle load on existing traffic infrastructure will be somewhat significant. Existing traffic volume will be affected during transportation of the excavation and filling materials and receiving relevant technical equipment.

As a result of filling and excavation activities carried out within the scope of land preparation and construction phase, the filling material will be received from the closest licensed quarry and excess excavation material will be sent to Municipality permitted excavation waste storage area. This will lead to a monthly number of 7-8 trips. Considering the daily traffic volume around the Project area and the schedule for the excavation works, which will be 180 days, significant traffic impact within the scope of the Project is not anticipated.

However, for Project-related vehicles, approaches to traffic safety will be implemented, such as setting speed limits in residential areas, covering transported material with a paulin, and loading the vehicles according to their load limits. The risk of accidents will be reduced as much as possible because of the implementation of such measures and the low traffic intensity outside of the Project area.

³⁸ Population data is provided from TurkStat 2020 data.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Considering the impacts on transport network for Ilgin WWTP including ETL, the magnitude of the impact is defined as “local” since it is in the Project’s AoI. The additional load to existing traffic volume will be highly limited. Thus, the level of severity of impact is identified as “low” accordingly. Within that scope, during the construction phase, the significance of the anticipated impact due to the transportation activities is assessed as “low (B1)”.

It is also assumed that the amount of wastewater to be brought to the facility from remote areas without access to sewer will be maximum 1 sewer trucks per day. This is considered as a negligible increase in the traffic load during the operation period on the roads of close vicinity of WWTP. On the other hand, it is anticipated that accumulation of sludge and other disposable and/or recyclable wastes will be slow. Thus, the operation phase impacts on transport network are considered as negligible.

5.5.1.2 Mitigation Measures

The construction contractor will manage the talks and applications necessary to be made to relevant authorities with the supervision of KOSKİ. In case any road, facility, building etc. will be damaged due to the activities originating from the Project during the construction period, the necessary maintenance, improvement and compensation works will be done by the construction contractor. This will be improved or compensated by KOSKİ for the operation phase.

The construction contractor will take and ensure the implementation of necessary precautions (signboards, flagman, lighted barriers and signs) in the entry and exit of the treatment plant and in terms of road traffic safety along the road by cooperating with the relevant authority/administration.

Trucks, trailers and other vehicles to be used to transport necessary equipment and materials will be provided to comply with the speed limits. The construction contractor and KOSKİ will ensure to comply with Highways Traffic Law, Road Transport Law and the regulations issued in compliance with these laws.

In the event of receiving any complaint from community relating with transportation activities since the existing road network is not so diversified letting the driver to use less populated or less dense roads, the grievance mechanism of the Project will be utilized, and grievances will be solved timely by implementing adequate measures/compensations.

5.5.2 Local Employment and Procurement

Within the scope of the Project, a total of 30 workers during construction phase and 10 workers in the operation phase will be employed. The Project will create job opportunities for local people of the region. The construction contractor will give priority to hire local people especially in terms of unskilled personnel and security personnel. In case there are skilled personnel locally available for employment, the contractor will prioritize their employment possibilities. However, when this is evaluated with respect to the employment ratio of the region, it is not expected to experience a significant increase in the regional employment rates; thereby, the impact on employment rate will be limited and insignificant.

In Ilgin WWTP, advanced treatment will be performed. In this way, the impacts related with the discharge of untreated effluent will be minimized. Advanced treatment before discharge will eliminate and/or minimize the risks to daily industrial and agricultural activities, as well as construction of Ilgin WWTP will improve living quality and standards of the population in Ilgin and nearby settlements. The wastewater treatment plant will provide a more centralized and systematic wastewater management approach rather than an untreated water discharge which is highlighted as a major positive impact on community.

The local procurement options will be prioritized and selected at all phases of the Project if it is deemed feasible. This approach will have a positive impact on the local economy of the region.

KOSKİ and the Contractor will ensure that code of conduct (see Annex 10) and public communication trainings are given to all employees as an orientation training to prevent a possible future dispute, unacceptable behaviors within the workplace (i.e., gender-based violence, harassment, abuse etc.).

MUNICIPAL SERVICES IMPROVEMENT PROJECT

5.5.3 Community Health and Safety

5.5.3.1 Construction Phase

5.5.3.1.1 Workers' Influx

Within the Ilgin WWTP construction works including ETL, it is anticipated that there will be 30 personnel working on site at the peak period of construction activities, of which 35% is anticipated to be unskilled. Contractors will be contractually required to maximize use of local workforce, especially by utilizing the experienced and qualified workforce available in Konya and nearby settlements. Thus, the impact of the Project related employment on the population movements in the region is considered to be limited to the temporary construction phase.

The construction camp site and site offices will be established on the WWTP area. Within the WWTP area, the landscaping areas and areas adjacent to internal service roads will be used for this purpose. Therefore, there is no land acquisition need for construction camp site and site office. All temporary auxiliary facilities associated with construction will be installed within the WWTP area to avoid any land-based impacts per the WB's mitigation hierarchy.

The worker camps will be provided in line with the requirements of EBRD/IFC Guidance Note on Workers' Accommodation (2009) and all measures given in the Guidance will be strictly followed during the construction phase.

In some cases, the management team of construction contractor, could prefer to rent an apartment and lodge in the district. There are available accommodation opportunities including hotels and rental houses in the district center. Thus, it is anticipated that this high-level team could utilize these accommodation opportunities.

As the number of construction personnel is limited and the total period for construction is foreseen to be 24 months for WWTP Project, adverse impacts on the nearby district centers, such as increased demands on infrastructure, services and utilities, development of illicit trade activities and inflation in local rent and other subsistence items, are anticipated to be minor. Similarly, benefits of off-site housing on the economies of the district center are also anticipated to be limited and temporary.

Considering the impacts relating with the workers' influx, the magnitude of the impact is defined as "local" since there could be an off-site accommodation by high level personnel (5-6 personnel) of construction contractor and the unskilled workers (35% of total workforce 10-11 workers) are expected to be local, so they will reside in their home. Whereas others (15-16 personnel) will reside in the campsite. Thus, the level of severity of impact is identified as "low" accordingly. Within that scope, during the construction phase, the significance of the anticipated impact due to workers' influx is assessed as "low (B1)".

The SEA/SH risk of the project is assessed as low, considering that in Türkiye, the national law and legislation on SEA/SH is in place and it includes robust measures for addressing SEA/SH risks, including Codes of Conduct for employees and contractors.

The following measures will be taken in order to minimize potential impacts that be caused due to on-site and off-site accommodation of the Project personnel:

- The construction contractor will ensure that all the direct and contracted workers are provided with trainings on Project requirements at the beginning of employment (individually or collectively). These trainings will also cover the code of conduct for accommodation, general moral, cultural and ethical rules as well as rules relating with sexual exploitation and abuse (SEA) required from all Project workers.
- The construction contractor will analyze the accommodation options preferred/selected by non-local workers in collaboration with KOSKİ and ensure that service buses are provided for the non-local workers accommodating in the nearby district center in order to ensure safe travel of the Project workers to the Project site and minimize project-related traffic in the region.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

- The construction contractor and KOSKİ will ensure that the relevant aspects of EBRD/IFC's Guidance Note on Workers' Accommodation (2009) will apply to project-related on-site and off-site accommodation.
- The construction contractor will also apply necessary Covid-19 measures at accommodation areas.

5.5.3.1.2 *Exposure to Diseases*

Contractors will be contractually required to maximize use of local workforce, especially by utilizing the experienced and qualified workforce available in Ilgın and nearby settlements in Konya.

As mentioned in the previous section, it is anticipated that there will be 30 personnel working on site at the peak period of construction activities and the worker influx to the area is anticipated to be negligible during construction phase. Additionally, the construction duration will be limited to 24 months. The risk of communicable and vector borne diseases is anticipated to be low for the communities. The magnitude of impact is evaluated as "local" taking the local community into account. Thus, the significance of the anticipated impact relating with exposure to diseases is assessed as "low (B1)".

KOSKİ and the construction contractor will closely monitor potential diseases among the project employees (direct and contracted) throughout the construction phase and ensure that necessary medical checks are in place at the time of hiring, which would be repeated as necessary. The contractor has medical screening reports for all the existing operations personnel.

The construction contractor will prepare Covid-19 precaution plans/procedures prepared in order to prevent any possible Project impact related to Covid-19 pandemic including following measures and implement in the work area such as construction camps, eating areas, construction site, office areas.

- A pandemic protocol will be developed and applied during the project lifecycle.
- Single use masks and gloves will be provided to all staff and workers.
- Use of masks and gloves will be ensured for workers and visitors.
- Social distance between people will be ensured where possible.
- Regular trainings about the pandemic will be provided to workers.
- Banners and posters about the pandemic will be put at critical locations in the facility.
- If someone has a fever, cough or other symptoms of Covid-19, he/she will stop work, stay home and get away from others (except to get medical care or testing, if recommended).
- HES code³⁹ and body temperature of the visitors will be checked at the entrance to site. If any Covid-19 risk is detected or any symptoms of Covid-19 is observed for someone, attendance of him/her to the meeting will not be allowed.

KOSKİ and the construction contractor will ensure that legally required basic occupational health and safety (OHS) trainings, covering the general and health related subjects (e.g., workplace hygiene and good housekeeping, principles for protection from sickness and protection techniques, biological and psychosocial risk factors), are provided to all direct and contracted employees at the time of hiring, which would be repeated as necessary.

Within the scope of the Project, hygienic working conditions will be ensured, and potable and sanitary water will be supplied in line with the requirements of the national legislation. On site facilities such as sanitary facilities and medical/first aid facilities will meet the requirements of EBRD/IFC's Guidance Note on Worker's Accommodation Processes and Standards.

Waste management will be implemented in line with regulatory requirements and project standards. The Project-specific Stakeholder Engagement Plan will be implemented to address any relevant grievance and plan/take corrective actions in line with the Grievance Mechanism, where necessary.

³⁹ The HES Code is a personal code implemented by Turkish Ministry of Health in order to check Covid-19 risk status of people.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

5.5.3.1.3 *Emergency Preparedness and Response*

The emergency related risks will start in land preparation and construction phase. The whole emergency context will be managed with an Emergency Preparedness and Response scheme.

The magnitude of impact of an emergency is evaluated as “local” taking the local community into account. The severity of the impact changes from low to high depending on emergency case. Thus, the significance of the anticipated impact relating with emergencies is assessed as “high (B3) to low (B1)”.

An Emergency Preparedness and Response Management Plan will be developed for Ilgın WWTP by construction contractor. This Plan will cover the following emergency situations but not limited to:

- First aid and incidents and accidents that required evacuation
- Fire
- Earthquake
- Unfavorable weather conditions (flood, snowfall, etc.)
- Interruptions on road transportation
- Sabotage / terrorist attack
- Poisoning
- Emergencies related with turbines
- Environmental incidents
- Health incidents including community health and COVID-19 pandemic

An Emergency Preparedness and Response Framework has been prepared (Annex 6) as a framework document.

The Emergency Preparedness and Response Management Plans to be prepared for WWTP Project by the construction contraction will define the following subject matters:

- Purpose
- Legislative Framework and Project Standards
- Roles and Responsibility including the Emergency Response Teams
- Emergency Levels
- Emergency Events
- Emergency Preparedness Measures/Actions (including planning, coordination, training, resources, any measure and/or warning system designed to notify local communities in case of emergencies)
- Emergency Response Procedures (Measures/Actions) and Post-emergency actions
- Emergency Contact Numbers (including communication details of the mukhtars, any school principals and authorities to be collaborated in case of emergencies)
- Emergency Trainings and Drills

During preparation of these plans and procedures, official announcements of the local/international authorities and Interim Guidance on Covid-19 of WB⁴⁰ will be considered and the plans and procedures will be updated regularly according to the updates of the documents and announcements.

During the construction phases, Emergency Preparedness and Response Plan will be implemented in order to avoid potential community health and safety risks that may emerge as a result of the incidents/accidents that would occur at the Project site.

5.5.3.1.4 *Public Access*

During the construction phase, access to the WWTP construction site will be permanently restricted to avoid potential health and safety risks (due to use of heavy vehicles, construction vehicles causing site traffic, earthworks, electrocution hazards due to electrical works, etc.). The WWTP area has no tracks on ground which could be used for access routes to common resources. There are alternatives and practical routes around the region for use.

⁴⁰ •World Bank, 2020, ESF/Safeguards Interim Note: Covid-19 Considerations in Construction/Civil Works Projects

MUNICIPAL SERVICES IMPROVEMENT PROJECT

In this respect, it is concluded that the WWTP land will not impede or restrict public access to common resources and not resulting a livelihood impact. On the other hand, the restriction to WWTP area will eliminate any risks on community health, safety and security. The ETL poles will occupy maximum 10 m² land area and the installation will be done last within one week. For community health and safety and security reasons, the access to installation area will be restricted during working hours. After the installation is completed, the projection of lines will be available for use.

The magnitude of impact of an anticipated restriction in public access is evaluated as “local” taking the local community into account. The severity of the impact is evaluated as “low” since there are no routes passing on WWTP area used by the community. Thus, the significance of the anticipated impact is assessed as “low (B1)”.

The construction contractor will undertake official communication with the authorities to ensure collaboration to be able to apply necessary health and safety restrictions, in case such restrictions are applied within their jurisdiction areas.

As part of SEP, local communities will be informed about the construction sites, traffic restrictions to be applied for health and safety purposes and also about the duration of such restrictions.

5.5.3.1.5 Security Personnel

As per the national law, private security officers are required to receive basic security trainings for not less than 120 hours, consisting of theoretical and practical trainings. The basic trainings are required to be renewed every 5 years. The private security basic training program includes the following courses, which includes effective communication techniques as well empathy and sympathy recommendations:

- Private Security Law and Immaterial Rights
- Security Measures
- Security Systems and Devices
- Basic First Aid
- Fire Safety and Natural Disaster Response Style
- Information on Drugs
- Effective Communication
- Crowd Management
- Person Protection (against the risk of assassination)
- Relations with General Law Enforcement
- Information on Weapon and Shooting Practice

The private security contractor firm has a standard dressing guidance approved by the Ministry of Interior, which defines the clothes and equipment to be used by the private security officers. The agreement executed between the private security contractor firm and the construction contractor requires appointment of certified officers, who received basic trainings for private security officers, were subject to necessary security inquiries and fulfils the age and education standards.

Within the scope of the Project, use of armed Security force is not expected. However, in case use of armed security is considered to be recruited, as per the ESCP, the Project will comply with the requirements of ESS4. Employment of the private security officers from the local communities minimizes the risk of potential social conflicts. As the Project site is relatively small, the number of security personnel is anticipated to be 2. The construction contractor will provide trainings by the private security contractor to the security officers and ensure that these officers receive periodical trainings on adequate use of force and appropriate conduct towards the project employees and the local communities in line with the requirements of national legislation as well as WB’s ESF.

The public grievances mechanisms defined in the SEP will also be implemented throughout the project’s lifespan, to address any potential risk that may be related to the acts of the private security officers employed in the WWTP Project.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

The magnitude of impact of due to security forces is evaluated as “local” taking the local community into account. The severity of the impact is evaluated as “low” since the security personnel will be restricted to WWTP area and the WWTP land are not close to public accommodation sites. Thus, the significance of the impact is assessed as “low (B1)”.

By means of implementation of defined measures above, this impact rate will be anticipated lower.

5.5.3.2 Operation Phase

5.5.3.2.1 Exposure to Disease

In the operation phase, risk of exposure to disease can be due to spreading of raw wastewater droplets or foams via wind on workers or public or transfer of diseases by personnel working during the operation phase. The magnitude of the impact is evaluated as “local” taking the local community into account. Providing that the raw wastewater passing ways will be mostly enclosed and potential foam generating units especially pumping station will be enclosed, the severity is evaluated as “low”. Thus, the significance of the anticipated impact relating with exposure to diseases is assessed as “low (B1)”.

To mitigate the potential impact, the measures given under Section 5.6.3 will be followed.

KOSKİ will prepare Covid-19 precaution plans/procedures prepared in order to prevent any possible impact related to Covid-19 pandemic including following measures and implement in the work area during operation phase.

- A pandemic protocol will be developed and applied during the project lifecycle.
- Single use masks and gloves will be provided to all staff and workers.
- Use of masks and gloves will be ensured for workers and visitors.
- Social distance between people will be ensured where possible.
- Regular trainings about the pandemic will be provided to workers.
- Banners and posters about the pandemic will be put at critical locations in the facility.
- If someone has a fever, cough or other symptoms of Covid-19, he/she will stop work, stay home and get away from others (except to get medical care or testing, if recommended).
- HES code⁴¹ and body temperature of the visitors will be checked at the entrance to site. If any Covid-19 risk is detected or any symptoms of Covid-19 is observed for someone, attendance of him/her to the meeting will not be allowed.

5.5.3.2.2 Emergency Preparedness and Response

The relevant risks and impacts of the Project will start during the construction phase and will also be in place during the entire operation phase.

The magnitude of impact of an emergency is evaluated as “local” taking the local community into account. The severity of the impact changes from low to high depending on emergency case. Thus, the significance of the anticipated impact relating with emergencies is assessed as “high (B3) to low (B1)”.

Fire risk is the main emergency risk that may potentially be heightened by the Project in case of lack of related design and mitigation measures and a framework for management of emergencies.

Fires can stem due to the following main factors:

- Failure of electrical equipment,
- Direct contact with an uncontrolled fire sourced from outside the Project area,
- Lack or insufficiency of a framework for emergency management, resulting in poor communications with related emergency services and authorities,
- General lack of fire safety awareness, including lack of attention during welding works.

Fire at the Project site can lead to the following impacts:

⁴¹ The HES Code is a personal code implemented by Turkish Ministry of Health in order to check Covid-19 risk status of people.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

- Damage and potential delays in emergency response,
- Spread of the fire due to burning debris drifted by the wind that may result in habitat loss, displacement of animal species, etc.,
- Potential risks to nearby settlements due to potential delays in emergency response,
- In case of a fire during a manned operation such as maintenance, a serious risk arises for personnel involved in the work, especially for those that are conducting work at height.
- A standard smoke detection system will be established to the WWTP site.

In addition to embedded fire safety and lightning protection design measures, handheld carbon dioxide (CO₂) fire extinguishers, first aid kits and fire blankets will be provided at the WWTP area during the operation period. The measures/actions (including alarms, detection system, fire-fighting equipment, etc.) against fire incidents, defined responsibilities of the firefighting team, whose members are trained and exercised on controlling the fire-prevention measures, taking the fire under control and the defense against fire will be in place. All the preventive and response measures described will minimize the risks associated with fire and lightning.

An Emergency Preparedness and Response Framework has been prepared (Annex 6) as a framework document. The Emergency Preparedness and Response Management Plans will be prepared for WWTP Project by KOSKİ for the operation phase and will define the following subject matters:

- Purpose
- Legislative Framework and Project Standards
- Roles and Responsibility including the Emergency Response Teams
- Emergency Levels
- Emergency Events
- Emergency Preparedness Measures/Actions (including planning, coordination, training, resources, any measure and/or warning system designed to notify local communities in case of emergencies)
- Emergency Response Procedures (Measures/Actions) and Post-emergency actions
- Emergency Contact Numbers (including communication details of the mukhtars, any school principals and authorities to be collaborated in case of emergencies)
- Emergency Trainings and Drills

5.5.3.2.3 *Public Access*

The use of land for WWTP Project will not impede or restrict public access to common resources during the operation phase.

In this respect, there is no anticipated impact relating with the restrictions on public access for the operation phase.

5.5.3.2.4 *Visual Impact*

Lighting of the WWTP can create visual impacts on communities. Although the impact will be minimum, necessary assessments will be done in the Community Health and Safety Management Plan and relevant mitigation measures will be defined in the plan.

5.5.4 **Summary of Impacts**

The potential impacts of the Project on socio-economic environment, significance of the impacts prior to mitigation, proposed mitigation measures and significance of the identified impacts before and after the implementation of mitigation measures are summarized in Table 7-5 and Table 7-6.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

5.6. Labor and Working Conditions

As stated in the former sections, it is planned that 30 employees on the land preparation and construction phase, and 10 employees on the operation phase will work on site for the Project. It is assumed that unskilled workers (35% of total workforce 10-11 workers) during construction phase will be local. In the recruitment process, the priority will be given by construction contractor to local people.

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

- Working Conditions and Management of Worker Relationship
- Protecting the Work Force
- Occupational Health and Safety
- Workers Engaged by Third Parties and the Supply Chain

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

The legal frame for the section can be drawn with two major national laws relevant to the Project:

- The Labor Law (Act. No. 4857) which regulates the relations between an employer and an employee and
- Occupational Health and Safety Law (Law No: 6331) which regulates management of all occupational health and safety issues.

Turkish Labor Law and related regulations covers the basic principles of international labor standards in the issues of equal treatment of employees, restrictions on the working age and employment of children, avoidance of forced labor and ensuring occupational health and safety at the workplaces. Monitoring of the implementation is essential to ensure full compliance of the activities with the relevant legislation.

Türkiye has ratified a broad range of International Labor Organization (ILO) Conventions including the following:

- Forced Labor Convention
- Minimum Age (Industry) Convention (Revised)
- Labor Clauses (Public Contracts) Convention
- Protection of Wages Convention
- Right to Organize and Collective Bargaining Convention
- Equal Remuneration Convention
- Social Security (Minimum Standards) Convention
- Abolition of Forced Labor Convention
- Discrimination (Employment and Occupation) Convention
- Equality of Treatment (Social Security Convention)
- Workers' Representatives Convention
- Minimum Age Convention
- Human Resources Development Convention
- Tripartite Consultation (International Labor Standards) Convention
- Occupational Safety and Health Convention
- Termination of Employment Convention
- Occupational Health Services Convention
- Safety and Health in Construction Convention
- Safety and Health in Mines Convention
- Worst Forms of Child Labor Convention
- Protection Framework for Occupational Safety and Health Convention

MUNICIPAL SERVICES IMPROVEMENT PROJECT

5.6.1 Working Conditions and Management of Worker Relationship

The working conditions are to a large extent depend on the contractor's awareness and moral attitude. There are strict rules on employment regulated by legislations; however, the implementation systems and compliance differ by the firms. Quality and effectiveness of enforcement of Labor Law by the relevant authorities sometimes are insufficient, therefore in the Project the management of labor and working conditions will be guided by the Labor Management Procedures (LMP). which is based on national labor legislation and the requirements of ESS2. and internal and external mitigation and monitoring systems will be defined for successful implementation of LMP (See Section7).

Considering the impacts related to the working conditions, the magnitude of the impact is defined as "restricted" since it is in the Project area. The severity of the impact is evaluated as medium-low assuming that a competent contractor will be awarded the contract and that an acceptable performance regarding labor regulations as a part of the contract winning. Within that scope, during the construction phase, the significance of the anticipated impact due to working conditions is assessed as "low".

KOSKİ and construction contractor shall provide workers with documented information that is clear and understandable, regarding their rights under national labor law; including collective agreements, their rights related to hours of work, wages, overtime, compensation, and benefits as of startup of working relationship and when any material changes occur.

KOSKİ and construction contractor will not discourage workers from electing worker representatives, forming or joining workers' organizations of their choosing, or from bargaining collectively, and will not discriminate or retaliate against workers who participate, or seek to participate, in such organizations and collective bargaining.

KOSKİ and construction contractor will pay particular attention on principles of non-discrimination and equal opportunity. In this respect, KOSKİ and construction contractor will not make employment decisions (i.e., recruitment and hiring, compensation, wages and benefits, working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices) on the basis of personal characteristics unrelated to job requirements. Wages, work hours and other benefits shall be per the Turkish Labor Law.

As mentioned in above sections, the construction contractor and KOSKİ will ensure that the relevant aspects of EBRD/IFC's Guidance Note on Workers' Accommodation (2009) will be applied to project-related on-site and off-site accommodation.

The construction contractor will provide a grievance mechanism for workers to raise workplace concerns. The construction contractor will inform the workers about the grievance mechanism at the time of recruitment and make it easily accessible to them. KOSKİ will ensure measures to prevent child labor and forced labor by routine controls of employment list. In this respect, children under 18 years of age will not be employed during construction and operation phases.

5.6.2 Workers Engaged by Third Parties and the Supply Chain

Considering the impacts relating with the third parties and supply chain for the Project, the magnitude of the impact is defined as "restricted" since it is in the Project area. The severity of the impact is evaluated as medium-low considering that a competent contractor will be awarded for the construction. Within that scope, during the construction phase, the significance of the anticipated impact due to working conditions is assessed as "low". KOSKİ will;

- ensure that the contractors are reputable and legitimate enterprises and have an appropriate environmental and social management system that will allow them to operate in a manner consistent with the labor conditions required.
- monitor the performance of contractors such that human rights policy and labor rights of all workers are exercised properly.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

- ensure that workers of contractors have access to the overall grievance mechanism to be established for the Project.
- monitor its primary supply chain for safety issues related to supply chain workers, and where necessary KOSKİ will introduce procedures and mitigation measures to ensure that suppliers are taking steps to prevent or to correct life-threatening situations.

In order to realize those, KOSKİ will prepare a Contractor Management Plan and ensure its implementation and will ensure that the impacts and measures defined by this ESIA and the relevant ESMP are followed by the contractor.

In the event of any significant incident (e.g., environmental, social, labor or lost-time incidents) the contractor shall immediately notify KOSKİ and KOSKİ shall inform İLBANK within 3 business days. İLBANK will immediately inform the WB. Then, within 30 business days, an incident report including the root causes analysis of the incident, precautions and compensation measures taken will be presented to İLBANK and İLBANK will forward the incident report to the WB immediately after receipt from KOSKİ.

5.6.3 Occupational Health and Safety

The construction phase of the Project includes assembling works for equipment and the use of duty vehicles in this scope. As described in the sectoral WBG EHS Guidelines Water and Sanitation; work at sanitation facilities is often physically demanding and may involve hazards such as open water, trenches, and slippery walkways, working at heights, energized circuits, and heavy equipment. The nature of the work may also involve entry into confined spaces, including manholes, sewers pipelines, storage tanks, wet wells, digesters, and pump stations.

Before the commencement of land preparation and construction works, the construction contractor will prepare a site-specific Occupational Health and Safety Management Plan for the Project which will comply with the Turkish Legislation and international standards inclusive of:

- Regulation on Occupational Health and Safety (Official Journal of 09.12.2003; No: 25311)
- Regulation on Occupational Health and Safety in Construction Works (Official Journal dated 05.10.2013; No: 28786)
- Regulation on the Use of Personal Protective Equipment in Workplaces (Official Journal dated 25.04.2013; No: 28628 – amended: 24.04.2017; No: 30047)
- Regulation on the Procedures and Principles of Occupational Health and Safety Trainings of Employees (Official Journal dated 15.05.2013; No: 28648)

Considering the risks relating with the OHS, the magnitude of the impact is defined as “restricted” since it is in the Project area. The severity of the impact is evaluated as medium-low considering that a competent contractor will be awarded for construction. Within that scope, during the construction and operation phases, the significance of the anticipated impact due to working conditions is assessed as “low”.

Design measures concerning OHS will include the measures listed below:

- Automatic cleaning screens should be used instead of manually cleaning screens to prevent entrance of cleaning workers into the channels.
- Appropriate ventilation systems should be installed at where methane accumulation is expected.
- Railings will be installed around all tanks and pits.

OHS Plan for the construction phase will include the measures listed below and details about the OHS measures (OHS measures for: working at heights, working in areas of high noise, use of PPE (boots, gloves, hard hat, safety goggles, etc.), road safety, and associated with use of alcohol, drugs, loading and unplanned release of chlorine medicines that affect a workers ability to work under certain OHS risks) in order to prevent accident risks:

- All Project staff shall comply with the environmental, health and safety policies.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

- In order to minimize the risks and hazards that may arise (e.g., natural disasters, accidents, equipment malfunctions etc.) on human health and safety, safe working environments in the working sites will be established and physical hazards and risks will be prevented.
- The relevant plans and procedures of the relevant Turkish legislation will be complied including OHS measures and practices.
- Employees will be informed about the hazards that may cause from their work and thus a safer work environment will be created.
- Training will be given to employees according to the Regulation on the Procedures and Principles of Occupational Health and Safety Trainings. In this context, a training program will be prepared, training records will be kept and evaluation activities will be carried out after the trainings.
- Personal protective equipment will be provided to all employees and necessary training will be given for their use.
- Work areas will be equipped with warning signs (e.g., "Hazard", "Entry Prohibited", etc.) in accordance with the quality and potential risks of the work to be performed in that area.
- All necessary precautions will be taken in the Project area to prevent possible fires from construction activities. Uncontrolled fires in and out of the field will be prevented.
- Smoking in areas where there is a risk of fire will be prohibited. All employees must have knowledge of what to do in the event of a fire.
- Project staff will include first aid trained personnel. In case of emergency where an intervention is required, personnel will be sent to the nearest health center by appropriate means.
- The construction contractor will apply the sufficiency of the technical requirement of the machinery, equipment, and tools to be used in the activities.
- Moving parts of machinery and equipment will be equipped with appropriate protective systems (e.g., metal shields etc.), minimizing the risk of injury or damage to the person using the machine or equipment.
- Personal factors that may create and control risks during activities (e.g., long hair, jewelry and accessory use, clothing etc.) will be removed from the site by the regulations brought by the field management. Project staff will be informed about the relevant regulations within the scope of the training program.
- Drivers and operators will be trained to comply with traffic rules and to control the vehicles and equipment they use against risks and hazards originating from vehicle traffic. Required traffic signs will be placed in the Project Site and its surroundings. Machine operators and other employees will be informed and alerted about the relevant signs.
- The wastes to be generated will be managed under the Waste Management Regulation and the negative impacts on public health will be minimized.
- Areas where excavation work is to be carried out will not be accessible other than the authorized personnel. The loading and unloading activities shall be carried out together with the persons to oversee the personnel to carry out the activity.
- Persons and/or organizations with the necessary permits will be assigned to ensure the security of the Project area (e.g., private security companies/officials). These persons and/or organizations shall regularly monitor the facility and its surroundings. The special security applications and officials' authorities within the scope of the project shall comply with the provisions of the Regulation on the Implementation of the Law on Private Security Services and the Law on Private Security Services.
- Before construction activities begin, any holes on the fences of the treatment plant area will be fixed and the access of the visitors, local people and animals to the area will be controlled.
- Entry of staff and third parties into the working site will be carried out in a controlled manner from the doors at which authorized security personnel will work.
- If a trench needed to be left open for night, the sufficient illumination of the area shall be ensured by the construction contractor and necessary signs shall be placed and the area shall be enclosed with barriers.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

- The construction contractor will prepare a Confined Space Entry Procedure that is consistent with KOSKİ standards, applicable national requirements and internationally accepted standards.
- KOSKİ and construction contractor will ensure the compliance of all the activities within the treatment plant with national standards and WBG EHS Guidelines.
- Chemicals and hazardous materials will be stored in designated impermeable chemical and hazardous material storage areas.
- Oil and Chemical Spill Contingency Management Plan will be prepared and implemented.
- Spill response material will be placed to the chemical and hazardous material storage areas and distributed to project vehicles in order for timely response.
- Trainings for KOSKİ operation team will be conducted on spill response, safe chemical and hazardous material handling and storage.
- Measures to be taken in case of leaks and spills that may arise from machinery and vehicles due to fuel storage and unexpected accidents will be described in site specific Emergency Response Plan to be prepared by considering the framework (Annex 6) given in this ESIA.
- In case of any significant environmental or social incident (e.g., lost time incidents, fatalities, environmental spills etc.), the contractor will notify KOSKİ about the occurrence of the incident in 3 business days and KOSKİ will inform İLBANK and World Bank. A detailed incident investigation report, including the root-cause analysis, precautions and compensation measures taken will be submitted to KOSKİ, İLBANK and World Bank in 30 business days after the incident.
- The construction contractor will prepare Covid-19 precaution plans/procedures prepared in order to prevent any possible Project impact related to Covid-19 pandemic including measures details in Table 7-5.

Mitigation measures that will be taken during the operation phase are listed below:

- Before the commencement of land preparation and construction works, the construction contractor will prepare a site-specific Occupational Health and Safety Management Plan for the Project which will comply with the Turkish Legislation and international standards and provide training accordingly.
- These trainings will also cover the code of conduct for accommodation, general moral, cultural and ethical rules as well as rules relating with sexual exploitation, abuse and sexual harassment (SEAH), gender-based violence (GBV) and code of conduct required from all project workers.
- The whole WWTP area will be fenced; the access of local people and wildlife will be controlled. The entry of personnel and third parties into the facility will be carried out in a controlled manner.
- Private security officers will be hired in order to provide the security of the working area. The special security applications within the scope of the project and the competent authorities shall be in compliance with the provisions of the Law on Private Security Services and the Implementation of the Law on Private Security Services and ESS4.
- Personal Protective Equipment will be provided for the workers according to the nature of work to be performed. The necessary trainings will be carried out for their use.
- Smoking will be prohibited where the risks of fire is high. All the workers will be informed about the action plan in a case of fire.
- All equipment will be operated in proper working order.
- Procedures approved by the KOSKİ in the maintenance and repair activities and the requirements of the technical specifications of the supplier companies will be complied with.
- The necessary health and safety signs and traffic signs will be placed around the Project site. Employees will be informed and alerted about the subject matter markings.
- Trainings will be given to employees and operational and maintenance personnel within the scope of the Regulation on Procedures and Principles of Occupational Health and Safety Trainings and measurement and evaluation activities will be carried out after the trainings.
- Entrance of operation and maintenance personnel and third parties will be carried out in a controlled manner from the doors of the security personnel.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

- Equipment that meets international standards in terms of electrical performance and safety will be used at the plant.
- After the WWTP construction is completed, necessary electrical tests will be carried out to check that the electrical connections and other related equipment are made properly before the plant is taken into operation.
- An Emergency Preparedness and Response Plan will be prepared before the plant is taken into operation.
- KOSKİ will conduct trainings for operators who work with chemicals/hazardous materials regarding safe handling practices and emergency response procedures.
- Chemicals and hazardous materials will be stored in designated impermeable chemical and hazardous material storage areas.
- Oil and Chemical Spill Contingency Management Plan will be prepared and implemented.
- Spill response material will be placed to the chemical and hazardous material storage areas and distributed to project vehicles in order for timely response.
- Trainings for KOSKİ operation team will be conducted on spill response, safe chemical and hazardous material handling and storage.
- Measures to be taken in case of leaks and spills that may arise from machinery and vehicles due to fuel storage and unexpected accidents will be described in site specific Emergency Response Plan to be prepared by considering the framework (Annex 6) given in this ESIA.
- KOSKİ will distribute sufficient number of personal gas detection equipment to its employees to be used in confined spaces.
- KOSKİ will ensure individuals with asthma, diabetes, or suppressed immune systems not to work at the treatment plants and its auxiliary facilities due to greater risk of infection. The individuals with who has such health problems will be able to work other units of KOSKİ.
- KOSKİ will ensure the compliance of all the activities within the treatment plants and pumping stations with national standards and WBG EHS Guidelines.
- The construction contractor will prepare Covid-19 precaution plans/procedures prepared in order to prevent any possible Project impact related to Covid-19 pandemic including measures details in Table 7-6.

KOSKİ will ensure that the contractor prepares an OHS Management Plan and Community Health and Safety Management Plan for land preparation and construction activities and will review this plan and submit it to the approval of İLBANK. In addition, a Community Health and Safety Management Plan will be prepared by KOSKİ and submitted to the approval of İLBANK prior to the beginning of the operation phase.

An Emergency Preparedness and Response Framework has been prepared (Annex 6) as a framework document. The construction contractor will prepare an Emergency Preparedness and Response Plan covering construction activities and for the operation phase, KOSKİ will prepared its own Emergency Preparedness and Response Plan for the Project. KOSKİ will ensure that this plan will be prepared, examined and submitted to İLBANK before construction activities begin.

5.6.4 Summary of Impacts

Table 7-5 and Table 7-6 summarizes the impact assessment on the labor and working conditions.

5.7. Cumulative Impacts

The previous sections of this ESIA include assessments on the potential Project-level impacts. This section aims to assess the potential cumulative environmental and social impacts of the Project on the Valued Environmental and Social Components (VECs), together with other existing and reasonably foreseeable future projects.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

5.7.1 Methodology

The Cumulative Impact Assessment (CIA) study that is conducted for the Project, follows the methodologies specified by relevant international guidelines. The IFC's Good Practice Handbook "Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets" will be the main reference document for the methodology to be applied in this assessment as it is the most recent and comprehensive document.

The IFC's Good Practice Handbook defines cumulative impacts as "impacts that result from the successive, incremental, and/or combined effects of an action, project, or activity when added to other existing, planned, and/or reasonably anticipated future ones". The Handbook further states that "multiple and successive environmental and social impacts from existing developments, combined with the potential incremental impacts resulting from proposed and/or anticipated future developments, may result in significant cumulative impacts that would not be expected in the case of a stand-alone development."

The need for CIA emerges in circumstances where a series of developments, which may or may not be of the same type, is occurring, or being planned within an area where they would impact the same VECs, which are defined as the environmental and social attributes that are considered to be important in assessing risks. The CIA process to be implemented in case of such circumstances is defined by IFC as;

- a. Analyzing the potential impacts and risks of proposed developments in the context of the potential effects of other human activities and natural environmental and social drivers on the chosen VECs over time, and
- b. Proposing concrete measures to avoid, reduce, or mitigate such cumulative impacts and risk to the extent possible.

In light of the evolving global practice, IFC proposes a six-step approach for conducting Project-initiated CIA studies. This approach, which will be adopted in the CIA study to be conducted as a part of this ESIA studies, is illustrated below.

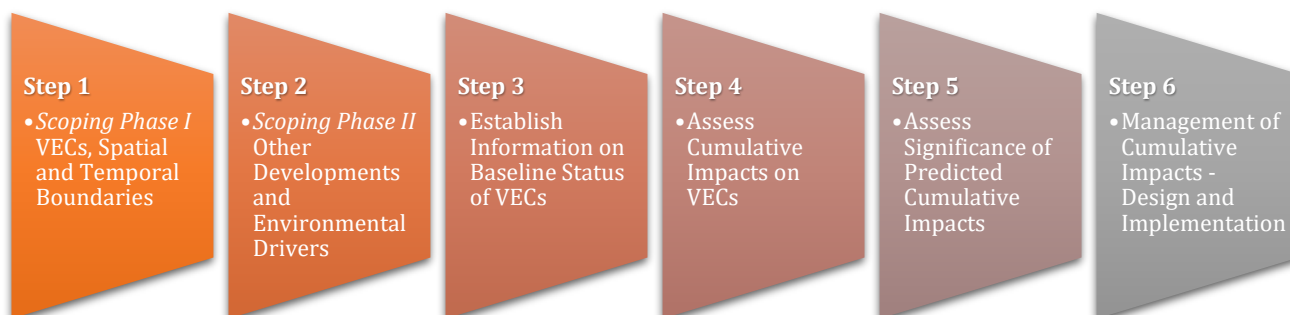


Figure 5.5 IFC's Six-Step Cumulative Impact Assessment Approach

There are several limitations to the assessment of the cumulative impacts of the Project with other development over a wide area and over a long period of time. Most of these limitations would apply to many projects of similar scale and duration. The main limitations are:

- The available information on future projects is variable and, in many cases, very limited. Therefore, their physical characteristics are uncertain or subject to change. The timing of many future projects is also uncertain and subject to change. Additionally, any planning documentation regarding these projects can be confidential.
- Some of the other projects have not been subject to environmental and social impact assessments (or the assessments are not accessible) yet and the effects of these possible developments have therefore not been documented.
- There are several unknowns associated with the baseline conditions in the CIA study area.
- Cumulative impacts will be influenced by policies and developments outside of the study area.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Given the limitations described above, this CIA has been prepared to establish at a very broad level the types of effects that could occur as a result of the Project in addition to other projects.

It should also be noted that mitigating the potential negative cumulative impacts are not solely the responsibility of the project proponent. Therefore, other project owners, relevant local and national authorities should also take responsibility to mitigate the potential impacts identified.

5.7.2 Cumulative Impact Assessment Study

The CIA study of the Project is conducted following the below steps:

5.7.2.1 Step 1: Scoping Phase I – VECs, Spatial and Temporal Boundaries

In the first step of the CIA study, VECs will be identified in consideration of the environmental and social assessments done in the previous chapters of this ESIA. Afterwards, spatial boundaries and temporal boundaries of the assessment will be established as the CIA Study Area.

In line with the Handbook, the CIA studies are conducted with a focus on the environmentally or socially important natural resources, ecosystems or human values, which are referred to as VECs and may include the following:

- Physical features, habitats, wildlife populations (e.g., biodiversity),
- Ecosystem services,
- Natural processes (e.g., water and nutrient cycles)
- Social conditions (e.g., health, economics), or
- Cultural aspects (e.g., archaeological sites).

As the CIA studies should be looked at “from the VECs point of view”, this approach allows assessment of the combined (i.e., cumulative) effects of various actions/projects on each VEC.

It should be noted that only the VECs affected by the Project are considered in the assessment. In other words, any VEC that would be affected by other developments, but not by the Project are not taken into account in the assessment.

Considering the findings of the ESIA study performed, VECs to be considered in this CIA study are selected as follows

Table 5-32 VECs for Ilgın WWTP Project

E&S Subject	VECs	Specific VECs
		Ilgın WWTP
Aquatic Environment	Receiving water body	Dry arm of Bulasan Creek – no aquatic environment
Biodiversity and Natural Resources	Key biodiversity areas	-
	Regionally endemic or critically endangered species according to IUCN criteria	-
Land Use	Agricultural areas	-
Air Emissions	Air quality at the closest residential area/receptor	Closest receptor at Şihbedrettin Neighborhood
Noise Emission	Noise levels at the closest residential area/receptor	Closest receptor at Şihbedrettin Neighborhood
Socio-economic Environment	Land and assets	-
	Economy	-
	Quality of life	Access to healthcare, education and commercial facilities Air pollutant and noise

MUNICIPAL SERVICES IMPROVEMENT PROJECT

As defined by the IFC, cumulative impacts can occur:

- When there is “spatial crowding” as a result of overlapping impacts from various actions on the same VEC in a limited area, (e.g., increased noise levels in a community from industrial developments, existing roads, and a new highway; or landscape fragmentation caused by the installation of several transmission lines in the same area), or
- When there is “temporal crowding” as impacts on a VEC from different actions occur in a shorter period of time than the VEC needs to recover (e.g., impaired health of a fish’s downstream migration when subjected to several cascading hydropower plants).

The CIA Study Area for Ilgın WWTP Project is given in Figure 5.1. It was determined to ensure that the area is sufficiently large to cover their direct impact area and the borders of the selected VECs. In the course of the determination, the relevant and available data were evaluated by taking the topographical conditions into consideration.

The temporal boundary of the CIA study is determined as the Project life of each Project, which will start with the beginning of land preparation activities and be limited with the operational phase.

5.7.2.2 Step 2: Scoping Phase II – Other Developments and Environmental Drivers

Upon identification of the spatial and temporal boundaries of the CIA Study Area, the existing and future developments and environmental drivers within the CIA boundary that would affect the condition of the selected VECs are identified through review of available public databases. To this end, the following resources are used:

- EIA Positive Decisions issued by the Ministry of Environment Urbanization and Climate Change
- GEODATA – Database of the Ministry of Agriculture and Forestry
- Information shared by KOSKİ

In identifying other contributing projects within the CIA Study Area, the primary focus is given to the infrastructure projects wherever possible, as they would have common types of impacts that would affect the same VECs. This said other developments in other sectors have also been considered within the CIA study.

It is identified that, no existing or any certain or reasonably foreseeable developments are present to be considered within the scope of CIA study. The district has an average socio-economical and economical status with limited budget to develop such an infrastructure project as well as the region of the WWTP Project is not considered as an attraction point for external investors.

Environmental drivers refer to natural drivers and other stressors, such as fires, droughts, floods, predator interactions, human migration, new settlements, etc. that may exert an influence on the VECs. For example, the fire regime in forested areas is a major driver that shapes social, ecological and economic systems.

Amongst the natural drivers, forest fires will not be the case as the habitat characteristics of the regions does not show forest environment. In this respect, local communities do not generate income from forest products. Droughts and would be expected as an impact of global climate change in the following years in Konya Province.

As mentioned above, the district is relatively less attractive for migrators. Reviewing the 10-year population data reveals rather stable population figures. In addition, the WWTP Project is not a type of project causing any future urban development potential. The socio-economical interactions are not competitive, and any predator interaction is not foreseen for the region of the proposed WWTP.

Based on the existing knowledge of the ecology and/or natural dynamics of the selected VECs, no major environmental driver that may contribute to cumulative impacts has been identified for this CIA study.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

5.7.2.3 Step 3: Establish Information on Baseline Status of VECs

Information on the baseline status of the VECs will be mainly based on the information gathered for each environmental and social subject in scope of the ESIA study. Thus, relevant information on the baseline status for VECs is presented in the related chapters of this ESIA Report.

5.7.2.4 Step 4: Assess Cumulative Impacts on VECs

The CIA analysis is future oriented. The impact of the Project is not assessed as the difference between the expected future condition of VECs and that of a past baseline condition. It is assessed as the difference between the estimated future condition of VECs in the context of the stresses imposed by all other sources (projects and natural environmental drivers) and the estimated VEC condition in the context of the future baseline plus the development under evaluation.

The estimate of the cumulative project impact, together with ESIA results, indicates the need for project-specific mitigation. By contrast, the estimated overall cumulative impact indicates the need for mitigation to be implemented by the various project owners or proponent parties to ensure that their respective contributions to the overall condition of the VECs is coherent and/or compatible with what is mandated or required by government-led national/regional programs and plans, or as a minimum compliant with ambient quality standards for the desired use.

Assessment of potential cumulative impacts of existing and future developments together with subject project on the selected VECs has been mostly based on a qualitative approach in consequence of limited publicly available information relating with other developments.

In the event of presence of another existing/planning developments in the CIA study area having an impact on any of the estimated VEC, there will be a cumulative impact potential on the concerning VEC.

In consequence of absence of any other existing/planning developments within the CIA study areas of the subject WWTP Project, it is concluded that there will be no cumulative impact on each VEC estimated previously.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

6 Project Alternatives

6.1. Introduction

The proposed Ilgın WWTP Project will be constructed in the Ilgın District of Konya Province. In the following sections, factors considered in the site's selection will be described and evaluation of alternatives will be presented.

6.2. "No Action" Alternative

No action alternative concerns the scenario that the Project do not become operational and negative or positive possible consequences of this scenario.

As explained in the previous sections, the domestic wastewater generated in the service area of the Project is currently being discharged to Bulasan Creek, from the discharge point without any treatment.

In case of the Project are not realized, the situation will continue, and the wastewater of the region will be discharged into the creek without treatment. This will continue to cause environmental pollution (i.e., contamination of surface water, ground water and soil) and potential health impacts for living features. Therefore, its negative impacts will continue, and the discharge will create pollution stress on environment. Furthermore, the settlements located in the service area of the Project would not be able to benefit from wastewater services in a healthy and sustainable manner since necessary treatment is not applied. Therefore, negative impacts could be occurring on public health, especially in terms of potable water.

The Project will cause land use change. However, the designated land for WWTP is not in use for any purposes except the informal use of adjacent landowner (See Section 5.3.1.1). The land had been used for wastewater treatment by means of stabilization ponds established; however, it has not been in operation for 15 years. The land is KOSKİ's registered land for WWTP and this land is not subject to any critical natural habitat or habitats having important values. Thus, this change is considered as negligible.

Construction phase short term impacts such as noise and dust generation will not occur if the Project is not actualized. However, these impacts will be kept under Project standards and will not have significant impacts on local residents anyway.

Due to the abovementioned reasons, no action alternative is not considered as a reasonable alternative. The benefits of the Project are considered as of great importance to the surrounding population.

6.3. Site Alternatives

Site selection criteria for the proposed WWTP Project are listed below;

- The need of treatment of wastewater in subject district,
- The absence of residences in the immediate vicinity of WWTP area,
- The absence of any flora and fauna species, which are rare and endangered in the WWTP area,
- The ownership of the WWTP area belong not to an individual,
- The WWTP would be easily accessible at all times during the year, energy, communication and drinking water connections could be made easily,
- The site would be close to a receiving environment where the treated wastewater can be discharged,
- The WWTP would have a low elevation area where the collected wastewater can be brought with gravity flow,

The areas that meet the above criteria at a most appropriate level have been selected as the WWTP area which is also subject to this ESIA Study. The WWTP land belong to KOSKİ and is located near a receiving environment as well as close to main roads. The planned WWTP is at a point where the end of the existing wastewater collection line passes after collecting the wastewater by gravity.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

KOSKİ had decided the location of the WWTP considering these criteria. Since the subject land is already allocated for wastewater treatment plant in 1980, no other alternative has been evaluated.

The area designated for the WWTP Project is located 640 m from the nearest housing/receptor. According to the noise levels caused by the construction equipment and equipment to be used, even at the worst conditions (all vehicles working at the same time and during working hours), it is estimated that after approximately 163 m from the source, it corresponds to the day-time noise limits.

6.4. Process Alternatives

It is necessary to treat the used water collected by the sewage system before discharging to environment in order to ensure that it does not cause any harm in terms of public health and ecological balance of the receiving environment.

The processes used in the treatment of domestic wastewater are generally named under "Biological Treatment". The basic principle of this type of treatment is that bacteria and other microorganisms growth using organic substances that cause pollution in the wastewater, so that organic substances eventually turn into substances such as microorganism mass, energy, water, CO₂ and NH₃.

Biological treatment is actually a self-occurring process in nature. With treatment technology, this event is accelerated under controlled conditions. Stabilization pools, which are called simple sewage treatment methods, are the fact that the biological treatment occurs on its own by keeping the water in the large natural pools for days.

Biological treatment methods applied in the treatment of domestic wastewater are stabilization ponds, aerated lagoons, biological filters, bio disks and different variations of the activated sludge system (Conventional, Contact-Stabilization and Extended Aeration).

Stabilization pools are the simplest of wastewater treatment techniques. Stabilization (self-cleaning) is the breakdown of organic matter into more balanced end products by bacterial activities. It requires that the wastewater is kept in shallow pools within a sufficient time to allow natural stabilization of organic substances with microbial activities.

The advantages and disadvantages of this system come from the fact that pool systems are implemented under completely natural conditions without any process accelerators (such as aeration). The advantages of the system are simple and the process is reliable. There is no equipment that can malfunction. Its cost is low unless the land costs are excessive; operating costs are low enough to be neglected compared to other methods. However, since the processes are very slow in nature, it requires pools where water will be kept for a long time; therefore, there is a very large land requirement.

Aerated lagoons require less space than stabilization ponds but require aeration equipment to add oxygen to the system.

Energy consumption in biological filters (drip filter) is lower than other processes, but both the initial investment and the effluent quality are not as good as other processes. In addition, disturbing situations such as smell and fly problems may occur from time to time. In this process, additional sludge digestion is required for the sedimentation sludge that will be generated by pre-sedimentation and sedimentation systems.

Bio disks are a process that works according to the principle of drip filters (adherent growth) applied in smaller plants.

The most applied process in the treatment of domestic wastewater in Türkiye and in the world is the activated sludge process.

In Türkiye, in the first years, the wastewater treatment systems financed by İLBANK and constructed in Provinces and Districts were mostly stabilization ponds (around twenty) and in a few places, the drip filters have been implemented.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

However, the activated sludge process has been chosen for almost all facilities built in recent years as well for facilities in the project phase. In developed countries, following the same process, activated sludge systems are widely accepted in domestic wastewater treatment today.

In practice, it is possible to apply the activated sludge with different variations (Conventional, Contact-Stabilization and Extended Aeration), taking into account some criteria and purification target in the current conditions.

In order to make the activated sludge process more economical and efficient, studies are carried out on different modifications all over the world. In Türkiye, these studies are closely followed by the sector, which has developed greatly in recent years.

Developed countries have comprehended the importance of nitrogen and phosphorus treatment in recent years and have developed their standards in this direction by adding these two parameters to their treatment targets. This is also regulated in Türkiye with the Regulation on Urban Wastewater Treatment and the targets were selected identical to the relevant EU Directive.

As a brief summary, the activated sludge process is an aerobic, biological process that takes the advantage of the metabolic reactions of suspended microorganisms (activated sludge) in a wastewater containing suspended colloid and dissolved organic and inorganic substances.

In this process, wastewater enters into a reaction tank, where the organic compounds in the wastewater come into contact with the microorganisms.

Organic substances serve as energy and carbon sources for the growth of microorganisms and turn into end products oxidized with new microorganism cells. In order for microorganisms to perform this reaction, oxygen must be supplied to the subject reaction tank.

6.5. Evaluation of Process Alternatives

The factors to be considered for the selection of the three most suitable treatment process alternatives from the wastewater treatment processes are summarized below.

- Providing discharge criteria,
- Generation of GHGs,
- Ease of operation and maintenance,
- Investment costs,
- Operation and maintenance costs,
- Low impact of fluctuating flow and pollution loads,
- Toxic wastes treatment,
- Land needs,
- Adaptation to climate conditions,
- Topographic and geological compatibility, and
- Risks it carries.

The following approach has been used to reduce the wastewater treatment alternatives to be considered in the process selection to three alternatives.

- A weighted score was assigned to each of the above selection criteria, depending on its importance.
- Each treatment process was given a score of 1-5, depending on the technology assessment. (5-most advantageous and 1-least advantageous).
- The total score of each alternative was found by multiplying the weights and the scores given to the alternatives.

The evaluation results are given in the table below.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 6-1 Alternative Treatment Systems Rating Table

No	Process	Criteria	Weight (%)	Stabilization Ponds		Drip Filter		Biological Reactors		Bio Disks		Conventional Activated Sludge		Extended Aeration Activated Sludge		Extended Aeration Activated Sludge with Nutrient Removal	
				Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
1	Providing discharge criteria		25%	1	0.25	2	0.5	4	1	4	1	4	1	4	1	5	1.25
2	Ease of operation and maintenance		15%	5	0.75	4	0.6	2	0.3	2	0.3	3	0.45	4	0.6	4	0.6
3	Investment cost		10%	5	0.5	4	0.4	3	0.3	2	0.2	4	0.4	4	0.4	3	0.3
4	Operation and maintenance costs		15%	5	0.75	4	0.6	3	0.45	2	0.3	3	0.45	3	0.45	3	0.45
5	Low impact of fluctuating flow and pollution loads		5%	5	0.25	2	0.1	3	0.15	4	0.2	3	0.15	4	0.2	4	0.2
6	Toxic wastes treatment		5%	5	0.25	2	0.1	3	0.15	4	0.2	4	0.2	3	0.15	4	0.2
7	Land needs		5%	1	0.05	3	0.15	4	0.2	5	0.25	4	0.2	3	0.15	3	0.15
8	Adaptation to climate conditions		5%	1	0.05	2	0.1	3	0.15	3	0.15	5	0.25	4	0.2	4	0.2
9	Topographic and geological compatibility		10%	2	0.2	2	0.2	4	0.4	3	0.3	5	0.5	4	0.4	4	0.4
10	Risks it carries		5%	4	0.2	5	0.25	5	0.25	5	0.25	3	0.15	5	0.25	5	0.25
	TOTAL		100%		3.25		3		3.35		3.15		3.75		3.8		4

As it is seen from the table, the highest scored process is extended aeration system with nutrient removal and extended activated sludge systems are ranked as second highest scored systems.

The following criteria are used for the environmental consideration of different alternatives.

- Impact on people (noise, odor, landscape)
- Effect on surface waters (mixing risk, process reliability)
- Soil and groundwater (sludge storage / use, mixing risk, illegal discharges)
- Air (CO₂ generation)
- Land requirement

The following table represents the advantages and disadvantages of three type of activated sludge systems in accordance with the subject criteria. As it is seen, each process has relatively similar advantages. Generated sludge as a result of the treatment is an excess product hard to further treat and dispose. In this respect, diminished sludge generation is significant reason for preference.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 6-2 Alternative Treatment Systems Environmental Considerations Rating Table

Conventional Activated Sludge		Extended Aeration Activated Sludge		Extended Aeration Activated Sludge with Nutrient Removal	
Advantages	Disadvantages	Advantages	Disadvantages	Advantages	Disadvantages
Providing discharge criteria	Odor generated by pre-sedimentation unit	Providing discharge criteria	High energy demand (high CO2 emissions)	Providing discharge criteria	Odor generated by pre-sedimentation unit (if there is any) ⁴²
Lower land requirement		Minimum odor problem	Higher land requirement	N&P removal	
Lower energy demand (low CO2 emissions)		Low facility height		Lower energy demand (low CO2 emissions)	
High amount of sludge generation		Diminished sludge generation		Diminished sludge generation	

6.6. Selected Process

In the light of the treated water quality targets and the associated evaluations, 'Extended Activated Sludge process with Nutrient removal' was selected for Ilgın WWTP Project.

Extended Aeration Activated Sludge process has two stages which are nitrification and denitrification processes. In those processes, wastewater should be kept in aeration tanks for long periods of time (extended aeration activated sludge). Therefore, the aeration times for conventional activated sludge processes is lower than extended aeration activated sludge process, conventional one is not suitable for nitrification (oxidation of ammonia nitrogen to nitrite and then nitrate) and nitrogen removal.

In the extended aeration activated sludge system, the pollution load given to the consumption of microorganisms is kept very low, and the mass of the microorganism remains hungry and eventually consumes itself.

Thus, a better quality effluent is obtained and the amount of sludge to be removed from the system is very low. Among all biological processes, the extended aeration method is the process that produces the least amount of sludge.

Since almost all the biodegradable substances are broken down by microorganisms, the excess sludge to be removed from the system is now "inert" materials that will not deteriorate any more. In all biological treatment systems, some amount of microorganism mass (sludge) is systematically removed from the plant to ensure that the amount and number of microorganism masses that perform the treatment are kept under control at all times and remain active at all times.

Since the excess sludge coming out of the extended aeration systems is stable, it can be dewatered and then removed without any further treatment.

The selected aeration tank geometry is carousel during the Project design processes. Thus, with the help of the location of the aerating devices in the tank and the devices measuring the dissolved oxygen, aerobic and anoxic zones are created in the tank and the nitrogen removal in the wastewater will be carried out by the nitrification-denitrification process.

For the Project, a Bio-P tank is also considered in order for removal of phosphorus from the effluent. Biological phosphorus removal unit (Bio-P tank) provides anaerobic environment conditions in biological treatment. In this tank, the process of releasing the phosphorus within the microorganisms (to take much

⁴² The proposed process for WWTP designed in respect to Extended Activated Sludge with Advanced phosphorus removal process do not include any pre-sedimentation unit. Therefore, odor problem is not expected due to this unit. Therefore, selection of this process would be beneficial considering the phosphorus removal as well.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

more in the aeration tank) takes place. The wastewater from the primary treatment will be mixed with the recycling sludge and fed to the biological phosphorus tank. Furthermore, in order to inactivate the microorganisms, a disinfection system (chlorine contact basin) is also included into the process.

6.7. Sludge Management

Sludge treatment is one of the most difficult processes in terms of operation and planning in WWTPs. Although the amount of sludge produced corresponds to a low percentage of 1% to 6% by volume of wastewater, the investment and operation costs of the sludge treatment units are a higher in the total cost of the treatment plant.

In general waste management; primarily strategy is to prevent waste generation or to minimize, then to recover it, if possible, if it cannot be recovered, it is essential to dispose of it in harmony with the environment. Sludge, if it is recycled, could be reused on the soil, used as additional fuel in cement plants and digested in an anaerobic digester as an energy recovery method, if it is disposed of in an environmentally compatible method, could be disposed to adequate landfill sites and dried/incinerated. In general, the sludge taken from the system with the pumps is first thickened and then decomposed by suitable sludge stabilization method selected under the sludge management, dewatered, dried and removed using the final disposal methods.

In order to manage the process adequately, KOSKÍ will prepare a Sludge Management Plan that includes procedures to be followed and will make the management plan available before the commencement of the treatment plant.

6.7.1 Sludge Thickening Alternatives

In sludge thickening, the concentration of the solid content of sludge coming from the wastewater treatment units is increased by removing a portion of liquid fraction and in that way, volume is decreased.

Volume reduction allows;

- Reduced capacity of tanks and equipment required,
- Reduced quantity of chemical required,
- Amount of heat required for the subsequent digesting processes.

6.7.1.1 Gravity Thickening

Solid matter that has high density in the sludge, can precipitate spontaneously and is separated from water, so becomes concentrated by gravity. It is applied to the preliminary settling sludge which has the high inorganic and perceptible solid content. Sludge thickening is accomplished in circular sedimentation basins. The solids concentration reached in the gravitational sludge thickening is generally 5-10% solids content for preliminary settling sludge, 2-3% solid content for waste activated sludge, 3-6% solid content for drip filter sludge and 4-7% for mixed sludge.

6.7.1.2 Floatation Thickening

It is primarily used to thicken the waste activated sludge produced by biological process. The incoming solids is concentrated as 2~8 times. Separation of solids is achieved by introducing fine air bubbles created under high pressure into the liquid, attaching to solids to cause flotation of solids. The thickened sludge that accumulates on the surface of the tank is stripped away. Coagulant addition can also be performed to better perform solid/liquid separation in process. Disadvantages of flotation thickening are equipment cost, maintenance-repair and high operating cost depending on energy requirement.

6.7.1.3 Mechanical Thickening (Centrifugation)

It is a common method for sludge thickening and dewatering. During the centrifugation process, centrifugal force separates the solid substances and free water in the sludge. The most advanced centrifuges are spiral

MUNICIPAL SERVICES IMPROVEMENT PROJECT

spinner solids decanter type centrifuges. Entrance of the sludge is continuous, and the solid materials are gathered around the horizontal cylinder and the sludge cake collected is paddled out. The water of the sludge is removed from the thickener by means of weirs.

Advantages of centrifugation are as follows;

- Better concentration performance,
- Easier and closed system operation,
- Need low area,
- Easy maintenance and repair, and
- Lower risk of odor problem and formation of pathogens.

Disadvantages of centrifugation are as follows;

- Higher initial investment cost

6.7.1.4 Gravity Belt Thickening

Gravity belt thickeners which are used for the waste activated sludge, aerobic and anaerobic digestive sludge and some industrial sludge. This method could be applied in solids concentrations less than 2%. Treatment sludge is distributed on the thickening band with a porous structure and the water is drained by gravity effect after the addition of polymer. Through the use of a series of scrapers placed along the band, the water is allowed to pass from the sludge to the band.

Disadvantages of gravity belt thickening are as follows;

- Need high polymer addition and equipment,
- The need for backwashing of the band increases the formation of filtrate water, which acts as additional pollution load to the treatment plant,
- Need good ventilation due to odor formation.

6.7.2 Sludge Stabilization Alternatives

In the selection of sludge treatment process, where sludge will be stored in landfills, criteria regulated by Regulation Concerning the Landfill of Wastes should be complied.

Stabilization is applied in order to reduce pathogenic organisms, prevent unwanted odors and eliminate problems such as decay, deterioration and spoilage. The most important feature in the stabilization process is the volatile or organic compounds in content of the treatment sludge.

If sludge incineration applications are preferred as a final disposal, since the amount of energy to be obtained as a result of the incineration process depends on the calorific value of the sludge and the stabilization of the sludge will reduce calorific value of the sludge, it may be considered that not to conduct stabilization of the sludge. In this case, the dewatered sludge must be transferred to the incineration process without prolonged storage.

The main technologies used for sludge stabilization are as follows:

6.7.2.1 Aerobic Digestion

Aerobic digestion can be applied to waste activated sludge or mixed sludge (primary sedimentation + waste activated sludge or primary sedimentation + drip filter sludge). Waste activated sludge is taken into a separate tank and aerated for a few days. Thus, the volatile solid compounds in the sludge are biologically stabilized.

Advantages of aerobic digestion are as follows;

- Low initial investment cost,
- Less operational problem.

Disadvantages of aerobic digestion are as follows;

MUNICIPAL SERVICES IMPROVEMENT PROJECT

- High energy need to provide necessary oxygen to the system,
- No useful final product such as methane can be obtained and lack of energy recovery.

6.7.2.2 Anaerobic Digestion

Anaerobic digestion which is one of the most common processes used for sludge stabilization, is heating the sludge at about 35 °C to decompose organic and inorganic substances in a mesophilic environment in the absence of molecular oxygen. Thickened primary sludge and excess sludge from biological process are pumped to the digesters and waited there where air intake is off and well mixing conditions are provided for anaerobic stabilization. The organic substances in the waste sludge are biodegraded and converted into various end products such as methane and carbon dioxide. The most important parameter in reactor design is the waiting period, which can be accepted as 20-25 days. The most important advantage of anaerobic digestion is that biogas can be obtained as a product and heat and electricity can be supplied by the gas cogeneration system collected in the gas reservoirs.

Electricity is generated by generator into which is activated by gas engine. The generator meets some of the electricity needed by the treatment plant. The cooling water from the gas motor is used as heat energy to protect the existing mesophilic temperature of the sludge digester.

6.7.2.3 Chemical Sludge Stabilization

In chemical stabilization, the lime is added to the raw sludge to raise pH above 12. The high pH environment is not suitable for the survival of microorganisms. Thus, microorganism will not cause rot, bad smell and harm to health. Despite the low initial investment cost, the operating cost is high due to the high amount of chemical addition and sludge formation.

6.7.2.4 Stabilization in the Aeration Tank

Extended aeration activated sludge systems have a high sludge age and therefore, excess biological sludge removed from the system is in a stabilized state. Larger tank volumes and more oxygen supply are needed for high sludge age.

In such a case, additional units need to be done are as follows:

- Mechanical Thickener
- Aerobic Sludge Stabilization Pool
- Diffuser System
- Mixers, dosing pumps, PE dosing unit
- Blower Unit
- Lime Unit is required.

Disadvantages of aerobic sludge stabilization tank area as follows;

- No energy recovery,
- More costly due to the energy costs which is spent for aeration,
- Weaker dewatering character of digested sludge,
- Process is affected by temperature, tank geometry, amount of solids in the input sludge, the quality of mixing / ventilation equipment and the type of tank building material.

6.7.3 Sludge Dewatering Alternatives

To facilitate the final disposal of treatment sludge and to reduce the amount of sludge to be removed, it is necessary to increase the content of solids and reduce the water content. The reduction in the volume of sludge is of great importance for the capacity and investment of the final disposal facilities. In addition, it reduces the cost of sludge transportation. Sludge dewatering by mechanical methods, is the most preferred method for dewatering treatment sludge. The advantages are that having low area requirement, higher dewatering efficiency, continuous operation, and having higher capacities.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Decanter centrifuges, belt filter presses and filter presses are most widely used as dewatering equipment. Other mechanical sludge dewatering equipment are vacuum filters and drill presses whose usage rates are low.

6.7.3.1 Dewatering with Centrifugation

Today, centrifugation is one of the most common method in use. Centrifugation dewatering is making the sludge denser under the influence of centrifugal forces. The sludge, which usually contain chemicals such as polyelectrolyte, alum and limestone, are given to centrifuges rotating about a horizontal axis at a speed of 1,600-2,000 rpm. The water drained from the centrifuge is conveyed to the entrance to the wastewater treatment plant. The dewatering yields are 90-95%, and the solids content of the outlet sludge can vary between 20-25%.

Advantages of centrifugation dewatering are as follows;

- Need less space,
- No odor problem because it is a closed system,
- High dewatering efficiency.

Disadvantage of centrifugation dewatering are as follows;

- High investment cost.

6.7.3.2 Dewatering in Belt Filter

Dewatering with a belt filter is based on the principle that the squeezing of the sludge with the pressure effect applied to the sludge to remove water. Polymer addition is required to increase the sludge quenching ability. Sludge is compressed between the two strips with a porous surface, with the tension provided by the cylinders in different diameters. Belt filter designs have basic features such as polymer conditioning, gravity drainage and compression under high or low pressure. The filtration area provided by the belt filter, the use of additional cylinders, and the belt rotation speed are factors affecting the dewatering efficiency. Belt filter dewatering can be dewatered to 18-20% solids in general, depending on the yield sludge characterization.

6.7.3.3 Dewatering in Filter Press

Filter press dewatering is the oldest method for dewatering which provides the highest output solid matter ratio. Higher pressures are applied in filter press dewatering. It is a suitable method to be used in industrial sewage sludge which has discontinuous sludge feed and low water supply ability. 28-30% solid matter ratios can be achieved.

6.7.4 Sludge Drying Alternatives

The water in the sludge has to be evaporated in order to dry the sludge. Since the water in the sludge has different properties, it is generally considered in two main parts; free water not bound to solid particles and bonded water particles that is difficult to evaporate. Both natural and mechanical dewatering and drying methods have been developed depending on the final sludge disposal method requiring different moisture contents. The dried sludge is biologically stable and has low water content which is suitable for combustion and/or storage. The advantages of sludge drying are that the problem of odor is low; transport, handling and storage costs are reduced considerably by reducing the volume of wet sludge.

The biggest advantage of drying the treatment sludge is the possibility of using the final product as following areas;

- Use as fertilizer in agriculture and forestry,
- Use as energy in cement plants, energy plants and incineration plants,
- Use for topsoil landscaping, fill and regular storage.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

6.7.4.1 Thermal Drying

Thermal drying reduces the content of moisture in the sludge far below that obtained by mechanical dewatering methods. Advantages of the dried sludge are lower transportation costs, reduction of pathogens and better storage and marketing.

In the contact drying process, heat is indirectly transferred to the sludge through the heated surface while heat is directly supplied to the particles in the convection drying process. The most common types of drying are tape, drum and fluid bed dryers.

The sludge is poured onto the conveyor band and the hot air is fed into the system. Since the speeds of the driers are adjustable, it is possible to obtain the solid ratio between 65% and 90%. The drying capacities of the dryers vary between 500 – 4,000 kg H₂O/hr. Mixing with dry matter (pre-dried sludge) is required at the beginning of the system in order to pass the adhesive phase to prevent plugging.

6.7.4.2 Solar Drying

Wet sludge is dried in specially prepared greenhouse areas where are extremely transparent, with special coverings that prevent uncontrolled temperature changes and therefore unnecessary heat loss. With ventilators located in the unit, the dried ambient air is introduced into the system by an optimal air flow rate. Climatic conditions and sludge drying characteristics are parameters that determine the design of the drying facility. Space required for drying depends on sludge characteristics and atmospheric conditions such as precipitation, relative humidity and temperature. The disadvantage of solar drying is that very big land area is needed.

6.7.4.3 Lime Drying

By the addition of lime, a hygienic and pathogen free product is obtained from the waste sludge. This is achieved by reaction heat and alkalization. The obtained product has organic content, can be used in agriculture and in soil lacking in lime.

6.7.5 Disposal Methods

Land application, storage, incineration and composting alternatives can be applied for final disposal. Information about the final disposal methods that can be applied to the treatment sludge to be formed at the WWTPs is as in the following.

6.7.5.1 Field Application

The application of treatment sludge to agricultural areas aims to use of sludge as fertilizer -as a source of nutrients- or as soil conditioner and so to increase agricultural productivity. The pH of the soil for which the treatment sludge will be applied, must be 6.5. Thus, the movement of heavy metals within the soil is limited.

Regulation on the Use of Domestic and Urban Treatment Sludge on Soil, which was published in the Official Gazette dated 03.08.2010 and numbered 27661, covers the technical and administrative principles related to soil controlled use in such a way that treatment sludge does not harm soil, plant, animal and human. It is strictly forbidden to use raw sludge to the soil according to the Regulation. In treatment sludge, there are limit values for heavy metals, organic compounds and dioxins. Heavy metal content limit values for soil and stabilized sludge to be used in soil and the maximum permissible values of stabilized sludge for organic compound are defined in the Annexes of the subject Regulation.

There are significant restrictions on the soil quality of the treatment sludge in terms of heavy metal, organic compound and dioxin content. Therefore, only heavy metal content of the treatment sludge within the limit values does not mean that the sludge can be used in the soil.

Composting is the process of decomposition of waste sludge by biological activity. Composting containers and tunnel reactors are widely used in composting process.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

The composted sludge could be used as fertilizer for soil. The heavy metal content in the final product has critical importance and must meet the specifications about the end product standards, local and national legislation.

Disadvantages of composting;

- Operating costs are higher than laying out of the raw sludge.
- Ventilation causes energy consumption. In order to ensure an optimum C/N ratio, it may be advantageous to mix the treatment sludge with other wastes, and in the case where it is necessary to purchase these wastes, it can turn into a disadvantage.

6.7.5.2 Landfill

Regulation Concerning the Landfill of Wastes, which was published in the Official Gazette dated 26.03.2010 and numbered 27533, covers the technical and administrative basis for the prevention and management of environmental effects that may occur during the disposal process of waste through the regular storage method.

Landfills belonging to the Metropolitan Municipalities is considered as Class II Landfill facility in the line with the description of the facility as facility having the substructure required for the storage of municipal wastes and non-hazardous wastes. Class II Landfill facilities acceptance limit values are given in the table below.

Table 6-3 Waste Acceptance Limit Values for Class II Landfill Facilities

Parameter	Limit Value	Unit
As	0.2	mg/l
Ba	10	mg/l
Cd	0.1	mg/l
Cr total	1.	mg/l
Cu	5	mg/l
Hg	0.02	mg/l
Mo	1	mg/l
Ni	1	mg/l
Pb	1	mg/l
Sb	0.07	mg/l
Se	0.05	mg/l
Zn	5	mg/l
Chloride	1,500	mg/l
Fluoride	15	mg/l
Sulfate	2,000	mg/l
DOC (Dissolved Organic Carbon)	80	mg/l
TDS (Total Dissolved Solid)	6,000	mg/l
pH	≥ 6	mg/l
Total Organic Carbon	5%	mg/l

The most important provisions in the Regulation Concerning the Landfill of Wastes are included in its Temporary Article 4. Temporary Article 4 is stated below:

- In Appendix IV to the Regulation on Waste Management, treatment sludge classified as non-hazardous does not require compliance with the Dissolved Organic Carbon (DOC) limit value by 1.1.2025 when it is stored in a separate lot in the Class II Landfill facilities on condition that all other

MUNICIPAL SERVICES IMPROVEMENT PROJECT

parameters given in Appendix 2 of Regulation is provided, avoidance of limit value increase, at least 50% by weight of dry matter is involved and of bad smell is eliminated.

In addition to the first paragraph of this Article, the following limit values must be met:

- For treatment sludge, TOC (Total Organic Carbon) value which is given under Appendix 2, 2-A) Inert Waste Landfill Storage Criteria for Class III Landfill Facilities is taken as maximum 250,000 mg/kg by 1.1.2025.
- For treatment sludge, TOC (Total Organic Carbon) value which is given under Appendix 2, 2-B) Non-hazardous Waste Landfill Criteria for Class II Landfill Facilities for disposal of non-reactive and stable hazardous wastes is taken as maximum 250,000 mg/kg by 1.1.2025.

6.7.5.3 Incineration

The disposal of treatment sludge to the landfill or use as a fertilizer for agricultural purposes are subject to increasingly stringent legal controls. That's way, incineration of treatment sludge is considered as mixing domestic solid wastes and waste sludge optimize the operation of the incineration plants. The volumetric reduction in quantities is the significant result of incineration.

It is estimated that incineration will be increasingly used in sludge treatment, despite of the high investment costs in incineration systems, the strictness of incineration criteria, increased costs associated with the processing of emission gases, and the difficulty of disposal of ash resulting from incineration

The Regulation on the Waste Incineration, which was published in the Official Gazette dated 06.10.2010 and numbered 27721, is designed to prevent the negative effects of the incineration of wastes on the environment, in particular the risks that may arise due to pollution resulting from emissions in air, soil, surface waters and groundwater and on human health.

The moisture content of the sludge is important for the incineration because dewatered sludge with a moisture content of 70% or more cannot sustain the incineration process and require additional fuel. For the sludge to be used as an alternative fuel, it must have a dry matter content of at least 85%. The dried sludge with a solid content above 90% is acceptable for incineration. Cement factories accept dried sludge with such a solid ratio as fuel that should also has a calorific value around 3,500-4,000 kcal.

The main advantages of the incineration method are listed below;

- After burning, there is a significant reduction in the volume of the treated sludge (it depends on the organic matter content of the sludge being burnt).
- Treatment sludge is used as energy.
- It is possible to use the by-products produced after the burning of the treatment sludge by recycling (asphalt road filler, concrete production and brick making).
- This process is not affected much by the sludge composition.
- They are reliable (known/implemented) systems.
- The smells are minimized due to the system being closed and in high temperatures.

6.7.6 Evaluation of Sludge Management Methods

Sludge treatment is one of the most difficult processes in terms of operation and planning in wastewater treatment plants. Although the amount of the originating sludge corresponds to a low percentage like 1% to 6% of wastewater in volume, the investment and operation costs of the sludge treatment units have a higher share in the total cost of the plant. Therefore, it is of great importance to select the most suitable sludge treatment system.

Generally, in waste management; it is firstly essential not to generate waste or to minimize waste generation, and secondly, if possible, to ensure recovery thereof, and if this is not possible, to dispose of it in an environment-friendly way. If sludge shall be recovered, the methods are using it as fertilizer for agricultural purposes, using it as additional fuel in cement plants and to generate energy with anaerobic

MUNICIPAL SERVICES IMPROVEMENT PROJECT

digesters shall be assessed. In case it is disposed of in an environment-friendly way, then the landfill facilities and drying/incineration methods are assessed.

When selecting the sludge treatment and disposal alternatives, the important criteria to be considered are Project area, legal standards, operational and maintenance costs, ease of operation, initial investment costs and land requirements. The assessment method for the selection of the most appropriate sludge treatment system is the same as the one used for wastewater treatment technologies. The criteria are weighted in percentiles according to the significance level. The weighted scores have been estimated by multiplying the scores indicating significance level with the technology scores. It is required to select the most feasible disposal method for the sludge treatment according to the characteristics of the sludge generated from the treatment plant as a by-product and considering the environmental conditions.

The following table represents the rating table for sludge treatment systems.

Table 6-4 Sludge Treatment Systems Rating Table

Concept	Significance	Sludge Stabilization				Sludge Dewatering			Sludge Drying			Sludge Removal		
		Aerobic Stabilization	Anaerobic Stabilization	Chemical Sludge Stabilization	Extended Aeration	Centrifugal	Belt Filter	Filter Press	Thermal Methods	Sun Drying	Lime Drying	Land Application	Landfill	Incineration (Cement etc. facilities)
Land requirement	20%	3	4	4	3	5	4	4	4	1	3	<u>1</u>	<u>3</u>	<u>4</u>
O&M Difficulties	20%	3	2	3	5	4	3	2	3	4	4	<u>4</u>	<u>2</u>	<u>3</u>
Investment Costs	20%	3	3	4	3	3	4	4	3	4	4	<u>3</u>	<u>4</u>	<u>2</u>
O&M Costs	25%	2	4	3	3	4	3	3	3	4	2	<u>4</u>	<u>3</u>	<u>2</u>
Feasibility	15%	4	5	1	5	5	4	3	4	5	2	2	2	5
Total	100%	2.9	3.6	3.1	3.7	4.15	3.55	3.2	3.4	3.5	3	2.9	2.85	3.05

Within the framework of the five basic criteria determined upon examination of Table 6-4, the most appropriate method is the incineration systems method, as no sludge stabilization is required, energy recovery is ensured, the products generated as a result of incineration are suitable for reuse, and it decreases to a large extent in volume. The incineration is a system with a high initial investment cost as well as operating cost, and which requires qualified personnel to operate it.

The other alternative is that the treatment sludge may be dried and stored in the landfill sites. In this context, the analyses of the sludge shall be carried out in accordance with the parameters specified in Appendix 2 of the "Regulation Concerning the Landfill of Wastes", and the final disposal form shall be determined according to the results of the analyses.

As another alternative, it is recommended to prioritize use of the sludge in agricultural activities. Because organic materials shall improve the structure of soil, the water holding capacity of soil, the infiltration and aeration of the soil; in addition, the macro nutrients and micronutrients shall contribute to plant development. Through this method, it shall be possible to recover the sludge, which is a waste matter, into economy. However, when it is assessed in terms of socioeconomic aspects, the social approach to the use of wastewater treatment sludge in agricultural activities is negative. It is necessary that the society is firstly informed, and their awareness is raised.

The environmental conditions that also affect selection of the disposal method are climate, presence of infertile soils in the region, availability or non-availability of thermal power plants or cement plants, presence of unused quarries and mines, and cheapness or expensiveness of the land.

For Ilgin WWTP, the selected sludge management techniques are gravity thickening and sludge dewatering by centrifuge at site. Dewatered sludge will be collected at site in containers.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

The enclosed sludge containers which contain sludge cake will be transferred to Konya Centrum WWTP by specific trucks used for transportation of such containers within the specified periods. The collected sludge in the Konya Centrum WWTP will be further dried in the drying area of this WWTP with the help of sunlight before sent to agricultural lands as compost. The drying area is large enough to be used for other WWTPs in Konya including Ilgın WWTP. The sludge of Konya Centrum WWTP itself has been used for agricultural purposes for the agricultural lands in its operation period with the permit it has obtained from Provincial Directorate of Environment, Urbanization and Climate Change. This is an applied and approved procedure for KOSKİ; therefore, it is foreseen to be easily operated by KOSKİ representatives. According to the KOSKİ representatives, Konya Centrum WWTP has enough capacity for management of the sludge generated from Ilgın WWTP.

In case dried sludge characteristics is not found appropriate for agricultural use or do not meet the regulatory requirements (See Section 5.3.7), KOSKİ will send the sludge to sanitary landfill in accordance with the Regulation on Landfill of Wastes.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

7 Environmental and Social Management and Responsibilities

7.1. Environmental and Social Management

Each project has environmental and social impacts. These impacts could be positive or adverse. There are ways to avoid, minimize, reduce and mitigate risks and adverse impacts. The WB's ESSs establish objectives and requirements for diminish adverse impact on environmental and social aspects. The national regulations also give regulatory references for the protection of environment and regarding health and safety.

The following sections provides information on roles and responsibilities relating with management of environmental and social risks and impacts, capacity development and training requirements, monitoring and reporting procedures and Project's Environmental and Social Mitigation Plan and Monitoring Plan.

7.2. Roles and Responsibilities

The construction of the Project will be performed by construction company/companies who will be awarded. KOSKİ will act as main responsible authority for the compliance with Project requirements including ESHS measures. The construction is expected to be finalized in 2 years and the economic life of the Project is determined as 35 years. During the 12-month defects liability period (DLP), the construction contractor will be responsible for any repairs of the newly constructed facility, in accordance with legal regulations as of provisional acceptance. Afterwards, KOSKİ will be responsible for operation, repairs and maintenance of the whole system.

The Supervision Consultant has been contracted by KOSKİ in August 2021. The Supervision Consultant is responsible for reviewing/revising and finalizing the designs of the projects and will work as controller and consultant during the construction phase of the Project.

ILBANK will monitor the compliance of the project during the construction period. ILBANK's representative(s) will visit regularly the construction sites and follow the progress. Furthermore, ESHS compliance will be reviewed regularly by these representatives.

A graphical presentation of this institutional structure is demonstrated in Figure 7.1. Detailed information on responsibilities of construction contractor, KOSKİ Project Implementation Unit (PIU), Supervision Consultant, and ILBANK is explained in Table 7-1.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

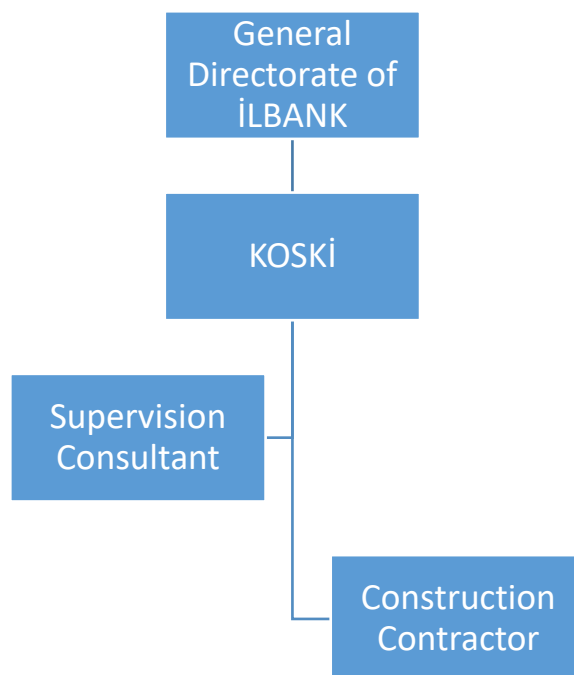


Figure 7.1 Institutional Structure

Table 7-1 Institutional Tasks of Relevant Authorities

Company/Institution	Tasks
<p>Construction Contractor</p>	<p>The construction contractor is contracted by KOSKI to construct the project in line with the approved design documents. The contractor is the responsible body to develop, implement and apply the mitigation measures given in ESIA.</p> <p>The contractor shall adhere its responsibilities specified in this ESIA.</p> <p>The contractor will develop a construction phase ESMP including an OHS Management Plan (See Section 7.1) and will develop sub-management plans (Table 7.3), submit to Supervisor Consultant/KOSKI and revise those plans in case, to get approval prior to the construction works.</p> <p>The contractor should ensure that it is aware of its duties and responsibilities within this ESIA for compliance with national regulation and WB’s ESSs.</p> <p>The construction contractor shall employ a full-time occupational health and safety (OHS) specialist and a full time environmental and social expert who will instruct and consult the workers on working structure and implementation of ESMP and LMP (including grievance mechanism and the applicable stakeholder engagement activities detailed in project SEP).</p> <p>Furthermore, a competent ESHS manager of contractor should monitor implementation of measures given in the mitigation plan.</p> <p>The construction contractor should develop monthly and quarterly Environmental and Social Monitoring Reports in order to submit to the İLBANK though KOSKI and Supervisor Consultant.</p> <p>During the construction phase, the contractor firm should train its workers on environmental and social aspects (including OHS) as per WB’s ESSs and national regulations in order to raise environmental and social awareness.</p> <p>During the defects liability period (DLP), the construction contractor will be responsible for any repairs of the newly constructed facilities, in accordance with legal regulations as of provisional acceptance. Within the liability period, the contractor should implement measures given in Environmental and Social Mitigation Plan for operation.</p>
<p>KOSKI PIU</p>	<p>The construction contract packages for the Project will be managed by KOSKI PIU.</p> <p>PIU is composed of 5 sub-units as technical, tendering and procurement, finance, OHS, and M&E with 14 persons in total assigned with a director, two electrical engineers (technical), two civil engineers (technical), two environmental engineers (1 for technical,</p>

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Company/Institution	Tasks
	<p>1 for M&E), two mechanical engineers (technical) and five officials (2 for tendering and procurement, 2 for finance, 1 for OHS).</p> <p>The KOSKI PIU will be responsible from the ESHS & OHS compliance of construction contractor and act as a controller within the scope of the Project.</p> <p>The KOSKI PIU shall adhere its responsibilities specified in this ESIA.</p> <p>The KOSKI PIU will be responsible for management of Project level grievance mechanism and the stakeholder engagement activities set out in the project SEP.</p> <p>The KOSKI PIU will examine the monthly and quarterly Environmental and Social Monitoring Reports (ESMR) of the contractor/s and Supervisor Consultant's E&S Supervision Reports. KOSKI will submit the quarterly prepared ESMRs and the Supervisor Consultant's E&S Supervision Reports to ILBANK.</p> <p>The KOSKI PIU will develop sub-management plans (Table 7.3) for operation phase and Contractor Sub-Management Plan for the construction phase, submit to ILBANK, revise in case to get approval prior to each phase.</p> <p>This unit requires trainings on WB's ESSs in order to understand the compliance scheme and ESHS requirements of the project.</p> <p>The KOSKI PIU will assign at least one environmental, one social and one ESHS expert.</p>
Supervisor Consultant	<p>The Supervision Consultant will serve as controller within the scope of the project and will control both the technical and administrative progress of the contract packages and the implementation of the measures.</p> <p>The Supervision Consultant will be on site to conduct site inspections.</p> <p>The Supervision Consultant will have an Environmental and Social unit staffed with qualified environmental and social specialists (at least one environmental expert, one social expert and one occupational health and safety (OHS) expert) and number of experts will be increased if necessary, during project implementation. The unit will have environmental and social capacity to supervise the construction works according to the requirements of this ESMP, prepare monitoring reports and non-conformity forms, update the ESMP if required.</p> <p>The Supervision Consultant will review the monthly and quarterly Environmental and Social Monitoring Reports of the contractor/s and will include its own assessments and observations on ESHS aspects.</p> <p>Supervision Consultant will prepare E&S Supervision Reports quarterly addressing the non-compliances they witnessed during their site visits and submit to KOSKI. The Supervision Consultant has the responsibility to prepare non-conformity forms in the event of any non-conformity observed during the site inspections and within the reports.</p> <p>In order to raise awareness and develop responsible capacities, provision of a number of trainings is required for KOSKI PIU and Contractor's management and employees.</p> <p>Supervision consultant will give E&S and OHS trainings to KOSKI PIU and to Contractor regarding the EHS, CHS & OHS measures to be taken, monitoring E&S and OHS issues including grievances, gathering/recording the E&S monitoring data and preparation of E&S Monitoring Reports addressed in Table 7 2 during the construction period, prior to construction works.</p> <p>Supervisor Consultant will ensure that the sub-project specific sub-management plans to be prepared by Contractor and KOSKI for construction and Operation Phases as indicated in Table 7.3 are in compliance to the requirements addressed in this ESIA.</p>
General Directorate of ILBANK	<p>The General Directorate of ILBANK is responsible for satisfactory implementation of each subproject including the environmental and social performance. ILBANK will regularly visit project sites and review the ESMRs and E&S Supervision Reports, follow up the safeguards actions to be taken for the non-compliances and grievances and monitor the project. ILBANK will prepare semi-annual progress reports including the E&S safeguards issues and submit to WB. ILBANK will approve sub-project specific sub-management plans to be prepared by Contractor and KOSKI</p>
World Bank	<p>WB will periodically review of the project development stages and regular semi-annual monitoring reports on the ESHS performance of the project.</p>

7.3. Capacity Development and Training Requirements

In order to raise awareness and develop responsible capacities, provision of a number of trainings is required for KOSKI PIU and Contractor's management and employees.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

In that respect, Supervision Consultant will be responsible for the environmental and social trainings. Environmental and Social Unit of Supervision Consultant will give necessary trainings to all personnel of KOSKÍ PIU and Contractor's management and employees before start of construction works. At the time of each employment for KOSKÍ PIU, Supervision Consultant will train the new member of the unit.

Supervision Consultant will repeat its training to KOSKÍ PIU and contractor representatives semi-annually and whenever it is deemed necessary.

Main subjects of the trainings for KOSKÍ PIU are listed as;

- Responsibilities on environmental and social precaution procedures and monitoring of implementation of measures
- Soil pollution control
- Waste management
- Water pollution control
- Air quality
- Noise control
- Protection of biological environment
- Community health and safety
- Grievance mechanism
- Land acquisition process and procedures
- OHS measures
- Environmental and Social Mitigation Plan and Monitoring Plan

Supervision Consultant will ensure that the Contractor will perform the same trainings for their personnel. The Supervision Consultant is responsible for the monitoring of the Contractor's actions on training. At the time of each employment for Contractor, the Contractor will train the new personnel.

Contractor will repeat its training to its personnel semi-annually and whenever it is deemed necessary by contractor itself or Supervision Consultant.

Main subjects of the trainings for Contractor's are listed as;

- Responsibilities on environmental and social precaution procedures
- Soil pollution control
- Waste management
- Water pollution control
- Air quality
- Noise control
- Protection of biological environment
- Community health and safety
- Grievance mechanism (stakeholders and workers)
- Toolbox talks
- OHS measures
- Work-specific talks
- Environmental and Social Mitigation Plan and Monitoring Plan

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Furthermore, the contractor, KOSKİ and the Supervision Consultant should receive obligatory trainings as per national legislation. The provision of trainings intends complying with the national legislation and achieving compliance with ESHS requirements of the Project.

During the operation phase of the Project, environmental and social trainings on above mentioned topics specific to the operation of WWTP will be delivered to the operation team by the trained KOSKİ PIU team.

7.4. Environmental and Social Reports on Monitoring and Supervision

The Environmental and Social Monitoring Report is one of the most important tools to record the monitoring activities. In that scope, Environmental and Social Monitoring Reports will be prepared in different frequencies, by different parties and having different scopes.

The Environmental and Social Monitoring Reports are detailed in below sections and summarized in Table 7-2.

Table 7-2 Environmental and Social Reports on Monitoring

Project Phase	Prepared by	Frequency	Submitted to
Construction	Construction Contractor	Monthly	KOSKİ and supervision consultant.
Construction	Construction Contractor	Quarterly	İLBANK through KOSKİ and supervision consultant
Construction	Supervision consultant	Quarterly	İLBANK through KOSKİ
Construction	İLBANK	Semi-annual	WB
Operation (DLP)	KOSKİ	Quarterly	İLBANK
Operation (DLP)	İLBANK	Semi-annual	WB
Operation	KOSKİ	As per the legislation	Keep records as required by MoEUCC

7.4.1 Construction Phase

7.4.1.1 Contractor's Environmental and Social Monitoring Reports

The Contractor will prepare monthly Environmental and Social Monitoring Reports both in Turkish and English for KOSKİ and Supervision Consultant. Results of assessments of issues given in Table 7.3 and evaluation of the monitoring parameters given in Table 7.5 will be presented in the monitoring reports. Monitoring reports will at least include all the issues defined in the Environmental and Social Mitigation Plan as the Contractor is the main responsible for implementation of the mitigation measures given in Environmental and Social Mitigation Plan. The Contractor's practices will be included in the Monitoring Reports together with exemplary on-site photos, records sheets, logs and documents spelled out in the Environmental and Social Monitoring Plans. The Contractor's internal non-compliance and incompliance tracking, and relevant preventive and corrective actions taken by Contractor will be listed with evidence in the Monitoring Reports. These will be submitted to KOSKİ and Supervision Consultant in the first week of each month and then KOSKİ, Supervision Consultant and Contractor will review the report and its findings in the Contractor's office. Once KOSKİ and Supervision Consultant ask to see or check any document, the Contractor is obliged to provide this document at any time.

The Contractor will prepare quarterly Environmental and Social Monitoring Reports in Turkish and English and share it with İLBANK through KOSKİ and Supervision Consultant. This report will have the same scope with monthly reports; yet to be prepared with quarterly data. Any analysis/sampling/measurement report will be given as an annex of the report together with the relevant assessment and necessary remediation activities. These reports will be submitted to KOSKİ and Supervision Consultant in the first week of each

MUNICIPAL SERVICES IMPROVEMENT PROJECT

quarter and then review the report with KOSKİ and Supervision Consultant before submission to İLBANK for adequacy. KOSKİ and Supervision Consultant can ask for revisions and updated. The Contractor will complete these revisions in one week and submit the revised version to KOSKİ and Supervision Consultant. If the report is found satisfactory to share with İLBANK, the Supervision Consultant will share the report with İLBANK.

7.4.1.2 Supervision Consultant's Environmental and Social Supervision Reports

Supervision Consultant will prepare E&S Supervision Reports quarterly addressing the non-compliances they witnessed during their site visits and submit to KOSKİ. The Supervision Consultant will review contractor's quarterly Environmental and Social Monitoring Reports in Turkish and English and submit it to KOSKİ including its own assessments and observations on ESHS aspects. Supervisor Consultant will assure that results of assessments of issues given in Table 7-5 and evaluation of the monitoring parameters given in Table 7-7 will be presented in the monitoring reports. The results shall be compared with the national legislative and WB's ESF requirements. The results of the visual observations together with the key issues observed will be submitted as well. The report will focus on the negative findings as well as the good practices. The negative findings should be supported with the relevant evidence such as photographs, reports etc. For each negative observation, a corrective action will be suggested with a reasonable due date. The subsequent reports will inform on the status of the previous observations and practices on corrective actions. Any analysis/sampling/measurement report will be given as an annex of the report together with the relevant assessment and necessary/performed remediation activities. Monitoring Reports will also include an overview of grievances received and addressed along with an analysis of types of grievances, assessment of functionality of GM and feedback into project management.

The Supervision Consultant's evaluation of the Environmental and Social Monitoring Reports will keep the Environmental and Social Mitigation Plan and Monitoring Plan prepared within this ESIA as a living document; thus, these should be reviewed and revised by the Supervision Consultant according to these findings, if necessary.

7.4.1.3 İLBANK's Progress Reports Including Environmental and Social Safeguards

İLBANK will prepare semi-annual progress reports including Environmental and Social Safeguards Section for the WB. Results of assessments of issues given in Table 7-5 and evaluation of the monitoring parameters given in Table 7-7 will be presented in the Environmental and Social Safeguards Section. The results shall be compared with the national legislative and WB's ESF requirements. The non-conformities and incompliances of Contractor will be presented, and remediation procedures, preventive and corrective actions defined will be included in the Environmental and Social Safeguards Section.

7.4.2 Operational Phase

7.4.2.1 KOSKİ's Environmental and Social Monitoring Reports

KOSKİ is the main responsible authority for implementation of the mitigation measures given in Environmental and Social Mitigation Plan. KOSKİ will review the quarterly and monthly Environmental and Social Monitoring Reports prepared by the consultant and by the Supervisor Consultant in Turkish and English in DLP that is the first year in operation. These reports will be submitted to İLBANK in the first week of each quarter.

7.4.2.2 İLBANK's Environmental and Social Monitoring Reports

İLBANK will prepare semi-annual progress reports including Environmental and Social Safeguards Section for the WB in DLP that is the first year in operation. Results of assessments of issues given in Table 7-6 and evaluation of the monitoring parameters given in Table 7-8 will be presented in the Environmental and Social Safeguards Section. The results shall be compared with the national legislative and WB's ESF requirements. The non-conformities and incompliances of KOSKİ should be presented and remediation

MUNICIPAL SERVICES IMPROVEMENT PROJECT

procedures, preventive and corrective actions defined will be included in the Environmental and Social Safeguards Section.

7.5. Environmental and Social Management Plan

The Environmental and Social Management Plan (ESMP) is mainly based on mitigation and performance improvement measures and actions that address the identified environmental and social issues, impacts and opportunities. Within the scope of the plan, mitigation measures and actions are identified for all stages of the Project (i.e., land preparation and construction, and operation phases) in compliance with the relevant Turkish Legislations and international requirements.

The major purpose of this ESMP is to document key environmental issues, the actions to be taken to address them adequately, as well as any actions to maximize environmental benefits, the schedule and person/unit responsible for implementation and monitoring, and an estimate of the associated costs. Detailed management plans/procedures (sub-management plans) will be prepared within the scope of the Project by the construction contractor during construction phase and by KOSKİ during operation phase. İLBANK will review and approve these plans.

The ESIA will be an annex of the tender documents and required to be implemented by the construction contractor. The tender documents for the Project will also contain the requirement for the Contractor to prepare detailed Sub-Management Plans to reflect the requirements of this Plan.

All Sub-Management Plans prepared by contractor(s) for construction phase and by KOSKİ for operation phase will be approved by İLBANK prior to start of any work for those phases. The sub-management plans to be prepared before the start of each phase of the Project is given in Table 7-3 below.

Table 7-3 Sub-Management Plans to be Prepared

Construction Phase			Operation Phase		
Name of the Plan	Responsibility	Approved by	Name of the Plan	Responsibility	Approved by
Occupational Health and Safety Management Plan	Construction Contractor	İLBANK	Occupational Health and Safety Management Plan	KOSKİ	İLBANK
Emergency Preparedness and Response Plan	Construction Contractor	İLBANK	Emergency Preparedness and Response Plan	KOSKİ	İLBANK
Grievance Mechanism	Construction Contractor	İLBANK	Grievance Mechanism	KOSKİ	İLBANK
Oil and Chemical Spill Contingency Management Plan	Construction Contractor	İLBANK	Oil and Chemical Spill Contingency Management Plan	KOSKİ	İLBANK
Hazardous Material Management Plan	Construction Contractor	İLBANK	Hazardous Material Management Plan	KOSKİ	İLBANK
Waste Management Plan	Construction Contractor	İLBANK	Waste Management Plan	KOSKİ	İLBANK
Air Quality and Noise Management Plan	Construction Contractor	İLBANK	Odor Management Plan	KOSKİ	İLBANK
Traffic Management Plan	Construction Contractor	İLBANK	Traffic Management Plan	KOSKİ	İLBANK
Biodiversity Management/Monitoring Plan	Construction Contractor	İLBANK	Sludge Management Plan	KOSKİ	İLBANK
Labor Management Plan	Construction Contractor	İLBANK	Biodiversity Management/Monitoring Plan	KOSKİ	İLBANK

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Construction Phase			Operation Phase		
Name of the Plan	Responsibility	Approved by	Name of the Plan	Responsibility	Approved by
Community Health and Safety	Construction Contractor	İLBANK	Labor Management Plan	KOSKİ	İLBANK
Security Plan	Construction Contractor	İLBANK	Community Health and Safety	KOSKİ	İLBANK
Water Resources and Effluent Management Plan	Construction Contractor	İLBANK	Security Plan	KOSKİ	İLBANK
Soil Management Plan	Construction Contractor	İLBANK	Water Resources and Effluent Management Plan	KOSKİ	İLBANK
Archeological Chance Find Procedure	Construction Contractor	İLBANK			
Contractor Management Plan	KOSKİ	İLBANK			

In order to reflect developments on detailed project designs, this ESMP will be improved and evolved in the future. Hence, this ESMP is a living document that will be continuously reviewed and updated by taking into account of these subjects:

- Monitoring results,
- Test and trial results performed during Project’s operation phase,
- Changes on national legislation and international standards, and
- Changes on Project’s parameters (if any).

This ESMP covers mitigation measures for significant adverse environmental impacts and describes the monitoring and institutional requirements necessary to implement this Plan. Mitigation and monitoring activities are considered for the two main phases of the Project, which are “Land Preparation and Construction” and “Operation”.

The main objectives of this ESMP are as follows:

- Fully comply the applicable national legislation, and WB ESSs,
- Comply with the environmental and social standards and requirements of Project,
- Prevent or minimize potential adverse environmental and social impacts of the Project.

The purpose of the Mitigation Management Plan and the Monitoring Plan is to apply mitigation measures, which are determined during ESIA studies, to reduce the impacts of the Project, describe the roles of the participating parties and key personnel responsible for the implementation of the mitigation measures, and identify procedures to ensure that the mitigation measures are implemented adequately during all phases of the Project.

Cost items and their breakdown for ESMP Implementation and Monitoring within the scope of the Project is provided in Table 7-4.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 7-4 ESMP Cost Breakdown for Implementation and Monitoring

Budget Item	Estimated Cost
Construction Phase	
Environmental Expert	Key staff (*)
Social Expert	Key staff (*)
OHS Expert	Key staff (*)
Monitoring (Measurements and laboratory analyses)	Included in the contractor's budget (**)
Financial Experts	No extra cost (***)
Technical Experts	No extra cost (***)
“Operation Phase	
Monitoring (Measurements and laboratory analyses)	Included in the operation budget of KOSKÍ (**)
Financial Experts	No extra cost (***)
Technical Experts	No extra cost (***)

(*) Recruitments of specialists shall be financed under the budget of supervision consultancy services. Relevant cost estimates are taken into account at the initial stage of the consultant selection. The contractors are obliged to hire environmental, social and OHS experts for the implementation and monitoring of ESMP within the scope and price of their bids. At this stage monthly cost estimated per specialist is 1,000 €/month)

(**) The laboratory and testing obligations and relevant reporting responsibility will be included within the works contract, during the construction period and the defect liability period. Later, for the operation stage, this responsibility will be transferred to KOSKÍ.

(***) Since KOSKÍ permanent staff will be appointed to these positions, there will be no extra cost to the Project budget.

7.5.1 Mitigation Plan

Mitigation measures and activities are developed for all phases of the Project including Ilgın WWTP and its ETL in scope of this ESIA to ensure compliance with national legislation as well as the international standards. Mitigation Plans are presented in Table 7-5 and Table 7-6 for land preparation and construction, and operation phase for Ilgın WWTP and its ETL, respectively.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 7-5 Land Preparation and Construction Phase Mitigation Plan

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of Residual Impacts
C1	Soil Environment	Soil pollution/contamination due to leaks/spillage and/or improper management of waste	Adverse	Medium	<ul style="list-style-type: none"> ▪ Pre-construction survey will be conducted to check up on the baseline environmental conditions and to plan/conduct any required remediation works. ▪ Soil Management Plan will be prepared and implemented. ▪ Oil and Chemical Spill Contingency Management Plan will be prepared and implemented. ▪ Wastes and wastewater to be generated during the land preparation and construction phases of the project will be stored and disposed in a controlled manner in accordance with the relevant regulations and in line with the management practices described in this ESIA. Thus, it will not be possible for the wastes and wastewater to be generated in the Project area interact with the soil environment and cause any impacts. ▪ The fuel required for the construction equipment and vehicles to be used within the site during construction phase will be supplied primarily from the nearest station; if deemed necessary, fuels that may possibly be stored at site will be stored in the areas where necessary impermeability precautions are taken. ▪ All oil and fuel leakages cause by construction machinery will be responded and collected with the soil contaminated. This contaminated soil will be stored in the hazardous waste collection area until the contamination rate will be analyzed for soil hazardousness categorization. ▪ Hazardous Material Management Plan will be prepared and implemented. ▪ Chemicals and hazardous materials will be stored in designated impermeable chemical and hazardous material storage areas. ▪ Oil and Chemical Spill Contingency Management Plan will be prepared and implemented. 	Contractor/In construction cost	Low

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of Residual Impacts
					<ul style="list-style-type: none"> ▪ Waste Management Plan including hazardous wastes will be prepared and implemented. ▪ Spill response material will be placed to the chemical and hazardous material storage areas and distributed to project vehicles in order for timely response. ▪ Trainings for construction contractor staff will be conducted on spill response, safe chemical and hazardous material handling and storage. ▪ Measures to be taken in case of leaks and spills that may arise from construction machinery and vehicles due to fuel storage and unexpected accidents will be described in site specific Emergency Response Plan to be prepared by considering the framework (Annex 6) given in this ESIA. <p>The provisions of the Regulation on the Control of Soil Pollution and Sites Contaminated by Point Sources shall be complied within the scope of the Project.</p>		
C2	Soil Environment	Topsoil loss	Adverse	Low	<ul style="list-style-type: none"> ▪ Soil Management Plan will be prepared and implemented. ▪ BMMP will be prepared prior to the construction works and implemented during the Project activities. ▪ The topsoil stripped will be stored on a designated area on WWTP land until to be used for landscaping purposes. ▪ Topsoil and subsoil storage areas will be designated and those will not be mixed in any case. ▪ The topsoil pile should be compacted slightly to minimize topsoil loss due to erosion. ▪ Construction vehicles and machinery will not go over or damage the topsoil pile in the course of construction works. ▪ The excavated subsoil from WWTP land will be stored on designated areas on WWTP land until to be used for backfilling purposes. ▪ The excavation wastes will be sent to Municipality's permitted excavation material dump sites after taking relevant official documents and receipt. 	Contractor/In construction cost	Negligible

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of Residual Impacts
					<ul style="list-style-type: none"> ▪ During the land preparation and construction phases of the Project, existing roads will be used. For the road opening requirements, which are not foreseen at the time of this ESIA, KOSKI will apply to related Municipality for the obtainment of relevant permits. ▪ All Project activities will be implemented on authorized areas, roads and lands. ▪ In order to minimize the impacts on soil environment, the amount of soil that could be subject to compaction and contamination/pollution will be minimized by ensuring the use of only the designated work sites and routes for the construction machinery and equipment and field personnel. ▪ In case of any unforeseen damage to existing roads, community assets, individual's crops and assets during construction phase of the project, the construction contractor will compensate the losses by identifying damage in accordance with the WB's ESS5 with the supervision of KOSKI. KOSKI's grievance mechanism will be a tool to be used by affected people in the event of any damage or loss. KOSKI undertakes that any temporary or permanent damage or loss that may occur during the construction will be eliminated. ▪ The provisions of the Regulation on the Control of Excavation Soil, Construction and Demolition Wastes shall be complied during land preparation and construction phase of the Project. 		
C3	Soil Environment	Erosion potential	Adverse	Low	<ul style="list-style-type: none"> ▪ Soil Management Plan will be prepared and implemented. ▪ By establishing a suitable drainage system in the field, the potential impact of surface runoff will be minimized. In this context, drainage channels will be constructed in accordance with the topographical conditions of the site. 	Contractor/In construction cost	Negligible
C4	Land acquisition	Livelihood Loss	Adverse	Low	<ul style="list-style-type: none"> ▪ The land users and owners of adjacent lands will be informed on their rights and related processes as well as Project's grievance mechanism by the construction 	Contractor/In construction cost KOSKI/Own resources	Negligible

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of Residual Impacts
					<p>contractor and KOSKÍ. Their opinions and requests will be prioritized and if these could not be realized, the reasons will be conveyed to land owners with clear explanations.</p> <ul style="list-style-type: none"> ▪ Community engagement will be performed timely and effectively with specific focus on vulnerable individuals and groups by the construction contractor and KOSKÍ. ▪ Grievance response mechanism will be established by the construction contractor and KOSKÍ. 		
C5	Air Environment	Dust emissions, exhaust emissions	Adverse	Low	<ul style="list-style-type: none"> ▪ Erosion measures will be applied in vegetation clearance areas. ▪ Air Quality and Noise Management Plan will be prepared and implemented. ▪ Dust suppression methods will be applied in sufficient frequency. ▪ Inner roads will be covered with materials to prevent dust and these roads will be kept clean. ▪ Speed limit will be set in and around the Project Area. ▪ Wind barrier trees will be kept and plantation of new ones will be performed. ▪ Loading/unloading will be performed without scattering. ▪ The stored excavation materials will be covered ▪ The exhaust systems of the vehicles will be regularly controlled. ▪ Provisions of Regulation on the Assessment and Management of Air Quality and the Industrial Air Pollution Control Regulation shall be complied. 	Contractor/In construction cost	Negligible
C6	Noise	Increase in noise levels	Adverse	High	<ul style="list-style-type: none"> ▪ Air Quality and Noise Management Plan including vibration will be prepared and implemented. ▪ The machinery and equipment to be used during the land preparation and construction activities will not be operated at the same point/location but homogeneously distributed in the site. This will enable noise level be at reasonable 	Contractor/In construction cost KOSKÍ (for only establishing GM) /Own resources	Low (as there are no sensitive receptors within the WWTP noise AoI)

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of Residual Impacts
					<p>levels and not to exceed related limit values defined in WBG's EHS Guidelines during the land preparation and construction phase of the Project.</p> <ul style="list-style-type: none"> ▪ The maintenance of the construction machinery and equipment will be carried out regularly and speed limitations will be defined for construction vehicles. ▪ An operating grievance mechanism will be established by both construction contractor and KOSKİ to manage noise related grievances. ▪ In the selection of equipment, sound power levels of the equipment will be taken into account and the equipment with minimum sound level will be used. 		
C7	Water Resources	Water requirement and wastewater generation	Adverse	Low	<ul style="list-style-type: none"> ▪ Pre-construction survey will be conducted to check up on the baseline environmental conditions and to plan/conduct any required remediation works. ▪ Water Resources and Effluent Management Plan will be prepared and implemented. ▪ The limited amount of domestic wastewater generated at site will be collected in the container of toilet cabins to be established or leak-proof septic tanks to be constructed in the Project Area during construction phase and will be disposed within the scope of the protocols of KOSKİ to the operational Akşehir District WWTP. ▪ The water demand/requirement within the scope of the Project will be provided/supplied by water tanks and purchased from market. ▪ The units of the Project that are in touch with water, wastewater and chemicals will be constructed with using concrete with appropriate cement ratio and durability in order to provide basement impermeability. Thus, no leakages to soil and groundwater will occur during the operation phase of the Project. 	Contractor/In construction cost	Negligible
C8	Waste	Waste generation	Adverse	Low	<ul style="list-style-type: none"> ▪ Waste Management Plan including hazardous wastes will be prepared and implemented. 	Contractor/In construction cost	Negligible

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of Residual Impacts
					<ul style="list-style-type: none"> ▪ Oil and Chemical Spill Contingency Management Plan will be prepared and implemented. Wastes to be generated within the scope of the Project will be managed in accordance with the waste management hierarchy. ▪ Wastes will only be temporarily stored on site and final disposal will be carried out outside the facility. ▪ Waste recycling, transport and disposal will be carried out by means of licensed companies and/or related municipalities. ▪ Incineration or burying of wastes by any means at site and/or dumping of wastes to nearby roads or water resources will absolutely not be in question. ▪ All kinds of implementations that may threaten personnel or public health will be avoided in all activities involving collection, temporary storage, transport and disposal of wastes throughout the Project. ▪ Wastes to be temporarily stored on site will be delivered to licensed transport vehicles appropriate to the type of waste for disposal. Information related to the operations in this context will be recorded and the records will be kept in the administrative building. ▪ Some amount of hazardous or special wastes likely to be generated (e.g., filters and protective clothes, rags, packages contaminated with chemical substances such as paint/solvent or oils) within the scope of the Project will be stored in special compartments in the Temporary Storage Area allocated for this purpose, in containers, separated from the non-hazardous wastes. This area will have an impermeable base/ground and will be protected from the surface flows and rain. Additionally, necessary drainage for the area will be provided. ▪ Hazardous or non-hazardous inscription, waste code, stored waste amount and storage date will be indicated/labeled on wastes temporary stored by classifying according to their properties. The reaction of 		

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of Residual Impacts
					<p>wastes with each other will be prevented by the measures taken in the Temporary Storage Area.</p> <ul style="list-style-type: none"> ▪ Permission regarding storage of wastes (e.g., hazardous and other special wastes), except municipal and packaging wastes, in the Temporary Waste Storage Area will be obtained from the Konya Provincial Directorate of Environment and Urbanization. ▪ The applicable legislation will be complied with at the time of temporary storage of wastes, transport of wastes to disposal facilities and final disposal of wastes and all kinds of wastes to be generated within the scope of the Project will be managed in accordance with the relevant legislation. 		
C9	Protected Areas	Damage to Terrestrial and Aquatic Species	Adverse	Low	<ul style="list-style-type: none"> ▪ BMMP will be prepared prior to the construction works and implemented during the Project activities. <p>See the topic for Terrestrial and Aquatic Biodiversity in this ESMP</p>	Contractor/In construction cost	Negligible
C10	Chance Find	Damage to Archeological Sites	Adverse	Low	<ul style="list-style-type: none"> ▪ Archeological Chance Find Procedure will be prepared and implemented. ▪ As required with Article 4 of Law on the Conservation of Cultural and Natural Properties (2863 Numbered Law), chance finds procedure will be implemented during land preparation and construction works. ▪ In this context, related Civilian Authority or Museum Directorate will be informed latest in three days in case of finding any movable or immovable cultural asset by chance during construction works. ▪ Construction works will be stopped immediately. ▪ In case of result of any damage on protected areas or cultural assets due to the Project during construction and operation phases, the damage will be compensated by KOSKİ. ▪ In case of a chance find, the communication with the relevant stakeholders will be performed. 	Contractor/In construction cost	Negligible

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of Residual Impacts
					<ul style="list-style-type: none"> ▪ In addition to the national legislation, the provisions of WB's ESF will be followed and complied during all phases of the Project. 		
C11	Landscape	Damage on Landscape and Visual Nuisance	Adverse	Low	<ul style="list-style-type: none"> ▪ Soil Management Plan will be prepared and implemented. ▪ Topsoil will be spread to the treatment plant site, grass cover growth will be ensured, and improvement of the landscape features of the area will be ensured. ▪ Types of trees and shrubs to be used for landscaping purposes shall be selected in accordance with the existing flora. ▪ Tall plants and trees will be used along the borders of the treatment plant area to reduce the noise and odor impacts. 	Contractor/In construction cost	Negligible
C12	Terrestrial Biodiversity	Habitat Loss/Habitat Fragmentation and Vegetation disturbance	Adverse	Low	<ul style="list-style-type: none"> ▪ BMMP will be prepared prior to the construction works and implemented during the Project activities. ▪ Soil Management Plan will be prepared and implemented. ▪ Prior to the land preparation phase, conduct biodiversity surveys in the project sites to identify VU and EN species, and take necessary mitigation measures as needed. ▪ Prior to the land preparation phase, definite working areas will be set up where activities (e.g., vegetation clearing, vegetation removal, leveling and construction) will be established. ▪ Project construction site will be separated from other areas with appropriate signboards, signs and fences. Therefore, staff and vehicle access to the area will be limited to the construction site. ▪ Habitat disturbance will be reduced by keeping vehicles on access roads and by minimizing foot traffic in undisturbed areas. ▪ Damages to the steppes elements agricultural lands and structures, pastures, livestock facilities will be avoided. In 	Contractor/In construction cost	Negligible

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of Residual Impacts
					<p>case of any damage, peaceful compensation will be applied immediately.</p> <ul style="list-style-type: none"> ▪ Local flora elements should be used during landscaping activities related with the Project (plant applications, greening efforts etc.). ▪ Herbicide/pesticide use should be limited to non-persistent, immobile herbicides/pesticides and apply only in accordance with label and application permit directions and stipulations for terrestrial and aquatic applications. ▪ Erosion controls will be applied that comply with local, regional or national standards. ▪ Precautionary measures regarding fire risks should be taken. 		
C13	Aquatic Biodiversity	Disturbance on Aquatic Environment	Adverse	Medium	<ul style="list-style-type: none"> ▪ BMMP will be prepared prior to the construction works and implemented during the Project activities. ▪ Care should be given not to pollute water resources during all phases of the Project. ▪ Dumping and throwing any waste to aquatic environment is forbidden and should be avoided. 	Contractor/In construction cost	Negligible
C14	Terrestrial Biodiversity	Disturbance on fauna species	Adverse	Low	<ul style="list-style-type: none"> ▪ BMMP will be prepared prior to the construction works and implemented during the Project activities. ▪ Workers should be trained regarding the occurrence of important resources in the area and the importance of their protection, including the appropriate regulatory requirements. ▪ Employees, contractors, and site visitors should be instructed to avoid harassment and disturbance of wildlife, especially during reproductive (e.g., courtship and nesting) seasons. ▪ Construction work will be done gradually so that it will have enough time to escape for possible fauna species to be found. 	Contractor/In construction cost	Negligible

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of Residual Impacts
					<ul style="list-style-type: none"> ▪ If any critical species is observed on the Project site, disturbance of species should be avoided during critical periods of the day (e.g., night) or year (e.g., periods of courtship, breeding, nesting, lambing, or calving). ▪ If there is a nest of fauna species, the nest should be marked with a safety strip about 3 meters in diameter and an expert ecologist should be informed. ▪ Noise-reduction devices (e.g., mufflers) will be maintained in good working order on vehicles and construction equipment. ▪ Dust emissions will be avoided/minimized by lightly watering the immediate surroundings of construction sites and wetting the stored material. ▪ Dust abatement techniques should be used on unpaved and unvegetated surfaces to minimize airborne dust. ▪ Spill prevention practices and response actions should be applied in refueling and vehicle-use areas to minimize accidental contamination of habitats. ▪ Spills should be addressed immediately per the appropriate spill management plan, and initiate soil cleanup and soil removal if needed. ▪ All unnecessary lighting should be turned off at night to avoid attracting fauna species. 		
C15	Terrestrial Biodiversity	Invasive nonnative species introduction	Adverse	Low	<ul style="list-style-type: none"> ▪ BMMP will be prepared prior to the construction works and implemented during the Project activities. ▪ The spread of invasive nonnative plants is avoided by keeping vehicles and equipment clean. Disturbed areas will be reseeded with native plants during reclamation. ▪ Project workers will not be allowed to bring any live animals or plants into the construction site to avoid the risk of pest/invasive species establishing in the Project Area. 	Contractor	Negligible

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of Residual Impacts
C16	Local Procurement	Procurement of goods and services locally	Positive		<ul style="list-style-type: none"> Procurement of good and services locally during the lifetime of the Project will have a positive impact on local economy. 	Contractor	
C17	Transport Network	Increase Traffic Load	Adverse	Low	<ul style="list-style-type: none"> Traffic Management Plan will be prepared and implemented. The construction contractor will manage the talks and applications necessary to be made to relevant authorities with the supervision of KOSKI. In case any road, facility, building etc. will be damaged due to the activities originating from the Project during the construction period, the necessary maintenance, improvement and compensation works will be done by the construction contractor. The construction contractor will take and ensure the implementation of necessary precautions (signboards, flagman, lighted barriers and signs) in the entry and exit of the treatment plant and in terms of road traffic safety along the road by cooperating with the relevant authority/administration. Trucks, trailers and other vehicles to be used to transport necessary equipment and materials will be provided to comply with the speed limits. The construction contractor and KOSKI will ensure to comply with Highways Traffic Law, Road Transport Law and the regulations issued in compliance with these laws. In the event of receiving any complaint from community relating with transportation activities, the grievance mechanism of the Project will be utilized and grievances will be solved timely by implementing adequate measures/compensations. 	Contractor/In construction cost	Negligible

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of Residual Impacts
C18	Community Health and Safety	Impacts on local communities due to workers' influx	Adverse	Low	<ul style="list-style-type: none"> ▪ Community Health and Safety Management Plan will be prepared and implemented. ▪ The construction contractor will ensure that all the direct and contracted workers are provided with trainings on Project requirement at the beginning of employment (individually or collectively). These trainings will also cover the code of conduct for accommodation, general moral, cultural and ethical rules as well as rules relating with sexual exploitation and abuse (SEA) required from all project workers. ▪ The construction contractor will analyze the accommodation options preferred/selected by non-local workers in collaboration with KOSKİ and ensure that service buses are provided for the non-local workers accommodating in the nearby district and town centers in order to ensure safe travel of the Project workers to the Project site and minimize project-related traffic in the region. ▪ The construction contractor and KOSKİ will ensure that the relevant aspects of EBRD/IFC's Guidance Note on Workers' Accommodation (2009) will apply to project-related on-site and off-site accommodation. 	Contractor/In construction cost KOSKİ/Own resources	Negligible
C19	Community Health and Safety	Exposure to Disease	Adverse	Low	<ul style="list-style-type: none"> ▪ Community Health and Safety Management Plan will be prepared and implemented. ▪ KOSKİ and the construction contractor will ensure that necessary medical checks are in place at the time of hiring, which would be repeated as necessary. The contractor has medical screening reports for all personnel. ▪ KOSKİ and the construction contractor will ensure that legally required basic occupational health and safety (OHS) trainings, covering the general and health related subjects (e.g., workplace hygiene and good housekeeping, principles for protection from sickness and protection techniques, biological and psychosocial risk factors), are provided to all 	KOSKİ/Own resources Contractor/In construction cost	Negligible

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of Residual Impacts
					<p>direct and contracted employees at the time of hiring, which would be repeated as necessary.</p> <ul style="list-style-type: none"> ▪ KOSKÍ and the construction contractor will closely monitor potential diseases among the project employees (direct and contracted) throughout the construction phase. ▪ Within the scope of the Project, hygienic working conditions will be ensured. ▪ Potable and sanitary water will be supplied in line with the requirements of the national legislation. ▪ On site facilities such as sanitary facilities and medical/first aid facilities will meet the requirements of EBRD/IFC's Guidance Note on Worker's Accommodation Processes and Standards. ▪ Waste management will be implemented in line with regulatory requirements and project standards. ▪ Project-specific Stakeholder Engagement Plan will be implemented to address any relevant grievance and plan/take corrective actions in line with the Grievance Mechanism, where necessary. ▪ The construction contractor will prepare Covid-19 precaution plans/procedures prepared in order to prevent any possible Project impact related to Covid-19 pandemic including following measures and implement in the work area such as construction camps, eating areas, construction site, office areas. <ul style="list-style-type: none"> - A pandemic protocol will be developed and applied during the project lifecycle. - Single use masks and gloves will be provided to all staff and workers. - Use of masks and gloves will be ensured for workers and visitors. - Social distance between people will be ensured where possible. 		

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of Residual Impacts
					<ul style="list-style-type: none"> - Regular trainings about the pandemic will be provided to workers. - Banners and posters about the pandemic will be put at critical locations in the facility. - If someone has a fever, cough or other symptoms of Covid-19, he/she will stop work, stay home and get away from others (except to get medical care or testing, if recommended). - HES code and body temperature of the visitors will be checked at the entrance to site. If any Covid-19 risk is detected or any symptoms of Covid-19 is observed for someone, attendance of him/her to the meeting will not be allowed. 		
C20	Community Health and Safety	Emergency Preparedness and Response and Fire Risk	Adverse	Low to High	<ul style="list-style-type: none"> ▪ Community Health and Safety Management Plan will be prepared and implemented. ▪ Emergency Preparedness and Response Plan will be developed and implemented considering the framework provided in Annex 6. ▪ Emergency Preparedness and Response Plan to be prepared will define at least the following subject matters: <ul style="list-style-type: none"> - Purpose - Legislative Framework and Project Standards - Roles and Responsibility including the Emergency Response Teams - Emergency Levels - Emergency Events - Emergency Preparedness Measures/Actions (including planning, coordination, training, resources, any measure and/or warning system designed to notify local communities in case of emergencies) - Emergency Response Procedures (Measures/Actions) and Post-emergency actions 	Contractor/In construction cost	Negligible to Medium

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of Residual Impacts
					<ul style="list-style-type: none"> - Emergency Contact Numbers (including communication details of the mukhtars, any school principals and authorities to be collaborated in case of emergencies) - Emergency Trainings and Drills 		
C21	Community Health and Safety	Public Access	Adverse	Low	<ul style="list-style-type: none"> ▪ Community Health and Safety Plan will be prepared and implemented. ▪ Access to the WWTP construction site will be permanently restricted to avoid potential health and safety risks (due to use of heavy vehicles, construction vehicles causing site traffic, earthworks, electrocution hazards due to electrical works, etc.) ▪ The road closure will be avoided all the time. ▪ The construction contractor will undertake official communication with the authorities to ensure collaboration to be able to apply necessary health and safety restrictions, in case such restrictions are applied within their jurisdiction areas. ▪ As part of SEP, local communities will be informed, by the environmental and social specialists of KOSKI PIU, about the construction sites, traffic restrictions to be applied for health and safety purposes and also about the duration of such restrictions. 	Contractor/In construction cost	Negligible

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of Residual Impacts
C22	Community Health and Safety	Security Personnel	Adverse	Low	<ul style="list-style-type: none"> ▪ Community Health and Safety Management Plan will be prepared and implemented. ▪ Security Plan will be prepared and implemented. ▪ Private security officers from the local communities will be employed, where possible, to minimize the risk of potential social conflicts. ▪ The agreement executed between the Private Security Contractor Firms and the construction contractor will include provisions related to the appointment of certified officers, who received basic trainings for private security officers, were subject to necessary security inquiries and fulfills the age and education standards. ▪ The construction contractor will provide trainings by the private security contractor to the security officers and ensure that these officers receive periodical trainings on adequate use of force and appropriate conduct towards the project employees and the local communities in line with the requirements of national legislation as well as WB's ESF. ▪ Project-specific Stakeholder Engagement Plan will be implemented to address any potential risk that may be related to the acts of the private security officers employed in the Project in line with the Grievance Mechanism, where necessary. 	Contractor/In construction cost	Negligible
C23	Labor Force	Working Conditions	Adverse	Low	<ul style="list-style-type: none"> ▪ Labor Management Plan will be prepared and implemented by the construction contractor in compliance with the LMP of the Project. ▪ KOSKI/Contractor will provide workers with documented information that is clear and understandable, regarding their rights under national labor law; including collective agreements, their rights related to hours of work, wages, overtime, compensation, and benefits as of startup of working relationship and when any material changes occur. ▪ KOSKI/Contractor will not discourage workers from electing worker representatives, forming or joining workers' 	KOSKI/Own resources Contractor/In construction cost	Negligible

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of Residual Impacts
					<p>organizations of their choosing, or from bargaining collectively, and will not discriminate or retaliate against workers who participate, or seek to participate, in such organizations and collective bargaining.</p> <ul style="list-style-type: none"> ▪ KOSKİ/Contractor will pay particular concern on principles of non-discrimination and equal opportunity. In this respect, KOSKİ/Contractor will not make employment decisions (i.e., recruitment and hiring, compensation, wages and benefits, working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices) on the basis of personal characteristics unrelated to job requirements. Wages, work hours and other benefits shall be per the Turkish Labor Law. ▪ The construction contractor and KOSKİ will ensure that the relevant aspects of EBRD/IFC's Guidance Note on Workers' Accommodation (2009) will apply to project-related on-site and off-site accommodation. ▪ The contractor will provide a grievance mechanism for workers to raise workplace concerns. The contractor will inform the workers about the grievance mechanism at the time of recruitment and make it easily accessible to them. ▪ KOSKİ will ensure measures to prevent child labor and forced labor by routine controls of employment lists. In this respect, children under 18 years of age will not be employed during construction phase as per the provisions of the national legislation and the LMP of the Project. ▪ If a child under the minimum age (18 years) is discovered working on the project, measures will be taken to immediately terminate the employment or engagement of the child in a responsible manner, considering the best interest of the child. 		
C24	Labor Force	Occupational Health and Safety	Adverse	Low	<ul style="list-style-type: none"> ▪ Before the commencement of land preparation and construction works, the construction contractor will prepare a site-specific Occupational Health and Safety 	KOSKİ/Own resources	Low

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of Residual Impacts
					<p>Management Plan for the Project which will comply with the Turkish Legislation and international standards.</p> <ul style="list-style-type: none"> ▪ Grievance mechanism will be prepared and implemented. ▪ All Project staff shall comply with the environmental, health and safety policies. ▪ In order to minimize the risks and hazards that may arise (e.g., natural disasters, accidents, equipment malfunctions etc.) on human health and safety, safe working environments in the working sites will be established and physical hazards and risks will be prevented. ▪ The relevant plans and procedures of the relevant Turkish legislation will be complied within the OHS measures and practices. ▪ Employees will be informed about the hazards that may cause from their work and thus a safer work environment will be created. ▪ Training will be given to employees according to the Regulation on the Procedures and Principles of Occupational Health and Safety Trainings. In this context, a training program will be prepared, training records will be kept and evaluation activities will be carried out after the trainings. ▪ Personal protective equipment will be provided to all employees and necessary training will be given for their use. ▪ Work areas will be equipped with warning signs (e.g., "Hazard", "Entry Prohibited", etc.) in accordance with the quality and potential risks of the work to be performed in that area. ▪ All necessary precautions will be taken in the Project area to prevent possible fires from construction activities. Uncontrolled fires in and out of the field will be prevented. ▪ Smoking in areas where there is a risk of fire will be prohibited. All employees must have knowledge of what to do in the event of a fire. 	Contractor/In construction cost	

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of Residual Impacts
					<ul style="list-style-type: none"> ▪ Project staff will include first aid trained personnel. In case of emergency where an intervention is required, personnel will be sent to the nearest health center by appropriate means. ▪ Contractor will apply the sufficiency of the technical requirement of the machinery, equipment, and tools to be used in the activities. ▪ Moving parts of machinery and equipment will be equipped with appropriate protective systems (e.g., metal shields etc.), minimizing the risk of injury or damage to the person using the machine or equipment. ▪ Personal factors that may create and control risks during activities (e.g., long hair, jewelry and accessory use, clothing etc.) will be removed from the site by the regulations brought by the field management. Project staff will be informed about the relevant regulations within the scope of the training program. ▪ Drivers and operators will be trained to comply with traffic rules and to control the vehicles and equipment they use against risks and hazards originating from vehicle traffic. Required traffic signs will be placed in the Project Site and its surroundings. Machine operators and other employees will be informed and alerted about the relevant signs. ▪ The wastes to be generated will be managed under the Waste Management Regulation and the negative impacts on public health will be minimized. ▪ Areas where excavation work is to be carried out will not be accessible other than the authorized personnel. The loading and unloading activities shall be carried out together with the persons to oversee the personnel to carry out the activity. ▪ Persons and/or organizations with the necessary permits will be assigned to ensure the security of the Project Area (e.g., private security companies/officials). These persons and/or organizations shall regularly monitor the facility and 		

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of Residual Impacts
					<p>its surroundings. The special security applications and officials' authorities within the scope of the project shall comply with the provisions of the Regulation on the Implementation of the Law on Private Security Services and the Law on Private Security Services.</p> <ul style="list-style-type: none"> ▪ Before construction activities begin, any holes on the fences of the treatment plant area will be fixed and the access of the visitors, local people and animals to the area will be controlled. ▪ Entry of staff and third parties into the working site will be carried out in a controlled manner from the doors at which authorized security personnel will work. ▪ If a trench needed to be left open for night, the sufficient illumination of the area shall be ensured by Contractor and necessary signs shall be placed and the area shall be enclosed with barriers. ▪ The construction contractor will prepare a Confined Space Entry Procedure that is consistent with KOSKİ standards, applicable national requirements and internationally accepted standards. ▪ KOSKİ and construction contractor will ensure the compliance of all the activities within the treatment plant with national standards and WBG EHS Guidelines. ▪ In case of any significant environmental or social incident (e.g., lost time incidents, fatalities, environmental spills etc.), the contractor will notify KOSKİ about the occurrence of the incident in 3 business days and KOSKİ will inform İLBANK and World Bank. A detailed incident investigation report, including the root-cause analysis, precautions and compensation measures taken will be submitted to KOSKİ, İLBANK and World Bank in 30 business days after the incident. 		

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of Residual Impacts
					<ul style="list-style-type: none"> ▪ Automatic cleaning screens should be used instead of manually cleaning screens to prevent entrance of cleaning workers into the channels. ▪ Appropriate ventilation systems should be installed at where methane accumulation is expected. ▪ Railings will be installed around all tanks and pits. ▪ The construction contractor will prepare Covid-19 precaution plans/procedures prepared in order to prevent any possible Project impact related to Covid-19 pandemic including following measures and implement in the work area such as construction camps, eating areas, construction site, office areas. <ul style="list-style-type: none"> - A pandemic protocol will be developed and applied during the project lifecycle. - Single use masks and gloves will be provided to all staff and workers. - Use of masks and gloves will be ensured for workers and visitors. - Social distance between people will be ensured where possible. - Regular trainings about the pandemic will be provided to workers. - Banners and posters about the pandemic will be put at critical locations in the facility. - If someone has a fever, cough or other symptoms of Covid-19, he/she will stop work, stay home and get away from others (except to get medical care or testing, if recommended). - HES code and body temperature of the visitors will be checked at the entrance to site. If any Covid-19 risk is detected or any symptoms of Covid-19 is observed for someone, attendance of him/her to the meeting will not be allowed. 		

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of Residual Impacts
C25	Labor Force	Workers Engaged by Third Parties and the Supply Chain	Adverse	Low	<ul style="list-style-type: none"> ▪ Labor Management Plan will be prepared and implemented. ▪ Grievance mechanism will be established and implemented. ▪ KOSKÍ will ensure that the contractors are reputable and legitimate enterprises and have an appropriate ESMS that will allow them to operate in a manner consistent with the labor conditions provided by KOSKÍ. ▪ KOSKÍ will monitor the performance of contractors such that human rights policy and labor rights of all workers are exercised properly. ▪ KOSKÍ will ensure that workers of contractors have access to the overall grievance mechanism to be established for the Project. ▪ KOSKÍ will monitor its primary supply chain for safety issues related to supply chain workers, and where necessary KOSKÍ will introduce procedures and mitigation measures to ensure that suppliers are taking steps to prevent or to correct life-threatening situations. ▪ KOSKÍ will prepare a Contractor Management Plan and ensure its implementation. ▪ KOSKÍ shall ensure that the impacts and measures defined by this ESIA and the relevant ESMP are followed by the contractor. ▪ In the event of any significant incident (e.g., environmental, social, labor or lost-time incidents) the contractor shall immediately notify KOSKÍ and KOSKÍ shall inform ÍLBANK within 3 business days. ÍLBANK will immediately inform the WB. Then, within 30 business days, an incident report including the root causes analysis of the incident, precautions and compensation measures taken will be presented to ÍLBANK and ÍLBANK will forward the incident report to the WB immediately after receipt from KOSKÍ. 	KOSKÍ/Own resources	Negligible

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of Residual Impacts
C26	Contractor Management	Mismanagement of contractor to comply with project standards	Adverse	High	<ul style="list-style-type: none"> KOSKI will prepare and implement Contractor Management Plan. 	KOSKI/Own resources	Low

Table 7-6 Operation Phase Mitigation Plan

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of the Residual Impacts
01	Soil Environment	Soil pollution/contamination due to leaks/spillage and/or improper management of waste	Adverse	Low	<ul style="list-style-type: none"> Wastes and wastewater to be generated will be stored and disposed in a controlled manner in accordance with the relevant regulations and in line with the management practices described in this ESIA. Thus, it will not be possible for the wastes and wastewater to be generated in the Project area interact with the soil environment and cause any impacts. The fuel required for Project will be supplied primarily from the nearest station. Only for repair and maintenance activities and if it is deemed necessary, fuels could be stored at site in the areas where necessary impermeability precautions are taken. All oil and fuel leakages cause by construction machinery will be responded and collected with the soil contaminated. This contaminated soil will be stored in the hazardous waste collection area until the contamination rate will be analyzed for soil hazardousness categorization. Hazardous Material Management Plan will be prepared and implemented. Waste Management Plan will be prepared and implemented. Sludge Management Plan will be prepared and implemented. Chemicals and hazardous materials will be stored in designated impermeable chemical and hazardous material storage areas. 	KOSKI/Own resources	Negligible

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of the Residual Impacts
					<ul style="list-style-type: none"> ▪ Oil and Chemical Spill Contingency Management Plan will be prepared and implemented. ▪ Spill response material will be placed to the chemical and hazardous material storage areas and distributed to project vehicles in order for timely response. ▪ Trainings for KOSKÍ operation team will be conducted on spill response, safe chemical and hazardous material handling and storage. ▪ Measures to be taken in case of leaks and spills that may arise from machinery and vehicles due to fuel storage and unexpected accidents will be described in site specific Emergency Response Plan to be prepared by considering the framework (Annex 6) given in this ESIA. ▪ The provisions of the Regulation on the Control of Soil Pollution and Sites Contaminated by Point Sources shall be complied within the scope of the Project. ▪ In the event of any repair or maintenance activity, KOSKÍ will follow the mitigation measures listed for land preparation and construction phase. 		
02	Soil Environment	Accidental damage to roads/asset or livelihood losses	Adverse	Low	<ul style="list-style-type: none"> ▪ The existing roads will be used. ▪ All project activities will be implemented on authorized areas, roads and lands. ▪ In case of any unforeseen damage to existing roads, community assets, individual's crops and assets during operation phase of the Project, KOSKÍ will be responsible to compensate the losses by identifying damage in accordance with WB's ESS5. KOSKÍ's grievance mechanism will be a tool to be used by affected people in the event of any damage or loss. ▪ Grievance Mechanism will be developed and implemented. 	KOSKÍ/Own resources	Negligible
03	Air Quality	Emission related impacts	Adverse	Low	<ul style="list-style-type: none"> ▪ Odor Management Plan will be prepared and implemented. ▪ Hydrogen sulfide (H₂S) will generate from physical treatment and sludge treatment systems, there should be an absorption system to catch H₂S which is critical to avoid odor emissions (see O4.Odor for details). ▪ There is a possibility of generation of methane under long term anaerobic conditions at pumping stations, sludge tanks and sludge cake containers unless adequate conditions for maintenance of these are met such as 	KOSKÍ/ Own resources	Negligible

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of the Residual Impacts
					frequent cleaning, continuous aeration of sludge tanks and periodical removal of sludge cake.		
04	Odor	Odor nuisance in the close vicinity of the treatment plant	Adverse	Low	<ul style="list-style-type: none"> ▪ Odor Management Plan will be prepared and implemented. <p>The first level measures:</p> <ul style="list-style-type: none"> ▪ Establishing an operating grievance mechanism to manage odor related grievances. ▪ Ensuring good operational conditions. ▪ Enclosing the pumping stations, physical treatment system and sludge treatment system. , ▪ Prevention of wastewater influents which exceed treatment plant capacity. ▪ Decreasing activated sludge amounts by adequate operation of WWTP. ▪ Increasing disposal frequency of screenings. ▪ Enclosing storage of dewatered sludge all the time. ▪ Proper and timely disposing of sludge in order to prevent flies and odor. ▪ Increasing aeration rate in biological treatment process. ▪ Addition of lime to activated sludge and dewatered sludge. ▪ Keeping water level under control in order to prevent turbulence as a result of instant decrease of water. <p>If odor nuisance prevails after the proper implementation of first level measures, the second level measures shall be taken. These are:</p> <ul style="list-style-type: none"> ▪ Addition of oxidizing material (such as hydrogen peroxide, sodium hypochlorite) (Oxidizing materials, prevent generation of especially hydrogen sulfide. Addition of sodium hydroxide can also be considered. Sodium hydroxide will dissolve hydrogen sulphur gas in water.) ▪ Preventing anaerobic bacteria with control of pH levels or disinfection. ▪ Oxidizing odorous compounds by the help of chemicals. ▪ Planting trees in the Project area and the buffer zone around the treatment plant for the prevention of odor distribution. 	KOSKI/Own resources	Low
05	Noise	Increase in noise levels	Adverse	Low	<ul style="list-style-type: none"> ▪ During the procurement of equipment and machinery, sound levels given in the technical specifications/data sheet will be taken into consideration. ▪ Relevant provisions and limit values of RAMEN and World Bank Group's/IFC's General EHS Guidelines and Sectoral Guidelines will be complied with during the operation phase. 	KOSKI/Own resources	Negligible

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of the Residual Impacts
					<ul style="list-style-type: none"> Plantation of trees along the border of the WWTP area should be considered both for visual improvement and for absorption of potential noise. 		
06	Water Resources	Wastewater treatment	Adverse	Low	<ul style="list-style-type: none"> KOSKİ will aim to minimize bypass of the treatment system. The effluent water quality of the wastewater treatment plant will be consistent with applicable national requirements or internationally accepted standards. KOSKİ will ensure compliance to required discharge limits specified as project specifications. System overflows will be prevented as much as possible by using level-meters. 	KOSKİ/Own resources	Negligible
07	Water Resources	Discharge of Treated Wastewater	Positive		<ul style="list-style-type: none"> Discharge of untreated water to receiving water bodies is avoided. 	KOSKİ/Own resources	
08	Wastes	Waste Generation (including sludge)	Adverse	Low	<ul style="list-style-type: none"> Waste Management Plan including hazardous wastes will be prepared and implemented. Hazardous Material Management Plan will be prepared and implemented. Sludge Management Plan will be prepared and implemented. See mitigation measures for waste for "Land Preparation and Construction Phase" The generated sludge cake will be transferred to a covered and appropriate container through the belt conveyor. These containers will be impermeable and labelled adequately as well as placed under an enclosed area. The enclosed sludge containers will be transferred to the Konya Centrum WWTP for further drying by specific trucks used for transportation of such containers with the specified periods (See Section 5.3.7). 	KOSKİ/Own resources	Negligible
09	Aquatic Biodiversity	Disturbance on Aquatic Environment	Adverse	Medium	<ul style="list-style-type: none"> BMMP will be prepared and implemented during the Project activities. Care should be given not to pollute water resources during all phases of the Project. Dumping and throwing any waste to aquatic environment is forbidden and should be avoided. 	KOSKİ/Own resources	Negligible

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of the Residual Impacts
010	Aquatic Biodiversity	Disturbance on Aquatic Environment	Positive	--	<ul style="list-style-type: none"> ▪ BMMP will be prepared and implemented during the Project activities. ▪ Discharge of untreated water to receiving water bodies is avoided 	KOSKI/Own resources	--
011	Terrestrial Biodiversity	Disturbance on fauna species	Adverse	Low	<ul style="list-style-type: none"> ▪ BMMP will be prepared and implemented during the Project activities. ▪ Observations of potential wildlife problems, including wildlife mortality should be reported to the appropriate wildlife agency. ▪ Workers should be trained regarding the occurrence of important resources in the area and the importance of their protection, including the appropriate regulatory requirements. ▪ Employees, contractors, and site visitors should be instructed to avoid harassment and disturbance of wildlife, especially during reproductive (e.g., courtship and nesting) seasons. ▪ If there is a nest of fauna species, the nest should be marked with a safety strip about 3 meters in diameter and an expert ecologist should be informed. ▪ Spills should be addressed immediately per the appropriate spill management plan, and initiate soil cleanup and soil removal if needed. ▪ All unnecessary lighting should be turned off at night to avoid attracting fauna species. 	KOSKI/Own resources	Negligible
012	Transport Network	Increase Traffic Load	Adverse	Low	<ul style="list-style-type: none"> ▪ Traffic Management Plan will be prepared and implemented. ▪ In case any road, facility, building etc. will be damaged due to the activities originating from the Project, the necessary maintenance, improvement and compensation works will be done by KOSKI. ▪ Trucks, trailers and other vehicles to be used will be provided to comply with the speed limits. ▪ KOSKI will ensure to comply with Highways Traffic Law, Road Transport Law and the regulations issued in compliance with these laws. ▪ In the event of receiving any complaint from community relating with transportation activities since the existing road network is not so diversified letting the driver to use less populated or less dense roads, the grievance mechanism of the Project will be utilized and grievances will be solved timely by implementing adequate measures/compensations. 	KOSKI/Own resources	Negligible

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of the Residual Impacts
013	Community Health and Safety	Emergency Preparedness and Response and Fire Risk	Adverse	Low to High	<ul style="list-style-type: none"> ▪ Emergency Preparedness and Response Plan will be developed and implemented. ▪ Community Health and Safety Management Plan will be prepared and implemented. 	KOSKI/Own resources	Negligible to Medium
014	Labor Force	Occupational Health and Safety	Adverse	Low	<ul style="list-style-type: none"> ▪ A site-specific Occupational Health and Safety Management Plan will be prepared and implemented. ▪ The WWTP area will be fenced; the access of local people and wildlife will be controlled. The entry of personnel and third parties into the facility will be carried out in a controlled manner. ▪ Security Plan will be prepared and implemented. ▪ Private security officers will be hired in order to provide the security of the working area. The special security applications within the scope of the project and the competent authorities shall be in compliance with the provisions of the Law on Private Security Services and the Implementation of the Law on Private Security Services. ▪ Personal Protective Equipment will be provided for the workers according to the nature of work to be performed. The necessary trainings will be carried out for their use. ▪ Smoking will be prohibited where the risk of fire is high. All the workers will be informed about the action plan in a case of fire ▪ All equipment will be operated in proper working order. ▪ Procedures approved by the KOSKI in the maintenance and repair activities and the requirements of the technical specifications of the supplier companies will be complied with. ▪ The necessary health and safety signs and traffic signs will be placed around the Project site. Employees will be informed and alerted about the subject matter markings. ▪ Trainings will be given to employees and operational and maintenance personnel within the scope of the Regulation on Procedures and Principles of Occupational Health and Safety Trainings and measurement and evaluation activities will be carried out after the trainings. 	KOSKI/Own resources	Low

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of the Residual Impacts
					<ul style="list-style-type: none"> ▪ Entrance of operation and maintenance personnel and third parties will be carried out in a controlled manner from the doors of the security personnel. ▪ Equipment that meets international standards in terms of performance and safety will be used at the plant. ▪ After the plant is completed, necessary electrical tests will be carried out to check that the electrical connections and other related equipment are made properly before the plant is taken into operation. ▪ An Emergency Preparedness and Response Plan will be prepared before the plant is taken into operation. ▪ KOSKÍ will conduct trainings for operators who work with chemicals/hazardous materials regarding safe handling practices and emergency response procedures. ▪ KOSKÍ will distribute sufficient number of personal gas detection equipment to its employees to be used in confined spaces. ▪ KOSKÍ will advise individuals with asthma, diabetes, or suppressed immune systems not to work at the treatment plant and its auxiliary facilities due to greater risk of infection. ▪ KOSKÍ will ensure the compliance of all the activities within the treatment plant and pumping stations with national standards and WBG EHS Guidelines. ▪ Labor Management Plan will be prepared and implemented. ▪ KOSKÍ will prepare Covid-19 precaution plans/procedures prepared in order to prevent any possible Project impact related to Covid-19 pandemic including following measures and implement in the work area such as construction camps, eating areas, construction site, office areas. <ul style="list-style-type: none"> - A pandemic protocol will be developed and applied during the project lifecycle. - Single use masks and gloves will be provided to all staff and workers. - Use of masks and gloves will be ensured for workers and visitors. - Social distance between people will be ensured where possible. - Regular trainings about the pandemic will be provided to workers. 		

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Topic	Definition of Potential Impact	Type of Impact	Impact Significance Before Mitigation	Measures to be Taken	Institutional Responsibility/Cost	Significance of the Residual Impacts
					<ul style="list-style-type: none"> - Banners and posters about the pandemic will be put at critical locations in the facility. - If someone has a fever, cough or other symptoms of Covid-19, he/she will stop work, stay home and get away from others (except to get medical care or testing, if recommended). - HES code and body temperature of the visitors will be checked at the entrance to site. If any Covid-19 risk is detected or any symptoms of Covid-19 is observed for someone, attendance of him/her to the meeting will not be allowed. 		

MUNICIPAL SERVICES IMPROVEMENT PROJECT

7.5.2 Monitoring Plan

In order to ensure the continuity and effectiveness of the implementation of mitigation management strategies defined, monitoring plays a key role. The main objective of the Monitoring Plan is to provide a basis for the evaluation of the impacts of the Project.

Information collected with the monitoring can be used to improve management plans during all phases of the Project. While impact assessment attempts to encompass all relevant potential impacts to identify their significance and include appropriate responses for these impacts, unanticipated impacts may still arise, which can be managed or mitigated before they become a problem using the information obtained through monitoring. Therefore, monitoring will ensure the successful implementation of the mitigation/management plans and optimize environmental protection through good practice at each and every stage of the Project. Monitoring plans are presented in Table 7-7 and Table 7-8 for land preparation and construction, and operation phases, respectively.

Details about the conditions (such as number and condition of chemical and hazardous materials storage areas, topsoil storage areas, waste containers for non-hazardous wastes on working sites) given in the “Which parameters shall be monitored?” column in the below table will be provided in the sub-management plans to be prepared.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 7-7 Land Preparation and Construction Phase Monitoring Plan

No.	Which parameters shall be monitored?	Where the parameters shall be monitored?	How the parameters shall be monitored?	When the parameters shall be monitored?	Why the parameter shall be monitored?	Institutional Responsibility/Cost
C1	Excavation waste: <ul style="list-style-type: none"> Number and condition of storage areas for excavation waste Amount of excavated waste stored Amount of excavated waste sent to excavation waste storage area 	Construction site and storage areas	Visual observation; Records of refilled, Stored, and disposed excavation materials	Weekly	To ensure adequate storage and use of excavation waste avoiding any damage to environment	Contractor/In construction cost
C2	Topsoil: <ul style="list-style-type: none"> Number and condition of designated topsoil storage areas Number and condition of topsoil storage areas whose topsoil is re-used 	Topsoil storage areas at WWTP area Where topsoil stripping activities occur	Visual observation Site inspections Records	Weekly	To ensure topsoil is stripped and stored avoiding mixing with subsoil	Contractor/In construction cost
C3	Leakages/spills: <ul style="list-style-type: none"> Number of spill kits at working zones Number of personnel trained on spill response Number of spill response personnel trained and assigned Number of accident investigation reports for spills Consistent use of drip trays Adequate secondary containment of oil/fuel/chemical containers' 	Construction site	Visual observation Site inspections Records Sampling and analysis	Weekly Occurrence of a spill	To ensure soil, surface water and groundwater are not contaminated as a result of Project works.	Contractor/In construction cost
C4	Chemicals and hazardous materials: <ul style="list-style-type: none"> Number and condition of chemical and hazardous material storage area Secondary containment used for chemical and hazardous material containers Number and condition of chemical and hazardous material containers Availability of safety data sheets Number of fire extinguishers at storage area Number of personnel trained on hazardous material management 	Chemical storage areas	Visual observation Site inspections Records	Weekly	To ensure chemicals and hazardous materials are managed without any hazard to environment and community.	Contractor/In construction cost

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Which parameters shall be monitored?	Where the parameters shall be monitored?	How the parameters shall be monitored?	When the parameters shall be monitored?	Why the parameter shall be monitored?	Institutional Responsibility/Cost
	- Number of assigned personnel for hazardous material storage					
C5	Soil quality (TOX, TPH, Ag, As, B, Cd, Cr, Cu, Hg, Ni, Pb, Sb, Se, Sn, Zn for NACE 3700&3900)	At soil quality baseline analysis point; and on stabilization pond area	Sampling and analysis in compliance to Regulation on Control of Soil Pollution and Point Source Contaminated Sites	Prior to the construction works as part of the pre-construction survey and when a spill has occurred	To check up on the baseline environmental conditions and to plan/conduct any required remediation works. To verify the existing soil quality on site with baseline analysis conducted and identify any soil contamination due to construction works	Contractor/In construction cost
C5.1	Soil/Sediment quality (TOX, TPH, Ag, As, B, Cd, Cr, Cu, Hg, Ni, Pb, Sb, Se, Sn, Zn for NACE 3700&3900)	On Bulaşan Creek's dry bed	Sampling and analysis in compliance to Regulation on Control of Soil Pollution and Point Source Contaminated Sites; and Surface Water, Groundwater And Sediment Sampling And Biological Sampling Communique	Prior to the construction works as part of the pre-construction survey;	To define baseline soil/sediment quality for operation phase; to plan/conduct any required remediation works.	Contractor/In construction cost
C5.2	Soil Quality Number of spills/leakages	Construction site	Site inspections	Daily	To ensure soil environment is protected at most	Contractor's competent soil expert/In construction cost
C6	Waste management: - Number and condition of waste containers for non-hazardous wastes on working sites	Construction site, storage areas, and	Visual observation Records Site inspections	Weekly	To ensure domestic and recyclable wastes, hazardous wastes, medical waste and waste oil are	Contractor/In construction cost

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Which parameters shall be monitored?	Where the parameters shall be monitored?	How the parameters shall be monitored?	When the parameters shall be monitored?	Why the parameter shall be monitored?	Institutional Responsibility/Cost
	<ul style="list-style-type: none"> - Number of personnel received training on waste management - Delivery records for domestic and recycle waste by type of waste - Number and condition of temporary hazardous waste storage area - Secondary containment used for hazardous wastes storage - Number and condition of waste containers for hazardous wastes at storage area - Number and condition of waste containers for hazardous wastes at working areas - Number of fire extinguishers at storage area - Number of personnel trained on hazardous material management - Number of assigned personnel for hazardous waste management - Records on hazardous waste transport and disposal - Records on medical waste disposal - Waste oil recycling form 	administration office			managed without any hazard to environment and community.	
C7	Wastewater management: <ul style="list-style-type: none"> - Official wastewater delivery records - Condition of the septic tanks 	Wastewater storage areas	Visual observation Pump-out records	Weekly	To ensure wastewater is managed without any hazard to environment.	Contractor/In construction cost
C8	Air Quality (PM10 and PM2.5)	The nearest sensitive receptors where baseline measurements conducted	Sampling/analysis	Before the commencement of construction works (to verify baseline measurements) Quarterly (during excavation works) and Upon complaint	To determine air quality impact due to construction activities	Contractor/In construction cost

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Which parameters shall be monitored?	Where the parameters shall be monitored?	How the parameters shall be monitored?	When the parameters shall be monitored?	Why the parameter shall be monitored?	Institutional Responsibility/Cost
C9	Noise level	The nearest sensitive receptors where baseline measurements conducted	Noise measurements	Before the commencement of construction works (to verify baseline measurements) Quarterly and Upon complaint	To determine noise impact due to construction activities	Contractor/In construction cost
C10	Community health and safety: <ul style="list-style-type: none"> - Number of trained personnel on project requirements - Number of non-local personnel - Number of service buses for transportation of non-local personnel - Number of medical checks for personnel - Number of trained personnel on OHS - Number of records on checks of potential diseases - Restrictions and measures regarding public access to site 	Construction site and offices	Visual observations Records	Monthly	To ensure that community health and safety is not affected adversely by construction activities	Contractor/In construction cost
C11	Traffic/transport network: <ul style="list-style-type: none"> - Number of signboards - Number of traffic interruption - Number of flagman - Number of grievances related to traffic 	Construction sites and existing access roads	Visual observation Records Accident records Maintenance records	Monthly	To ensure that traffic load generated by project would not adversely impact community and workers health and safety	Contractor/In construction cost
C12	Chance finds: <ul style="list-style-type: none"> - Number of chance finds - Number of personnel trained on chance find measures 	On and around the working location	Visual observation Records	Continuous	To avoid damage on archeological findings	Contractor/In construction cost
C13	Internal Grievances <ul style="list-style-type: none"> - Number of internal grievances received 	Administration office	Grievance records	Upon grievance	To ensure grievance mechanism is implemented properly and worker grievances are recorded and solved adequately	KOSKI/Own resources Contractor/In construction cost

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Which parameters shall be monitored?	Where the parameters shall be monitored?	How the parameters shall be monitored?	When the parameters shall be monitored?	Why the parameter shall be monitored?	Institutional Responsibility/Cost
C14	External Grievances – Number of external grievances received	Administration office	Grievance records Grievances related to security personnel and workers of the Project	Upon grievances and events	To ensure grievance mechanism is implemented properly and community grievances are recorded and solved adequately	KOSKi/Own resources Contractor/In construction cost
C15	Stakeholder Engagement – Number of stakeholders engaged – Number of stakeholder engagement activities	Administration office	Engagement records (including engagement log and minutes of meetings)	Upon each engagement	To ensure stakeholders are engaged	KOSKi/Own resources Contractor/In construction cost
C16	OHS: – Number of personnel trained on OHS – Number of accidents and accident investigation reports – Number of corrective/preventive actions – Number of non-conformity/incompliances recorded – Checklist/inspection forms – Risk assessments – Safety barriers – Precautionary lighting – Number of toolbox talks – Checklist for firefighting equipment – Number of personnel trained on firefighting – Number of assigned personnel to firefighting team – Periodical control forms – Daily control forms – Number of personnel having certificate on first aid – PPE provision records – Number of incident reports – COVID-19 measures taken and number of COVID-19 cases (if relevant)	Construction site Administration office	Visual observation Site inspection Records	Weekly	To ensure OHS measures and records of contractor are in place and compliant	Contractor/In construction cost

MUNICIPAL SERVICES IMPROVEMENT PROJECT

No.	Which parameters shall be monitored?	Where the parameters shall be monitored?	How the parameters shall be monitored?	When the parameters shall be monitored?	Why the parameter shall be monitored?	Institutional Responsibility/Cost
C17	Labor Force - Contractor's LMP - Number of workers contracts - Number of personnel records - Number of employees - Number and nature of work-related grievances	Administration office	Record reviews	Monthly	To ensure employment records of contractor are in place and compliant	KOSKİ Contractor/Own resources
C18	Biodiversity Number of biodiversity surveys	Construction site	Biodiversity field survey	Semi-annually (Spring and Autumn)	To ensure existing biodiversity features are protected at most	Contractor's competent biologist/In construction cost
C19	Water/Groundwater quality (Conductivity, pH, DO, BOD, COD, TSS)	At the closest water resources on the downstream of the discharge point (surface water, depots, wells etc.)	Sampling and analyses in compliance to the Regulation on The Protection of Ground Water Against Pollution and Deterioration; and the Regulation On Monitoring Surface and Ground Water	Prior to the construction works as part of the pre-construction survey,	To set/check up on the baseline environmental conditions and to plan/conduct any required remediation works.	KOSKİ Contractor/Own resources

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 7-8 Operation Phase Monitoring Plan

No.	Which parameters shall be monitored?	Where the parameters shall be monitored?	How the parameters shall be monitored?	When the parameters shall be monitored?	Why the parameter shall be monitored?	Institutional Responsibility/Cost
01	<p>Chemicals and hazardous materials:</p> <ul style="list-style-type: none"> - Number and condition of chemical and hazardous material storage area - Secondary containment used for chemical and hazardous material containers - Number and condition of chemical and hazardous material containers - Availability of safety data sheets - Number of fire extinguishers at storage area - Number of personnel trained on hazardous material management - Number of assigned personnel for hazardous material storage 	Chemical storage areas	<p>Visual observation</p> <p>Chemical dosing system checks</p>	Continuously	To ensure chemical and hazardous materials are managed without any hazard to environment and community.	KOSKI/Own resources
02	<p>Waste management:</p> <ul style="list-style-type: none"> - Number and condition of waste containers for non-hazardous wastes on working sites - Number of personnel received training on waste management - Delivery records for domestic and recycle waste by type of waste - Number and condition of temporary hazardous waste storage area - Number of secondary containment used for hazardous wastes storage - Number and condition of waste containers for hazardous wastes at storage area - Number and condition of waste containers for hazardous wastes at working areas - Number of fire extinguishers at storage area - Number of personnel trained on hazardous material management - Number of assigned personnel for hazardous waste management - Records on hazardous waste disposal 	Treatment plant site, storage areas, and administration office	<p>Visual observation</p> <p>Site inspections</p> <p>Records</p>	Weekly	To ensure domestic and recyclable wastes and hazardous wastes, medical waste and waste oil are managed without any hazard to environment and community.	KOSKI/Own resources

MUNICIPAL SERVICES IMPROVEMENT PROJECT

	<ul style="list-style-type: none"> - Records on medical waste disposal - Waste oil recycling form 					
03	<p>Sludge management:</p> <ul style="list-style-type: none"> - Number of sludge containers filled and transferred - Amount of sludge cake produced per week - record of final use/disposal including quantity and confirmation that tested and was non-hazardous and acceptable for final use/disposal 	<p>Sludge Cake Container Administrative office</p>	<p>Visual observation (Container is closed and periodically sent to Konya Centrum WWTP) Site inspections Records</p>	<p>Daily</p>	<p>To ensure sludge cake is stored without any adverse impact to environment and community.</p>	<p>KOSKi/Own resources</p>
04	<p>Soil quality (TOX, TPH, Ag, As, B, Cd, Cr, Cu, Hg, Ni, Pb, Sb, Se, Sn, Zn for NACE 3700)</p>	<p>At soil quality baseline analysis point</p>	<p>Sampling and analysis</p>	<p>Annually</p>	<p>To verify the existing soil quality on site with operational baseline analysis conducted and identify any soil contamination due to operational activities</p>	<p>KOSKi/Own resources</p>
05	<p>Odor at the nearest settlements Maintenance and cleaning records of treatment plan facilities against odor generation</p>	<p>Nearby residents, boundaries, pumping station, physical treatment system and sludge treatment system,</p>	<p>Number of odor information campaign with nearby residents/receptors, and semi-annual boundary and off-site monitoring Inspection of clogging, septic pockets and excess solid/sludge presence</p>	<p>Regularly (semiannual) Upon complaint</p>	<p>To ensure odor nuisance is not occur</p>	<p>KOSKi/Own resources</p>

MUNICIPAL SERVICES IMPROVEMENT PROJECT

06	Noise level	The nearest sensitive receptors	Noise measurement	Once in a year Upon complaint	To ensure noise level do not impact community adversely	KOSKI/Own resources
07	Effluent quality (pH, BOD5, COD, TSS, TP, TN, Oil & grease, Total coliform bacteria)	Treatment plant discharge unit	Automatic measurement for TSS and pH, and laboratory analysis for others in compliance to the Continuous Wastewater Monitoring Systems Communique	Continuous by sampling device Weekly basis for others	To ensure discharge effluent is in line with the standards	KOSKI/Own resources
08	Surface water and ground water	Downstream of WWTP discharge point	Grab and combined grab over day samples Automatic measurement for TSS and pH, and laboratory analysis for others; and in compliance to Surface Water, Groundwater And Sediment Sampling And Biological Sampling Communique	Quarterly Quarterly for a more complete set of all potential contaminants (heavy metals, organics, etc.);	To ensure the surface water, quality is in line with the standards and good for the biological indicators	KOSKI/Own resources
09	Number of internal grievances received	Administration office	Grievance records	Upon grievance	To ensure grievance mechanism is implemented properly and worker grievances are recorded and	KOSKI/Own resources

MUNICIPAL SERVICES IMPROVEMENT PROJECT

					solved adequately	
010	Number of external grievances received	Administration office	Grievance records	Upon grievances and events	To ensure grievance mechanism is implemented properly and community grievances are recorded and solved adequately	KOSKI/Own resources
011	Number of stakeholders engaged Number of stakeholder engagement activities	Administration office	Engagement records (including engagement log and minutes of meetings)	Biannually	To ensure stakeholders are engaged	KOSKI/Own resources
012	OHS: <ul style="list-style-type: none"> - Number of personnel trained on OHS - Number of accidents and accident investigation reports - Number of corrective/preventive actions - Number of non-conformity/incompliance recorded - Checklist/inspection forms - Risk assessments - Safety barriers - Precautionary lighting - Number of toolbox talks - Checklist for firefighting equipment - Number of personnel trained on firefighting - Number of assigned personnel to firefighting team - Periodical control forms - Number of daily control forms - Number of personnel having certificate on first aid - PPE provision records - Number of incident reports 	Treatment plant site	Visual observation Site inspection Records	Continuously	To ensure OHS measures and records of contractor are in place and compliant	KOSKI/Own resources

MUNICIPAL SERVICES IMPROVEMENT PROJECT

	- Covid-19 and/or any other pandemic measures taken and number of pandemic cases (if relevant)					
013	- Number of workers contracts - Number of personnel records - Number of employees	Administration office	Record reviews	Quarterly	To ensure employment records are in place and compliant.	KOSKI/Own resources
014	Habitat quality/loss	Around the WWTP area	Biodiversity field survey	Semi-annually (Spring and Autumn) (at least for the first two years)	To ensure habitat quality is re-maintained.	KOSKI (will assign a competent ecologist) /Own resources
015	Success of landscaping activities	Landscaping areas	Biodiversity field survey	Semi-annually (Spring and Autumn) (at least for the first two years)	To ensure habitat quality is re-maintained.	KOSKI (will assign a competent ecologist) /Own resources
016	Permits/consents/approvals/official correspondences	Administration office	Record reviews	Quarterly After obtainment/renewal of any permit/approval	To ensure the documents are in place and valid.	KOSKI/Own resources

MUNICIPAL SERVICES IMPROVEMENT PROJECT

8 Stakeholder Consultation

8.1. Stakeholder Consultation Meetings

The first stakeholder consultation meeting for the Project was conducted on February 24th, 2020 at Ilgın District Lala Mustafa Paşa Külliyesi. With this meeting, the KOSKİ's Stakeholder Engagement Plan (SEP) and the Project was introduced, and its aim, scope, relevant practices and grievance mechanism were informed to participants. The meeting minutes was recorded by KOSKİ representatives and integrated into the KOSKİ's final SEP which is publicly available on KOSKİ's web site as per its commitments. Detailed information about the meeting is presented within the KOSKİ's SEP and a summary is provided below

Approximately 75 attendees were present representing different level of interest. The participants include authorities, residents, refugees and NGO's. Some of the key participants were:

- Local residents from Ilgın which includes vulnerable people such as women, elderly people and refugees;
- Mukhtars of the neighbourhoods;
- Representatives of İLBANK;
- KOSKİ representatives;
- Representatives of Ilgın Municipality;
- Representative of former Provincial Directorate of Environment and Urbanization;
- Director of Chamber of Agriculture.

According to the participant list, 76 people (72 men, 4 women) were attended to the meeting. The meeting was announced on KOSKİ's website, and each stakeholder was informed about the meeting via official letters (authorities, NGOs) or telephone calls (mukhtars). In addition, advertisements are published in local newspapers. Local community members, especially PAPs including women and refugees, were invited to the meeting via mukhtars and KOSKİ. Vehicles were arranged in order to support and enable participation of community members at neighbourhood level. However, participation of community members including PAPs was low since they were not interested in this meeting although all efforts have been made (transportation options provided, communication tools to reach out to vulnerable groups, etc.). Further additional efforts will be made to increase the number of participants for the next consultation meeting to be carried out. Their representatives (mukhtars) participated the meeting and collected Project information. Participant list, meeting notes and other materials are provided in Annex 8.

After the presentation of KOSKİ, the attendees asked a number of questions which are given below with the concerning clarification provided during the meeting.

- Regarding the population increase in Ilgın, there are concerns about the capacity of the WWTP. KOSKİ informs that the calculations made as per standard calculation methods considering the current data. In the case of an unexpected population increase, WWTP capacity will be increased.
- Regarding clarification for delayed WWTP investment in Ilgın, KOSKİ highlights high costs of WWTP investments and monetary limitation of KOSKİ.
- Regarding a question on the absence of separate stormwater system, KOSKİ informs that a separate storm water system is not considered at the moment.
- Regarding a question on potential benefits to farmers and potential total area to be irrigated by discharge water, KOSKİ's consultant informs that the discharge water could be used for irrigational purposes once the standards will be met and added that according to irrigation methods, potential area would change.
- Regarding a question on odor problem of Uçarı neighborhood pumping station, KOSKİ informs that a deodorization equipment was recently installed and for wet season, KOSKİ is working on a project.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

- Regarding a question on aiming to bring more refugees to Ilgın under FRIT project, KOSKİ stated that the project name referring to grant received due to disruption of municipal services as a result of the current refugees and the project is not for arrival of new refugees.
- Regarding a question on use of WWTP sludge by farmers, KOSKİ informs that once the sludge analysis reveal that the sludge is suitable for use in agriculture, farmer could use it.
- Regarding a question on whether there will be an electricity generation facility associated to WWTP such as the one in Çumra, KOSKİ indicated neither in Ilgın nor in Çumra WWTPs there will be such a facility.
- Regarding a question on operation system and responsibilities, KOSKİ informs that after one year defect liability period, KOSKİ will operate it.
- Regarding a question on wastewater of rural neighborhoods, KOSKİ informs that building sewer networks for every small settlement is out of question since the investment cost of WWTPs are significantly high and without building a WWTP, it is not suitable to build sewer networks and added it is sufficient that individual septic tanks are treated by filtration.

A stakeholder consultation meeting was held following the approval of the draft version of this ESIA Report by WB and İLBANK in Ilgın district on January 03rd, 2023. The aim of the meeting was to inform the stakeholders on the project details, its anticipated environmental and social impacts and risks, proposed proactive, preventive and mitigation measures as well as roles and responsibilities. Moreover, the primary aim of the meeting was to engage and consult the project affected people who are affected by the project directly or indirectly on their expectation, observation and comments.

Mukhtars are the primary contact person to reach out the community members. In this respect, specific phone calls were organized with mukhtars for an effective invitation process before the meeting.

KOSKİ invited the public institutions via official letters. These official letters included a copy of the announcement note to make it publicly available. This announcement note was disclosed on the KOSKİ's web site⁴³ and it was also published on a local newspaper.

A brochure was prepared and distributed to the participants of the meeting in Turkish and Arabic including a summary of the Project and ESIA. The brochure is also available on KOSKİ's official website.⁴⁴

The meeting was organized at meeting room of Ilgın Chamber of Commerce and Industry. Total of 34 people (31 males, 5 females) participated to the meeting with different level of interest. Some of the key participants were:

- Local residents from Ilgın district;
- Heads (mukhtars) of the neighbourhoods;
- KOSKİ representatives;
- Representatives of Ilgın Municipality;
- Representatives of Chamber of Commerce and Industry;
- Representative of Regional Directorate of DSİ
- Representatives of Regional Directorate of İLBANK

A presentation that includes project related information was prepared for the meeting and presented at the beginning of the meeting by representative io Environmental Solutions. This presentation consists of Project description, importance, potential environmental and social impacts of the Project, proposed mitigation measures, stakeholder consultation process and grievance mechanism. The presentation was supported with figures, photographs and maps. The construction and operation phase impacts of the Project were presented separately.

At the end of the presentation, following question was raised by the participants and the question was answered by KOSKİ representative.

⁴³ <https://www.koski.gov.tr/sayfa/multecilerden-etkilenen-bol-bel-hizm--iyilestirilmesi--frit-ii>

⁴⁴ <https://www.koski.gov.tr/sayfa/multecilerden-etkilenen-bol-bel-hizm--iyilestirilmesi--frit-ii>

MUNICIPAL SERVICES IMPROVEMENT PROJECT

- Head of Mukhtars Association: Where will the water treated in the treatment plant be used?
- KOSKİ representative: Ilgin WWTP is designed according to the advanced biological treatment process. In legislation of the country, Wastewater Treatment Plant Technical Procedures Communiqué is in force related to use of wastewater treatment plant effluents in agriculture. Ilgin WWTP effluent conforms to B class water quality and is suitable for use in agriculture. With the application to the MoEUCC, permission can be obtained for use of the treated water in irrigation, considering criteria such as plant pattern and irrigation system to be used in the agricultural area.

Participant list, meeting notes, photos and other materials of these meetings are provided in Annex 8.

The SEP of the Project is disclosed in KOSKİ webpage.⁴⁵ The SEP includes information about previous stakeholder engagement activities and the grievance mechanism by which the Project stakeholder can submit their requests, complaints and concerns to the Project management. The stakeholders can use various tools to deliver their grievances which are detailed in the SEP document.

The prepared ESIA was reviewed after the meeting to incorporate opinions and questions of attendees. KOSKİ provided brief clarifications during the meeting for the interest of attendees, and these are in line with statements in the ESIA.

Following applicable Covid-19 measures will be taken during organization and execution of the any stakeholder engagement activities and stakeholder consultation meeting. The measures will be updated in line with the official announcements of the Ministry of Health and other related authorities during the project implementation.

- Size of the meeting room, number of participants and positions of the chairs will meet the social distancing requirements.
- Air conditioning system of the meeting room will be adequate.
- In order to circulate fresh air into the room, some breaks will be provided during the meeting, so that the doors and windows can be opened to allow the meeting room to ventilate naturally for a short period of time
- HES code⁴⁶ and body temperature of the participants will be checked at the entrance of the meeting room. If any Covid-19 risk is detected or any symptoms of Covid-19 is observed for someone, attendance of him/her to the meeting will not be allowed.
- Individual bottles of water and plates of foods will be placed on the meeting tables.
- Use of single use masks or face coverings will be mandatory for attending the meeting.
- Online connection of some stakeholders to the meeting can be preferable if it is applicable.
- If any stakeholder cannot participate the meeting, a separate consultation program will be organized.
- Hand sanitizers will be available in the meeting room.

If the stakeholder consultation meeting cannot be executed due to the pandemic conditions, virtual consultations will be organized in order to inform project stakeholders about ESIA. Online meetings via easily accessible software (i.e., Zoom, Microsoft Teams) will be used in order to present key issues in the ESIA. Project stakeholders including community leaders (mukhtars) and representatives of sub-provincial institutions and provincial instructions will be invited to the online meeting. If any stakeholder will not be able to attend the meeting, individual meetings or phone calls will be arranged to achieve a successful stakeholder engagement process in line with the project SEP.

8.2. Grievance Mechanism

A grievance mechanism (GM) has been established by KOSKI in order to receive, resolve and follow the concerns and complaints of the project affected communities. KOSKI PIU will be accessible for the

⁴⁵ https://www.koski.gov.tr/uploads/sayfalar_v/dosya/sayfalar-137-turkiye-nin-multecilerden-etkilenen-bolgelerinde-belediye-hizmetlerinin-iyilestirilmesi-projesi--frit-ii--2020-03-26-14-35-45-LD.pdf

⁴⁶ The HES Code is a personal code implemented by Turkish Ministry of Health in order to check Covid-19 risk status of people.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

stakeholders and respond to all grievances (complaints, requests, opinions, suggestions) at the earliest convenience. The intake channels of KOSKI's GM are provided below and also in the SEP prepared specific for this sub-project.

Webpage:	www.koski.gov.tr https://www.koski.gov.tr/sayfa/bize-yazin
Telephone/Hotline	0332 221 61 00
Postal Address	İhsaniye Mah., Kazım Karabekir Cd. No :56 , 42060 Selçuklu/Konya
E-mail	bilgi@koski.gov.tr

It will be important to ensure that all grievances are effectively received, recorded, resolved and responded to within a predetermined timeline and on the basis of their contents by the PIU and that the corrective/regulatory action to be taken is acceptable to both parties. After the successful closure of the grievances, the corrective actions taken will be monitored and the complainants will be informed of the results of these actions. In addition, GM will be designed to be suitable for receiving and correcting anonymous complaints. The grievance form provided in Annex-1 of the project's SEP will be used during the life of the project and anonymous complaints will be allowed to be submitted.

In addition, the Project GM will include a dedicated channel to receive and address confidential complaints about Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH) where special measures have to be taken. If an employee faces a SEA/SH issue s/he can either apply to a higher level superior or directly go to police station, as stipulated in the national referral system of the country for dealing such cases. The content and procedures of the project's GM will also have a reporting line on such cases in regard to SEA/SH issues and will be handled under full confidentiality. The GM focal point receiving the SEA/SH related grievance should direct this to national referral systems immediately and record that this has been directed, as set out in the GM Procedure⁴⁷ of ILBANK. All details of the complainant of the sensitive case will be kept strictly confidential.

The communication tools (webpage, e-mail address, brochure, telephone number, bulleting, etc.) for dissemination of information about the Project and the GM will be prepared. These communication tools will be announced to all relevant parties/stakeholders (including both the host and Syrian communities) and will be disclosed through official webpages and social media accounts of the respective institutions. Communication tools prepared to disseminate information about the project and the GM will also be announced to Syrian communities in their own language. An interpreter will be available at all meetings and events attended by refugees and an Arabic grievance form will be prepared to enable them to express their complaints.

KOSKI PIU is responsible for establishing close relationships with all stakeholders. The contact details of PIU and branch offices to be used by stakeholders to get their grievances filed will be available in the SEP.

Alternative communication channels to submit a complaint is outlined below:

Any individual or organization may make enquiries and/or lodge complaints personally. Apart from the communication tools for KOSKI above, the following communication channels could be used for lodging grievances.

- Grievance Boxes installed at construction sites (mainly for internal grievances), related neighborhoods' mukhtars office, KOSKI units and/or selected points for grievance boxes;
- Direct contact with gate keepers and site managers at construction sites,

⁴⁷ For Turkish and English versions of the GM Procedure is available at the following links <https://www.ilbank.gov.tr/sayfa/uluslararasi-finansmanli-projeler> and <https://www.ilbank.gov.tr/sayfa/projects-with-external-financing>, respectively.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

- Meetings and formal/informal consultations
- Through concerned public administrations (district governorship, municipality, mukhtars), and;
- Application by grievance forms) and letters through the grievance boxes in KOSKI, ILBANK and contractor's project site offices.

In the last 10 years, Turkish citizens have adopted a centralized compliant system called **Presidency's Communication Center (CIMER)**. CIMER operates under the Presidency's Directorate of Communications and serves as the official state tool to receive requests, complaints, compliments and inquiries for information from the public. The applicants can communicate their requests (such as suggestions, complaints, compliments, inquires for information or whistleblower complaints) to the Presidency through the online CIMER system (www.cimer.gov.tr), via the call center ALO 150, through letter/fax or in person. CIMER has a detailed manual in Turkish for its users (available at <https://cimer.gov.tr/50sorudacimer.pdf>). CIMER will be available to Project stakeholders as an alternative channel for conveying their Project-related grievances and feedbacks directly to state authorities. Stakeholders can access to the CIMER through the below listed communication channels.

- Website: <http://www.cimer.gov.tr>
- Call Centre: 150
- Phone number: +90 312 525 55 55
- Fax number: +90 312 473 64 94

The grievances received from CIMER system are investigated by the relevant authority representatives and an answer/solution is communicated to the complainant through the system.

In addition, **the Foreigners Communication Center (YİMER)**, which provides a central grievance system for foreigners, can also be used as an alternative method for the refugees to submit their grievances. YİMER has been providing a centralized complaint system for foreigners. YİMER will be available to Project stakeholders as an alternative and well-known channel for conveying their Project-related grievances and feedback directly to state authorities. Stakeholders can access to the YİMER through the below listed communication channels.

- Website: <http://www.yimer.gov.tr>
- Call Centre: 157
- Phone number: +90 312 157 11 22
- Fax number: +90 312 920 06 09

Also, complainants may, if they wish, submit their grievances to a higher authority through the following communication tools. Stakeholders can submit their grievances to the ILBANK through the below listed communication channels.

- Website: <https://www.ilbank.gov.tr/form/bilgiedinmeuluslararasi>
- E-mail: bilguidb@ibank.gov.tr and etikuidb@ilbank.gov.tr
- Phone Number: +90 312 508 70 00
- Address for Official Letter/Petition: ILBANK Department of International Relations, GM Team Emniyet Mahallesi Hipodrom Caddesi No:9/21 Yenimahalle/ANKARA- (letters must be marked as personal or confidential)

After the necessary actions are taken, ILBANK and the complainant will agree that the complaint is closed and the complainant will be informed that the complaint has been closed through the communication channel preferred by the complainant and together with any kind of supporting document (official letter, photograph, etc.).

If an agreement cannot be reached on the closure of the complaint, the complainant will be informed that he/she can apply other legal remedies (such as "Right to Appeal") as described in ILBANK's GM Policy⁴⁸. After the notification of the complainant about the appeal process, the complaint will be closed.

⁴⁸ <https://www.ilbank.gov.tr/form/bilgiedinmeuluslararasi>

MUNICIPAL SERVICES IMPROVEMENT PROJECT

8.2.1 Operational Flow of Grievance Mechanism

The operational flow of the GM is presented in Table 8-1 given below. A Sample Grievance Register Form is also provided in Table 8-2.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 8-1 Grievance Mechanism Flow Chart

Complaint Procedures	Requirement / Action
Receiving and recording grievances (meetings, request and complaint boxes, by phone or individual application)	<p>Filling out a complaint form.</p> <p>If necessary, the name of the complainant should be kept anonymous.</p>
Responding to complaints	<p>The Municipality will appoint a Community Communication Officer to establish and manage the subproject's grievance and feedback mechanism.</p> <p>The complaint will be evaluated. It will be examined in the field if necessary.</p> <p>Affected community representatives will be consulted depending on the type of complaint.</p> <p>Complaint response/resolution will be forwarded to the complainant.</p> <p>If not resolved, it will be forwarded to the Level 2* procedure or to the Civil Court of First Instance, depending on the complaint.</p>
Close a complaint	<p>Complaints are closed within fifteen (15) days from the date of application, unless an alternative agreement is made with the Complainant. If the grievances are not closed within fifteen (15) Business Days, the mitigating circumstances are documented and reported.</p>
If the complaint cannot be resolved	<p>The Level 2* GM procedure is followed by ILBANK as follows:</p> <p>Continuation of the complaint will be confirmed.</p> <p>The complaint will be evaluated by KOSKI and ILBANK will be informed.</p> <p>Complaint response / resolution will be communicated to the complainant by KASKI. ILBANK will monitor KOSKI for the smooth execution of the grievance mechanism. The reaction time at this level is thirty (30) days.</p> <p>If not resolved, the complainant will be directed to the Civil Court of First Instance.</p>
Reporting	<p>It will be ensured that all processes are carried out by the relevant department in accordance with the Complaint process.</p> <p>Results will be reported to management.</p>

**Level 2 is one of the complaint categories determined in ILBANK GM Policy. Refers to one of the following two complaints:*

(1) one off Project related grievance that will not affect the Project schedule or will not affect the reputation of Bank, or;(2) repeated, extensive and high-profile worker complaints that may jeopardize the Project or the reputation of the Bank.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Table 8-2 Sample Grievance Register Form

Date of Grievance	Name of Complainant	of the Subject Grievance	of Corrective Action	State of Grievance Closure	Date of Closure	of Remarks

8.2.2 World Bank Grievance Redress Service

Communities and individuals who believe that they are adversely affected by a World Bank supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their grievances to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. Information on how to submit complaints to the World Bank's corporate GRS is provided in the WB website: <http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service>. Information on how to submit complaints to the WB Inspection Panel can be reached through its website: www.inspectionpanel.org.

MUNICIPAL SERVICES
IMPROVEMENT PROJECT

Annexes

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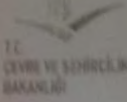
MUNICIPAL SERVICES IMPROVEMENT PROJECT

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MUNICIPAL SERVICES IMPROVEMENT PROJECT

Annex 3: Official Letter Regarding Out of Scope of EIA Regulation


T.C.
KONYA VALİLİĞİ
Çevre ve Şehircilik İl Müdürlüğü

Sayı : 47342952-220.03-E.8892
Konu : CED Muafiyeti.

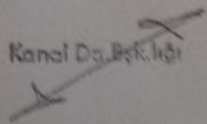
KONYA SU VE KANALİZASYON İDARESİ GENEL MÜDÜRLÜĞÜNE

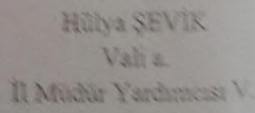
İlgi : a) Mora Çevre ve Orman Müh. San. Tic. Ltd. Şti.'nin 10/05/2018 tarihli dilekçesi.
b) 16/05/2018 tarihli ve 91849 Referans No'lu Başvuru.

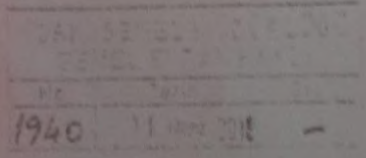
İlimiz İlgün İlçesi Şihbedrettin Mahallesi 440 Ada, 199 Parsel adresinde KOSKI Genel Müdürlüğü tarafından yapılması planlanan İlgün Atıksu Arıtma Tesisi (8.500 metreküp/gün, 46.000 kişi) projesi, 25/11/2014 tarih ve 29186 sayılı Resmi Gazete'de yayımlanarak yürürlüğe giren CED Yönetmeliği Listelerindeki eşik değerden az olduğu için kapsam dışı olarak değerlendirilmiştir.

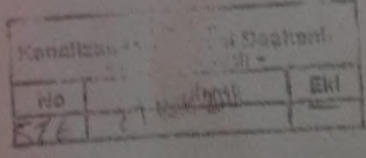
Ancak, planlanan yatırım ile ilgili olarak, 5491 sayılı kanunla değişik 2872 sayılı Çevre Kanunu ile bu Kanuna istinaden çıkarılan Yönetmeliklerin ilgili hükümlerine uyulması ve diğer mer'î mevzuat çerçevesinde öngörülen gerekli izinlerin alınması, ekolojik dengenin bozulmamasına, çevrenin korunmasına ve geliştirilmesine yönelik tedbirlere riayet edilmesi hususunda;

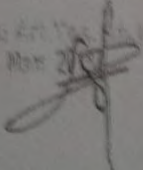
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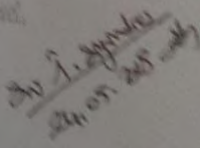

Kanak Dağcıoğlu
Adresli Kontrol Sorumlusu


Hülya ŞEVİK
Vali a.
İl Müdür Yardımcısı V.


1940 11 Mart 2018


Kanalizasyon...
No...
EKİ


11 Mart 2018


11 Mart 2018

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Annex 4: WWTP Project Approval Form

EK-3
ILGIN ATIKSU ARITMA TESİSİ PROJESİ ONAY FORMU

Belge No: **AAT01991**
Belge Tarihi: **13.09.2018**

ATIKSU ARITMA TESİSİNİN
Adı : İlgin Atıksu Arıtma Tesisi
Adresi : Şihbedrettin Mah. İlgin / KONYA
Vergi Numarası : MERAM V.D. 5800024777
Tel : 0332 221 61 00
Faks : 0332 235 46 24
E-Posta : ekoski@koski.gov.tr
Koordinatları : ED50 ile;
1(X:4236802.87 Y:408948.00); 2(X:4236961.93 Y:408944.83);
3(X:4237075.86 Y:408941.82); 4(X:4237081.42 Y:408936.41);
5(X:4237103.79 Y:408885.71); 6(X:4237123.40 Y:408834.70);
7(X:4237149.41 Y:408710.79); 8(X:4237035.05 Y:408651.38);
9(X:4237043.89 Y:408522.04); 10(X:4236776.28 Y:408461.02);
11(X:4237050.44 Y:408419.75); 12(X:4237063.91 Y:408416.33)

Üretim Sektörü:
Evsel Nitelikli Atıksular
Alt Sektör Adı:
-
Deşarj Std. Tablo No:
KAAY Tablo 1 ve Tablo 2
Deşarj Yeri ve Havzası:
Bulasan Çayı, Sakarya Havzası
AAT/DDD Kapasitesi:
I.Kademe: 7000 m³/gün
II.Kademe: 8500 m³/gün

RESMİ TEMASLARDA İŞLETMEYİ TEMSİL ETMEYE YETKİLİ İKİ ŞAHSİN
Adı : Serdar KOYUNCU Adı : İbrahim SİYİRDİCİ
Adresi : Nişantaşı Mah. Vatan Cad. Adresi : Nişantaşı Mah. Vatan Cad.
No: 2/A 42060 Selçuklu / KONYA No: 2/A 42060 Selçuklu / KONYA
Tel : 0332 221 61 00 Tel : 0332 221 61 00
Faks : 0332 235 46 24 Faks : 0332 235 46 24
E-Posta: serdar.koyuncu@koski.gov.tr E-Posta: ibrahim.siyirdici@koski.gov.tr

Proje onay dosyasının, doğru sağlıklı bilgilere havi olduğunu ve bu bilgilere ait tüm sorumluluğun aşağıda imzalan bulunan işletme, firma sorumlusu ve proje koordinatörü tarafından yüklenildiğini ve ayrıca işletmeyi temsile yetkili şahısların aynı sorumluluğu paylaştığını şimdiden kabul ve taahhüt ederiz.


İşletme Yetkilisinin; **Mahmet KOSEÖZLU** Etol Birim Müdür Yardımcısı
Adı Soyadı: **Mahmet KOSEÖZLU**
İmza ve Kaşesi: **Mahmet KOSEÖZLU**
Projeyi Hazırlayan Firma Yetkilisinin; **İrina ACAR**
Adı Soyadı: **İrina ACAR**
İmza ve Kaşesi: **İrina ACAR**

OBM DANIŞMANLIK
EĞT. MÜH. BİLŞ. BLG. İNŞ. SAN. TİC. LTD. ŞTİ.
Mebusevleri Mah. Ergin Sok. No: 28/8 Çankaya / ANKARA
Tel: 0312 212 50 05

AAT/DDD PROJESİNİ HAZIRLAYAN FİRMANIN			AAT/DDD PROJESİNİ ONAYLAYAN KURUMUN		
Adı, Adresi ve Telefonu			Adı, Adresi ve Telefonu		
OBM DANIŞMANLIK EĞT. MÜH. BİLŞ. BLG. İNŞ. SAN. TİC. LTD. ŞTİ. Mebusevleri Mah. Ergin Sok. No: 28/8 Çankaya / ANKARA TEL / FAX: 0312 212 50 05			T.C. Çevre ve Şehircilik Bakanlığı Çevre Yönetimi Genel Müdürlüğü		
AAT/DDD Projesini Hazırlayan Teknik Personelin			AAT/DDD Projesini İnceleyen Teknik Personelin		
Adı Soyadı	Mesleği	İmzası	Adı Soyadı	Mesleği	İmzası
Kubilay DUMAN	Çevre Müh.		Gülden BUDAK	Uzman	
Berkay ALA	Çevre Müh.		Yılmaz ŞENÖZLÜ	Çevre Müh.	
Ali ALTAY	İnşaat Müh.		Muhammed Barış PEKCAN	Şube Md. V.	
.../.../20...			12/09/2018		
Proje Koordinatörünün Adı Soyadı-İmzası Prof. Dr. İsmail Ayhan ŞENGİL			Projeyi Onaylayan Kurum Yetkilisinin Adı Soyadı-İmza ve Mühür Gürsel ERUL Geni. Bst. V.		

MUNICIPAL SERVICES
IMPROVEMENT PROJECT

Annex 5: Approved ETL Application Project

MEDAŞ MERAM ELEKTRİK DAĞITIM A.Ş.					
<i>25-07-2018 GÜN. ZARF - Zİ - 5846 ANI</i> İLE 5 YIL YÜRÜRLÜKTE KALMAK ÜZERE TASDİK EDİLMİŞTİR.					
MERAM ELEKTRİK DAĞITIM A.Ş. Sancak Mh. Yeni İstanbul Cd. No: 92 Selçuklu / KONYA Selçuk Vergi Dairesi: 833 003 0874 Ticaret Sicil No: 45211					
<i>4/11</i>					
 MEDAŞ MERAM ELEKTRİK DAĞITIM A.Ş.			PROJE FİRMASI/SORUMLUSU ROHAT ÇETİNKAYA ELEKTRİK MÜHENDİSİ MUSALLABAĞLARI MAH. YÜKSEK SK. NO: 7/18 SELÇUKLU / KONYA TEL: 0530 662 97 66 SELÇUK V.D. 2470336374		
İŞİN ADI: KOSKİ İLGİN ATIK SU ARITMA TESİSİ ENERJİ NAKİL HATTI PROJESİ İLGİN / KONYA			ÖLÇEK: 1/1000		
			PAFTA NO: 1		
PROJE SORUMLUSU:			<i>Rohat ÇETİNKAYA</i> Elektrik Mühendisi Ticaret Sicil No: 60101		
	ADI SOYADI	ÜNVAN	ODA NO	SMM NO	TARİH
ÇİZEN	ROHAT ÇETİNKAYA	ELEKTRİK MÜHENDİSİ	60101	06-42-60101	
ELK.MÜH	ROHAT ÇETİNKAYA	ELEKTRİK MÜHENDİSİ	60101	06-42-60101	
HAR.MÜH					

MUNICIPAL SERVICES
IMPROVEMENT PROJECT

Annex 6: Emergency Preparedness and Response Framework



Ilgın Wastewater Treatment Plant Project
Emergency Preparedness and Response Framework

MUNICIPAL SERVICES IMPROVEMENT PROJECT



CONTENT

CONTENT.....1

1 PURPOSE.....2

2 SCOPE.....2

3 RESPONSIBILITIES.....2

4 DEFINITIONS3

 4.1 Abbreviations3

 4.2 Management Definitions3

 4.3 Possible Emergencies4

5 PROJECT STANDARDS4

6 IMPLEMENTATION5

7 MONITORING.....5

8 TRAINING6

9 INSPECTION AND REPORTING.....6

MUNICIPAL SERVICES IMPROVEMENT PROJECT



1 PURPOSE

The purpose of this Emergency Preparedness and Response Framework (EPRF) is to mitigate the impacts of unpredictable emergencies that may occur during the construction and operation phases of Ilgın Wastewater Treatment Plant (WWTP), which is owned by Konya Water and Sewage Administration (KOSKI). These emergencies could be on the WWTP area itself and/or in the local settlements, such as natural disasters (fire, earthquake, lightning etc.), closure of roads, communication interruption, and incidents occur due to the inappropriate operation and maintenance.

In order to implement this Framework successfully, KOSKI will establish its own Emergency Preparedness and Response Plan (EPRP) in accordance with the provision of this EPRF, also constitute an Emergency Preparedness and Response Coordinator (EPRC) and Team (EPRT). Also, KOSKI will distribute the duties by providing that these personnel get necessary training.

2 SCOPE

This Framework summarizes the emergency planning activities of the KOSKI in relation with Ilgın WWTP. KOSKI's EPRP will cover all activities of the KOSKI together with contractor activities.

KOSKI requests the Contractors to prepare an EPRP in line with the scope of the field of activity and thus takes the necessary actions by determining the site-specific risks.

3 RESPONSIBILITIES

The responsibilities are specified below to successfully implement this EPRF and EPRP to be developed.

Plant Manager: All activities and actions carried out in Ilgın WWTP are the responsibility of the Plant Manager. Other duties and responsibilities of the Plant Manager within the scope of this Framework are defined as follows:

- Determination of EPRC and establishment of EPRT together with EPRC,
- Participation in annually arranged EPRP review meetings and approval of the ultimate EPRP,
- Approval of the convenience of the activities to be carried out in the emergency event which is not handled in the scope of this EPRP, and
- Examination of reports to be prepared after an emergency.

Emergency Preparedness and Response Coordinator (EPRC): EPRC is responsible for the implementation of actions developed in accordance with this Framework and related EPRP. Other duties and responsibilities of EPRC are summarized as following:

- Establishment of EPRT,
- Arrangement of necessary trainings for the personnel who will response in the emergency,
- Assigning duties of the EPRT members,
- Participation in the annual EPRP review meetings, making the necessary arrangements and providing that the updated copy is accessible to all participants,
- Organizing drills periodically to control the functionality and suitability of this Framework,
- Identification of people to be called according to the type of emergency and putting information of this people up as written in a way that information will be available to everyone,

MUNICIPAL SERVICES IMPROVEMENT PROJECT



- Updating the list of people to be called, in case of a change in the contact information of EPRT members,
- Ensuring that EPRT works in compliance with this Framework and related EPRP during an emergency,
- If this Framework and related EPRP is found to be insufficient during an emergency, taking necessary additional actions by getting permission from the Plant Manager, and updating this Framework and related EPRP by adding these actions after emergency ends, and
- Preparing a monitoring report together with the members of EPRT and presenting it to the Plant Manager after the emergency ends.

Emergency Preparedness and Response Teams (EPRT): EPRT is the general name given to the teams consisting of personnel working under EPRC and having different abilities. EPRT consist of the following teams:

- Search, Rescue, Evacuation Team,
- Fire Fighting Team, and
- First Aid Team.

The duties and responsibilities of EPRT are as follows:

- Participating to trainings and drills organized for the implementation of this Framework and related EPRP,
- Revision of this Framework and related EPRP annually with EPRC,
- Informing EPRC during emergency,
- Taking necessary actions according to this Framework and related EPRP, by relevant team according to the type of emergency,
- Informing people during an emergency, and
- Revision of the situation with EPRC after emergency ends and contribution to the preparation of an observation report.

4 DEFINITIONS

4.1 Abbreviations

EPRC:	Emergency Preparedness and Response Coordinator
EPRF:	Emergency Preparedness and Response Framework
EPRP:	Emergency Preparedness and Response Plan
EPRT:	Emergency Preparedness and Response Teams
KOSKİ:	Konya Water and Sewage Administration
WWTP:	Wastewater Treatment Plant

4.2 Management Definitions

Incident:	A situation that may lead to business interruption, loss, emergency or crisis.
Emergency:	Unforeseen crisis situation which emerged suddenly and requires emergency action.

Ilgın Wastewater Treatment Plant Project
Emergency Preparedness and Response Framework

MUNICIPAL SERVICES IMPROVEMENT PROJECT



Disaster: It is an event that may cause long-term interruption in activities or systems and caused by human, nature or other factors.

Abnormal Situation: Situations that interrupts the main activity of the Project.

Department: Common name used to define Unit, Region and Branch.

4.3 Possible Emergencies

Possible emergency situations for Ilgin WWTPs are defined as follows:

- Incidents,
- Fire,
- Bomb Call Emergency,
- Workplace Violence Emergency,
- Armed Robbery Emergency,
- Seizure/Hostage-Taking Emergency,
- Earthquake Emergency,
- Flood Emergency,
- Storm and Hurricane Emergency,
- Building Collapse/ Landslide Emergency,
- Severe Weather Emergency,
- Strike Emergency,
- Explosion Emergency,
- Suicide Emergency,
- Leakage/Spill Emergency,
- Drowning Emergency,
- Poisoning Emergency,
- Vector-borne, Water Borne and Infectious Diseases Emergency,
- Community Health and Safety Emergency, and
- Bypass Emergency.

EPRP that will be prepared by the Contractors will cover at least all of the above-mentioned emergencies. The Contractors' EPRP will be archived as an Annex to this document.

5 PROJECT STANDARDS

All activities conducted by KOSKİ shall be carried out in accordance with the applicable standards. These standards are listed as follows:

- Applicable Turkish Standards
 - Communique on Major Accident Prevention Policy Paper (Official Gazette No:29435, Date: 04.08.2015)
 - Prevention of Major Industrial Accidents and Regulation on Reducing Effects (Official Gazette No: 28867, Date: 30.12.2013)
 - Occupational Health and Safety Law No:6331 (Official Gazette No: 28339, Date: 30.06.2012)

Ilgin Wastewater Treatment Plant Project
Emergency Preparedness and Response Framework

MUNICIPAL SERVICES IMPROVEMENT PROJECT



- Regulation on Emergency Situations at Workplace (Official Gazette No: 28681, Date: 18.06.2013)
 - Other commitments to Turkish State Institutions
 - WBG's Environmental and Social Framework and WBG's EHS Guidelines
 - Applicable KOSKİ standards

If there is a difference between Turkish national legislations and related international standards, KOSKİ shall comply with the stricter ones.

6 IMPLEMENTATION

This Framework shall be reviewed annually during the construction and operation periods to reflect the changing conditions or operational needs of WWTP and necessary revisions shall be done. This Framework shall be updated without waiting for the annual updating period in case of an increase in the service area of the plant and adding new units to plant's process.

This Framework and related EPRP shall be reviewed after each incident and drill, and improvement opportunities shall be identified. Plant Manager is responsible for the coordination of examination and revision of EPRP to be developed. This revision will focus on accuracy of the actual information such as information about people to be notified in case of an emergency and information about personnel who are appointed as the members of EPRC and EPRT. All reviews and revisions which will be done in this Framework and related EPRP and its annexes shall be performed in accordance with the requirements of the Turkish legislation and Project Standards.

7 MONITORING

The performance indicators are defined as follow in order to measures the performance of implementation of this Framework.

- Number of emergencies which trigger this Framework
- Number of Emergency Preparedness and Response training of employees and specific training for emergency response teams
- Number of emergency drills conducted
- Number of review and update of EPRP and its procedures (in routine operation without any incident/emergency)
- Number of meetings with authorities and emergency services
- Number of nonconformities to emergency prevention and preparedness action

The fundamental monitoring activities, which are proposed under this Framework and related EPRP, are summarized in the table below.

Monitoring Action/Measure	Monitoring Tools	Time Interval
Number of emergencies that have triggered the emergency response	Incident/emergency reports	Post incident/emergency
Emergency Preparedness and Response trainings of employees and specific trainings for emergency response teams	Training records	Annual

MUNICIPAL SERVICES IMPROVEMENT PROJECT



Monitoring Action/Measure	Monitoring Tools	Time Interval
Number of emergency drills conducted	Drill records	Biannual
Review and update of EPRP and its procedures (in routine operation without any incident/emergency)	EPRP review and update records	Biannual
Meeting with authorities and emergency services	Meeting records with local authorities and emergency services, signed memorandum of understanding, if any	Annual
Nonconformities recorded to emergency prevention and preparedness action	Nonconformity Records	Biannual

8 TRAINING

Ilgm WWTP management provides basic training on health, safety, and security to all of its employees, contractors, and visitors.

There shall be a section related to emergency preparedness and response in workplace orientation trainings and the section shall outline the contents of this Framework and related EPRP. In addition to this, training shall be organized for all employees in order to adopt this Framework and related EPRP. This training shall be renewed once a year. Moreover, special trainings shall be organized for the operators and members of EPRT. In these special trainings, operators shall be trained about emergency preparedness and response related to their work, while members of the EPRT shall get trainings about practical firefighting, search-rescue and communication with local organizations and emergency services. All these trainings shall be recorded.

In addition to theory, tabletop drills shall be arranged at least once a year and full-fledged drills shall be arranged biannually.

9 INSPECTION AND REPORTING

Monthly inspections, which shall be performed within the scope of this Framework and related EPRP, shall be carried out by a person who is authorized by EPRC. In addition to plant related topics, off-site and community health and safety issues shall also be considered during these inspections. When the authorized person detects any nonconformity or incident, he/she shall inform the EPRC and shall keep the nonconformity report. The identified nonconformities shall be recorded with its recommended corrective actions and corrective actions shall be monitored.

All incidents and identified nonconformities shall be reported and recorded according to the requirements of KOSKI.

The functionality and suitability of this Framework and related EPRP shall be assessed periodically with internal inspections.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Annex 7: Measurement and Analysis Results

Soil Quality Analysis Results



Dokay
LABORATUVAR
DOKAY LABORATUVAR VE MÜHENDİSLİK HİZMETLERİ LTD. ŞTİ.
Ata Mahallesi Kabil Caddesi No:140/A 06460 Çankaya - ANKARA
Tel: 0 312 475 71 31 (pbx) Faks: 0 312 475 71 30 e-mail: dokaylab@dokay.info.tr



Test
TS EN ISO/IEC 17025
AB-0062-T

ÖLÇÜM ve ANALİZ RAPORU

MÜŞTERİ BİLGİLERİ	
Müşteri Adı : İO ENVIRONMENTAL SOLUTIONS RE-DE LTD. ŞTİ.	Müşteri Adresi : BEŞTEPE MAH. MERİÇ CAD. B BLOK APT NO: 5 B/27 YENİMAHALLE/ANKARA
İlgili Kişi :	Tel/Faks/E-Posta : (0312) 215 98 36 / () / info@iocevre.com
LABORATUVAR BİLGİLERİ	
Analiz Yapıldığı Yer :	Dokay Laboratuvarı, Ata Mahallesi Kabil Caddesi No: 140/A 06460 Çankaya/ANKARA Tel: 0 312 475 71 31 Faks: 0 312 475 71 30 E-posta: dokaylab@dokay.info.tr
Taşeron Laboratuvar :	Bu testler için taşeron laboratuvar kullanılmamıştır.
NOT: 1. Deney laboratuvarı olarak faaliyet gösteren DOKAY Laboratuvarı, Türk Akreditasyon Kurumu (TÜRKAK)tan AB-0062-T ile TS EN ISO/IEC 17025 (12-04-2012) standardına göre akredite edilmiştir. 2. TÜRKAK deney raporlarının tanınırlığı konusunda Avrupa Akreditasyon Birliği (EA) ile Çok Taraflı Anlaşma ve Uluslararası Laboratuvar Akreditasyon Birliği (ILAC) ile karşılıklı tanıma anlaşması imzalamıştır. 3. Dokay Laboratuvarı, Y-06/104/2015 Belge Numaralı Çevre Ölçüm ve Analiz Yeterlilik Belgesine sahiptir. 25 Aralık 2013 tarih ve 28862 sayılı Resmî Gazete'de yayımlanan Çevre Ölçüm ve Analiz Laboratuvarları Yeterlilik Yönetmeliği'ne göre ölçüm ve/veya analiz yapmaya ve bu çerçevede rapor hazırlamaya yetkilidir. 4. Raporla gerçekleştirilen görüş ve yorumlar, deneyi gerçekleştirilen numune elde edilen analiz sonuçlarına dayanmaktadır. 5. Bu analiz raporu, sahada yapılan örnekleme ve ölçümler ile laboratuvara gelen numuneyi temsil eder. 6. Numune alındığı şekli ile deney tabii tutulur. Numune ile ilgili bilgiler müşteri tarafından beyan edilmiştir. 7. Bu rapor, DOKAY Laboratuvarı'nın izni olmadan kısmen veya tamamen kopyalanıp çoğaltılamaz. 8. İmzasız Analiz ve Ölçüm Raporları geçersizdir. 9. Bu rapor, 1 (bir) asıl nüsha olarak hazırlanmıştır.	
NUMUNE BİLGİLERİ	
Rapor No: DLT-242 Rapor Tarihi: 02.10.2020 Numunenin Alındığı Tarih/Saat: 03.09.2020 15:00 Numunenin Laboratuvara Geliş Tarihi: 04.09.2020 15:51 Numunenin Alınış Amacı: Özel Talep Numune Cinsi: Toprak Numunesi Numunenin Koruma ve Taşıma Durumu: Isı Korumalı (+4°C) Mühür Durumu/Mühür No: Mühürsüz Numune Kabı/Numune Miktarı: Plastik Poşet (1 kg) x 1, Cam Kavanoz (250 mL) x 1, Cam Kavanoz (1L) x 1 Numuneyi Alan: DOKAY Laboratuvar Yetkili Personeli, Ali Murat COŞAR tarafından alınmıştır. Numune Alınış Şekli / Metodu: Anlık / TS 9923 Numune Alım Yeri ve Koordinatları: Konya İlgin Nokta-1, Zone 36 S / Doğu - 408646 , Kuzey - 4236915 Analiz Başlangıç ve Bitiş Tarihi: 10.09.2020 - 29.09.2020 Numune Örnekleme Sırasında Hava Şartları: Açık / 33,0°C Analiz Süresi Boyunca Laboratuvar Ortam Şartları: Nem Aralığı : %38 -%43 Sıcaklık Aralığı : 20,3°C - 23,8°C	

c.b. c.s.

Bu rapor çevre mevzuatına ilişkin resmi işlemlerde kullanılamaz.
Bu rapor toplam 2 sayfadan oluşmuştur.



LB-005/F01-R22 (31.12.2019)
Yayın Tarihi: 07.05.2005
1 / 2

MUNICIPAL SERVICES IMPROVEMENT PROJECT

AB-0062-T

DLT-242

10.2020

ÖLÇÜM ve ANALİZ RAPORU

RAPOR NO: DLT-242

ÖLÇÜM VE ANALİZ SONUÇLARI			
Parametre	Birim	Analiz Sonucu	Metod
Toplam Organik Halojen (TOX)	-	-	-
C10-C40 Aralığındaki Hidrokarbonların Tayini ⁽¹⁾	mg/kg	298	TS EN 14039
Arsenik(As) ⁽¹⁾	mg/kg	< 4,8 ⁽²⁾	EPA 3051 A, EPA 200.7
Kadmium(Cd) ⁽¹⁾	mg/kg	< 0,0020 ⁽²⁾	EPA 3051 A, EPA 200.7
Krom(Cr) ⁽¹⁾	mg/kg	22,2	EPA 3051 A, EPA 200.7
Bakır(Cu) ⁽¹⁾	mg/kg	30,3	EPA 3051 A, EPA 200.7
Cıva (Hg) ⁽¹⁾	mg/kg	< 7,9 ⁽²⁾	EPA 3051 A, İşletme İçi Metod MET-LB-002 IN-LB-082
Nikel(Ni) ⁽¹⁾	mg/kg	21,7	EPA 3051 A, EPA 200.7
Kurşun(Pb) ⁽¹⁾	mg/kg	17,5	EPA 3051 A, EPA 200.7
Çinko(Zn) ⁽¹⁾	mg/kg	112,0	EPA 3051 A, EPA 200.7

Açıklamalar:

(1) Bu Parametre TÜRKAK akreditasyon kapsamımız dahilindedir.

(2) MDL, Metod Dedeksiyon Limiti

(* Belirtilen parametre, işbirliği kapsamında yetkili laboratuvara gönderilmiş olup, numunenin analiz sonuçlarını ve analiz metodlarını içeren, işbirliği yapılan laboratuvara ait IST.TP.20.0922012 numaralı analiz raporu ekte verilmiştir.

NOT: Toprak Kirliliğinin Kontrolü Ve Noktasal Kaynaklı Kirlenmiş Sahalara Dair Yönetmelik Tablo 2. Potansiyel Toprak Kirleticili Faaliyetler ve Faaliyete Özel Kirlilik Gösterge Parametreleri 4120 NACE Kodlu Faaliyete Özel Kirleticili Gösterge Parametreleri analizleri gerçekleştirilmiştir.

Kısaltmalar:

TS : Türk Standardı

EN : European Norm

EPA : Environmental Protection Agency

Rapor Sorumlusu
CANSU SÜREL

Laboratuvar Yöneticisi
GİGDEM BAL

Yayımlandığı Tarih: 05.10.2020

Bu rapor çevre mevzuatına ilişkin resmi işlemlerde kullanılamaz.
Bu rapor toplam 2 sayfadan oluşmuştur.

LB-005/F01-R22 (31.12.2019)
Yayın Tarihi: 07.05.2005
2 / 2

MUNICIPAL SERVICES IMPROVEMENT PROJECT



ARTEK MÜHENDİSLİK Çevre Ölçüm ve Danışmanlık Hiz. Tic. A.Ş. ÇEVRE LABORATUVARI

ANALİZ RAPOR

Mehmet Akif Mah. Elalmış Cad. Tarık Buğra Sok. No:15 - Ümraniye/Türkiye
Tel: +90 216 499 02 49 (Pbx) Faks: +90 216 499 28 68
www.artekcevre.com.tr

AB-0012-T
IST.TP.20.0922012
30/09/2020

Rapor No / Tarihi	IST.TP.20.0922012 / 30/09/2020		
Müşterinin Adı	DOKAY LABORATUVAR VE MÜHENDİSLİK HİZMETLERİ LTD. ŞTİ.		
Müşterinin Adresi	ATA MAHALLESİ, KABILCADDE 140/ A 06460 DİKMEN ÇANKAYA/ANKARA Ankara/Türkiye		
Numune No	IST.TP.20.0922012	Numunenin Alındığı Yer	KONYA ILGIN NOKTA 1 (DLT-242)
Müşteri Numune No	DLT-242	Numunenin Alınma Tarihi - Saati	03/09/2020 15:00:00 03/09/2020 15:00:00
Numune Durum	TOPRAK	Numuneye Uygulanan İşlemler	Soğuk Zincir
Numuneyi Alan	DOKAY	Numunenin Kabul Tarihi-Saati	22/09/2020 - 09:30:45
Numunenin Alınma Şekli	Anlık	Analiz Başlangıç / Bitiş Tarihi	22/09/2020 29/09/2020
Numunenin Getirilişi	Kargo		
Numune Miktarı / Ambalajı	1000 gr Cam Kavanoz		

Metot Numarası	Metot Adı - Tarih
EVS EN 16166	Determination of Adsorbable Organically Bound Halogens (AOX)- (2012)

ARTEK MÜHENDİSLİK
ÇEVRE ÖLÇÜM VE DAN.HİZ.TİC.A.Ş.

İmzasız ve kaşesiz raporlar geçersizdir. Raporlarda yer alan sonuçlar sadece incelenen numuneye aittir. Bu rapor laboratuvarımızın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. Bu raporun hiçbir bölümü tek başına veya ayrı ayrı kullanılamaz. Numune alma ve taşıma işlemleri Numune Alma Prosedürüne, Numune Alma Talimatına ve numune alma planına uygun olarak gerçekleştirilmiştir. Analiz yapılan numunede, numunenin alınığında laboratuvarımıza teslimine kadar olan prosedürlerin ve bakılması istenen grup ve parametrelerin belirlenmesinde teknik ve hukuki sorumluluk numuneyi, örneklemeyi alana aittir. Bu rapor çevre mevzuatına ilişkin resmi işlemlerde kullanılamaz.

Sayfa (1 / 2

FORM NO:FR.510.01-01
YAYIN TARİHİ:14.02.2013

REV.NO: 3
REV.TAR.: 03.03.2014

MUNICIPAL SERVICES IMPROVEMENT PROJECT



ARTEK MÜHENDİSLİK
Çevre Ölçüm ve Danışmanlık Hiz. Tic. A.Ş.
ÇEVRE LABORATUVARI

ANALİZ RAPOR

Firma Adı	DOKAY LABORATUVAR VE MÜHENDİSLİK HİZMETLERİ LTD. ŞTİ.		
Rapor No / Tarihi	IST.TP.20.0922012 / 30/09/2020		
Analiz Parametreleri	Analiz Metodu	Birim	Analiz Sonucu
Toplam Organik Halojenler (TOX) (*)	EVS EN 16166	mg/Kg	62

* İşaretili parametreler Bakanlık kapsamı dışında, TÜRKAK kapsamında raporlanmıştır.

Bu rapor 1(bir) nüsha halinde hazırlanıp, müşteriye gönderilmiştir. Bu rapor laboratuvarımız tarafından elektronik ortamda
Açıklamalar : arşivlenmektedir.

Sorumlu İmzalar :

Özlem GÜLER
Laboratuvar Birim Yöneticisi

Melahat AYDIN
Laboratuvar Müdürü
ARTEK MÜHENDİSLİK
ÇEVRE ÖLÇÜM VE DAN.HIZ.TİC.A.Ş

İmzasız ve kaşesiz raporlar geçersizdir. Raporlarda yer alan sonuçlar sadece incelenen numuneye aittir. Bu rapor laboratuvarımızın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. Bu raporun hiçbir bölümü tek başına veya ayrı ayrı kullanılamaz. Numune alma ve taşıma işlemleri Numune Alma Prosedürüne, Numune Alma Talimatına ve numune alma planına uygun olarak gerçekleştirilmiştir. Analiz yapılan numunede, numunenin alınışından laboratuvarımıza teslimine kadar olan prosedürlerin ve bakılması istenen grup ve parametrelerin belirlenmesinde teknik ve hukuki sorumluluk numuneyi, örnekleme alanına aittir. Bu rapor çevre mevzuatına ilişkin resmi işlemlerde kullanılamaz.

Sayfa (2 / 2

FORM NO:FR.510.01-01
YAYIN TARİHİ:14.02.2013

REV.NO: 3
REV.TAR.: 03.03.2014

Surface Water Analysis Results

Annexes

MUNICIPAL SERVICES IMPROVEMENT PROJECT



DOKAY LABORATUVAR VE MÜHENDİSLİK HİZMETLERİ LTD. ŞTİ.
Ata Mahallesi Kabil Caddesi No:140/A 06460 Çankaya - ANKARA
Tel: 0 312 475 71 31 (pbx) Faks: 0 312 475 71 30 e-mail: dokaylab@dokay.info.tr



AB-0062-T

DLS-6768

10.2020

ÖLÇÜM ve ANALİZ RAPORU

MÜŞTERİ BİLGİLERİ	
Müşteri Adı : İO ENVIRONMENTAL SOLUTIONS RE-DE LTD. ŞTİ.	Müşteri Adresi : BEŞTEPE MAH. MERİÇ CAD. B BLOK APT NO: 5 B/27 YENİMAHALLE/ANKARA
İlgili Kişi :	Tel/Faks/E-Posta : (0312) 215 98 36 / () / info@iocevre.com
LABORATUVAR BİLGİLERİ	
Analizin Yapıldığı Yer :	Dokay Laboratuvarı, Ata Mahallesi Kabil Caddesi No: 140/A 06460 Çankaya/ANKARA Tel: 0 312 475 71 31 Faks: 0 312 475 71 30 E-posta: dokaylab@dokay.info.tr
Taşeron Laboratuvar :	Bu testler için taşeron laboratuvar kullanılmamıştır.
NOT: 1. Deney laboratuvarı olarak faaliyet gösteren DOKAY Laboratuvarı, Türk Akreditasyon Kurumu (TÜRKAK)'tan AB-0062-T ile TS EN ISO/IEC 17025 (12-04-2012) standardına göre akredite edilmiştir. 2. TÜRKAK deney raporlarının tanınırlığı konusunda Avrupa Akreditasyon Birliği (EA) ile Çok Taraflı Anlaşma ve Uluslararası Laboratuvar Akreditasyon Birliği (ILAC) ile karşılıklı tanıma anlaşması imzalamıştır. 3. Dokay Laboratuvarı, Y-06/104/2015 Belge Numaralı Çevre Ölçüm ve Analiz Yeterlilik Belgesine sahiptir. 25 Aralık 2013 tarih ve 28862 sayılı Resmî Gazete'de yayımlanan Çevre Ölçüm ve Analiz Laboratuvarları Yeterlilik Yönetmeliği'ne göre ölçüm ve/veya analiz yapmaya ve bu çerçevede rapor hazırlamaya yetkilidir. 4. Raporlarda gerçekleştirilen görüş ve yorumlar, deneyi gerçekleştiren numunede elde edilen analiz sonuçlarına dayanmaktadır. 5. Bu analiz raporu, sahada yapılan örnekleme ve ölçümler ile laboratuvara gelen numuneyi temsil eder. 6. Numune alındığı şekli ile deneye tabi tutulur. Numune ile ilgili bilgiler müşteri tarafından beyan edilmiştir. 7. Bu rapor, DOKAY Laboratuvarı'nın izni olmadan kısmen veya tamamen kopyalanıp çoğaltılamaz. 8. İmzasız Analiz ve Ölçüm Raporları geçersizdir. 9. Bu rapor, 1 (bir) asıl nüsha olarak hazırlanmıştır.	
NUMUNE BİLGİLERİ	
Rapor No: DLS-6768 Rapor Tarihi: 02.10.2020 Numunenin Alındığı Tarih/Saat: 03.09.2020 16:00 Numunenin Laboratuvara Geliş Tarihi: 04.09.2020 15:57 Numunenin Alınış Amacı: Özel Talep Numune Cinsi: Yüzeysel Su Numunesi Numunenin Koruma ve Taşıma Durumu: Isı Korumalı (+4°C), Kimyasal Koruma (H ₂ SO ₄) (+4°C), Kimyasal Koruma (ZnAc) (+4°C), Kimyasal Koruma Mühür Durumu/Mühür No: Mühürsüz Numune Kabı/Numune Miktarı: HDPE Şişe (1L) x 1, HDPE Şişe (1L) x 4, Cam Şişe (1L) x 3, HDPE Şişe (1L) x 1 Numuneyi Alan: DOKAY Laboratuvar Yetkili Personeli, Ali Murat COŞAR tarafından alınmıştır. Numune Alınış Şekli / Metodu: Anlık / TS ISO 5667-6 Numune Alım Yeri ve Koordinatları: Konya İlgün Nokta-1, Zone 36 S / Doğu - 410238 , Kuzey - 4237141 Analiz Başlangıç ve Bitiş Tarihi: 03.09.2020 - 21.09.2020 Numune Örnekleme Sırasında Hava Şartları: Açık / 32,0°C Analiz Süresi Boyunca Laboratuvar Ortam Şartları: Nem Aralığı : %38 -%42 Sıcaklık Aralığı : 21,0°C - 23,8°C	

G.B C.S.

Bu rapor çevre mevzuatına ilişkin resmi işlemlerde kullanılamaz.
Bu rapor toplam 3 sayfadan oluşmuştur.

LB-005/F01-R22 (31.12.2019)
Yayın Tarihi: 07.05.2005
1 / 3

MUNICIPAL SERVICES IMPROVEMENT PROJECT



DOKAY LABORATUVAR VE MÜHENDİSLİK HİZMETLERİ LTD. ŞTİ.
Ata Mahallesi Kabil Caddesi No:140/a 06460 Çankaya - ANKARA
Tel: 0 312 475 71 31 (pbx) Faks: 0 312 475 71 30 e-mail: dokaylab@dokay.info.tr



Taahhüt
TS EN ISO/IEC 17025
AB-0062-T

AB-0062-T

DLS-6768

10.2020

ÖLÇÜM ve ANALİZ RAPORU

RAPOR NO: DLS-6768

ÖLÇÜM VE ANALİZ SONUÇLARI							
Parametre	Birim	Analiz Sonucu	I (çok iyi)'	II (iyi)'	III (orta)'	IV (zayıf)'	Metod
pH ^{(2)*}	-	7,11(28,4°C)	6-9	6-9	6-9	6-9	TS EN ISO 10523
İletkenlik (EC) ^{(2)**}	µS/cm	1542	< 400	1000	3000	> 3000	SM 2510 B
Renk ⁽²⁾	m ⁻¹	RES 436 nm:3,1 RES 525 nm:2,0 RES 620 nm:1,3	RES 436 nm: ≤1,5 RES 525 nm: ≤1,2 RES 620 nm: ≤0,8	RES 436 nm: 3 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	RES 436 nm: > 4,3 RES 525 nm: > 3,7 RES 620 nm: > 2,5	TS EN ISO 7887 B
Çözünmüş Oksijen ^{(2)**}	mg/L	4,92(%75,1)	> 8	6	3	< 3	ASTM D 888
Kimyasal Oksijen İhtiyacı (KOİ) ⁽²⁾	mg/L	100	< 25	50	70	> 70	SM 5220 B
Biyolojik Oksijen İhtiyacı (BOİ) ⁽²⁾	mg/L	34	< 4	8	20	> 20	SM 5210 B
Amonyum Azotu (NH ₄ -N) ⁽²⁾	mg/L	16,2	< 0,2	1	2	> 2	SM 4500-NH ₃ B, SM 4500-NH ₃ F
Toplam Azot ⁽²⁾	mg/L	31,4	< 3,5	11,5	25	> 25	TS EN 12260
Nitrat Azotu (NO ₃ -N) ⁽²⁾	mg/L	0,103	< 3	10	20	> 20	SM 4500 NO ₃ -E
Toplam Kjeldahl Azotu (TKN) ⁽²⁾	mg/L	17	< 0,5	1,5	5	> 5	SM 4500-NORG B
Toplam Fosfor (P) ⁽²⁾	mg/L	2,3	< 0,08	0,2	0,8	> 0,8	SM 4500-P B, SM 4500-P E
Orto Fosfat Fosforu (PO ₄ -P) ⁽²⁾	mg/L	0,15	< 0,05	0,16	0,65	> 0,65	SM 4500-P E
Florür ⁽²⁾	µg/L	480	≤1000 µg/L	1500 µg/L	2000 µg/L	> 2000 µg/L	SM 4500-F B, SM 4500-F D
Mangan (Mn) ⁽²⁾	µg/L	50	≤100 µg/L	500 µg/L	3000 µg/L	> 3000 µg/L	EPA 200.7, SM 3030 D, SM 3030 K
Selenyum (Se) ⁽²⁾	µg/L	< 10 ⁽³⁾	≤10 µg/L	15 µg/L	20 µg/L	> 20 µg/L	EPA 200.7, SM 3030 D, SM 3030 K
Sülfür ⁽²⁾	µg/L	5400	≤2 µg/L	5 µg/L	10 µg/L	> 10 µg/L	SM 4500 S-2 D
Yağ ve Gres ⁽²⁾	mg/L	< 10 ⁽³⁾	< 0,2	0,3	0,5	> 0,5	TS 7887
Askıda Katı Madde (AKM) ⁽²⁾	mg/L	39	-	-	-	-	TS EN 872

Açıklama:
(1) Yerüstü Su Kalitesi Yönetmeliğinde Değişiklik Yapılmasına Dair Yönetmelik, Ek-5 Yerüstü Su Kütlelerinde Bazı Parametreler İçin Çevresel Kalite Standartları ve Kullanım Maksatları, Tablo 2 : Kıtaiçi Yerüstü Su Kaynaklarının Genel Kimyasal ve Fizikokimyasal Parametreler Açısından Sınıflarına Göre Kalite Kriterleri (R.G. Tarihi: 10.08.2016, R.G. Sayısı: 29797)
(2) Bu Parametre TÜRKAK akreditasyon kapsamımız dahilindedir.
(3) MDL, Metod Dedeksiyon Limiti
(**) DOKAY Laboratuvar yetkili personeli tarafından sahada ölçülmüştür.

G.B C.S.

Bu rapor çevre mevzuatına ilişkin resmi işlemlerde kullanılamaz.
Bu rapor toplam 3 sayfadan oluşmuştur.



LB-005/F01-R22 (31.12.2019)
Yayın Tarihi: 07.05.2020
2 / 3

MUNICIPAL SERVICES IMPROVEMENT PROJECT

AB-0062-T

DLS-6768

10.2020

ÖLÇÜM ve ANALİZ RAPORU

RAPOR NO: DLS-6768

Kısaltmalar:

SM : Standart Metot(Standard Methods For The Examination Of Water And Wastewater 23st Edition: 2017)
TS : Türk Standardı
EN : European Norm
ISO : International Organization For Standardization
EPA : Environmental Protection Agency
ASTM : American Society for Testing and Materials

Rapor Sorumlusu
CANSU SÜREL

Laboratuvar Yöneticisi
CİSDEM BAL

Yayımlandığı Tarih: 05.10.2020

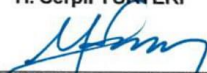
Bu rapor çevre mevzuatına ilişkin resmi işlemlerde kullanılamaz.
Bu rapor toplam 3 sayfadan oluşmuştur.

LB-005/F01-R22 (31.12.2019)
Yayın Tarihi: 07.05.2005
3 / 3

Background Noise Measurement Results

Annexes

MUNICIPAL SERVICES IMPROVEMENT PROJECT

 DOKAY Laboratuvar ve Mühendislik Hizmetleri Ltd. Şti. Ata Mah. Kabil Cad. 140/A 06460 Çankaya/Ankara Telefon: 0(312) 475-7131 Faks: 0(312) 475-7130 e-posta: dokaylab@dokay.info.tr		 TÜRKAK TST TS EN ISO/IEC 17025 AB-0062-T AB-0062-T DKL-20/G953 10.2020
GÜRÜLTÜ ÖLÇÜM RAPORU (DKL-20/G953)		
Müşterinin Adı ve Adresi	IO ENVIRONMENTAL SOLUTIONS RE-DE LTD. ŞTİ. Beştepe Mah. Meriç Caddesi B Blok Apt No:5B / 27 Yenimahalle /Ankara Tel : (312) 215 98 36	
İstek/Proje Numarası	Dokay Proje Kod No: 019.01.03.136	
Ölçüm İle İlgili Açıklamalar	TS 9315 ISO 1996-1, TS ISO 1996-2 Standartlarına uygun olarak CEM DT-173 (Seri No: 181005667) cihazı ile 2 noktada ölçüm yapılmıştır. Ölçüm sonuçları Tablo 3 ve 4'de verilmiştir.	
Ölçüm Yeri	Tablo 2'de verilmiştir. (ILGIN AAT)	
Ölçüm Tarihi	02 - 03 Eylül 2020	
Yetkili Ölçüm Personeli	Ali Murat COŞAR	
Deney Şartları	Ölçümler 989 mbar ve 33 ° C 'de yapılmıştır.	
Raporun Sayfa Sayısı	5 Sayfa	
<i>Deney Laboratuvarı olarak faaliyet gösteren DOKAY Çevre Laboratuvarı, Türk Akreditasyon Kurumu (TÜRKAK) tarafından TS-EN-ISO/IEC-17025 Standardına göre akredite edilmiştir. TÜRKAK deney raporlarının tanınması konusunda Avrupa Akreditasyon Birliği (EA) ve Uluslararası Laboratuvar Akreditasyon Birliği (ILAC) ile karşılıklı tanınma antlaşmasını imzalamıştır.</i>		
Yetkili Ölçüm Personeli Ali Murat COŞAR 	Yetkili Raporlama Personeli Elif KEMAL 	Laboratuvar Yöneticisi Çiğdem BAL 
Mühür Tarih  06.10.2020	Laboratuvar Kalite Sorumlusu H. Serpil YURTERİ 	Şirket Müdürü Prof. Dr. Coşkun YURTERİ 

Bu raporda bulunan ölçüm sonuçları sadece ölçümün yapıldığı konumlara ait olup, raporda yapılmış olan yorum ve öneriler raporun bütünü dışında kullanılamaz. Bu rapor, DOKAY'ın yazılı izni olmaksızın kısmen ya da tamamen çoğaltılamaz. Damgasız ve imzasız raporlar geçerli değildir.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Tablo 1 Kısaltmalar

ÇGDYY	Çevresel Gürültünün Değerlendirilmesi ve Yönetimi Yönetmeliği: Haziran 2010
dBA	A-ağırlıklı desibel (İnsan işitme sisteminin en çok duyarlı olduğu orta ve yüksek frekanslara daha fazla ağırlık veren ses düzeyi ölçütü).
EN	European Norm
ISO	International Organization for Standardization
LA_{akşam}	A-ağırlıklı akşam gürültü seviyesi (Saat 19:00 ile 23:00 arasında düzeyleri değişim gösteren eşdeğer gürültünün enerji açısından eşdeğeri olan sabit düzey).
LA_{eq}	A-ağırlıklı eşdeğer gürültü seviyesi (Belli bir süre içinde düzeyleri değişim gösteren gürültünün enerji açısından eşdeğeri olan sabit düzey).
LA_{gece}	A-ağırlıklı gece gürültü seviyesi (Saat 23:00 ile 07:00 arasında düzeyleri değişim gösteren eşdeğer gürültünün enerji açısından eşdeğeri olan sabit düzey).
LA_{gündüz}	A-ağırlıklı gündüz gürültü seviyesi (Saat 07:00 ile 19:00 arasında düzeyleri değişim gösteren eşdeğer gürültünün enerji açısından eşdeğeri olan sabit düzey).
LA_{mx}	Ölçüm süresi içinde A-ağırlıklı ses düzeyinin en büyük değeri.
LA_{mn}	Ölçüm süresi içinde A-ağırlıklı ses düzeyinin en küçük değeri.
m	Metre
TS	Türk Standardı
UTM	Universal Transverse Mercator (Coordinate System)

Bu raporda bulunan ölçüm sonuçları sadece ölçümün yapıldığı konumlara ait olup, raporda yapılmış olan yorum ve öneriler raporun bütünü dışında kullanılamaz. Bu rapor, DOKAY'ın yazılı izni olmaksızın kısmen ya da tamamen çoğaltılamaz. Damgasız ve imzasız raporlar geçerli değildir.



MUNICIPAL SERVICES IMPROVEMENT PROJECT

Tablo 2 Ölçüm Lokasyonları

Ölçüm Kayıt No	Ölçüm Yeri	Ölçüm Tarihi	Koordinat		
			Zone	Doğu	Kuzey
DKL-20/G953-1	Nokta -1	02 - 03 Eylül 2020	36 S	409149	4236425
DKL-20/G953-2	Nokta -2	02 - 03 Eylül 2020	36 S	407455	4236683

Tablo 3 Nokta - 1 Gürültü Ölçüm Sonuçları

TARİH	SAAT		DKL-20/G953-1 ÖLÇÜM SONUÇLARI (dBA)		
	Başlangıç	Bitiş	LA _{mx}	LA _{mn}	LA _{eq}
02.09.2020	11:00	12:00	58,8	35,5	51,9
	12:00	13:00	64,2	50,3	60,1
	13:00	14:00	62,5	39,9	56,5
	14:00	15:00	72,7	56,0	66,4
	15:00	16:00	64,8	36,6	59,2
	16:00	17:00	58,7	36,1	48,4
	17:00	18:00	59,7	38,7	51,4
	18:00	19:00	63,1	39,8	53,9
	19:00	20:00	56,0	37,4	48,5
	20:00	21:00	53,2	38,0	45,0
	21:00	22:00	48,0	36,4	40,4
	22:00	23:00	45,1	36,8	39,2
	23:00	00:00	46,7	37,0	40,3
03.09.2020	00:00	01:00	43,6	37,3	40,0
	01:00	02:00	45,8	37,8	40,7
	02:00	03:00	42,2	36,8	38,3
	03:00	04:00	41,6	37,1	38,9
	04:00	05:00	42,5	38,1	40,4
	05:00	06:00	43,3	39,4	51,8
	06:00	07:00	58,7	40,6	43,3
	07:00	08:00	53,9	41,4	54,3
	08:00	09:00	60,6	41,0	48,1
	09:00	10:00	50,3	38,5	44,9
10:00	11:00	57,5	36,0	50,2	



Bu raporda bulunan ölçüm sonuçları sadece ölçümün yapıldığı konumlara ait olup, raporda yapılmış olan yorum ve öneriler raporun bütünü dışında kullanılamaz. Bu rapor, DOKAY'ın yazılı izni olmaksızın kısmen ya da tamamen çoğaltılamaz. Damgasız ve imzasız raporlar geçerli değildir.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Tablo 4 Nokta - 2 Gürültü Ölçüm Sonuçları

TARİH	SAAT		DKL-20/G953-2 ÖLÇÜM SONUÇLARI (dBA)		
	Başlangıç	Bitiş	LA _{mx}	LA _{mn}	LA _{eq}
02.09.2020	11:00	12:00	50,5	39,8	46,0
	12:00	13:00	53,8	39,8	44,1
	13:00	14:00	51,3	39,9	46,8
	14:00	15:00	53,1	40,8	45,5
	15:00	16:00	53,7	40,1	45,9
	16:00	17:00	50,3	39,7	44,2
	17:00	18:00	55,0	39,9	47,0
	18:00	19:00	50,9	39,8	44,7
	19:00	20:00	51,9	39,8	47,4
	20:00	21:00	55,0	40,1	44,2
	21:00	22:00	51,5	40,1	45,1
	22:00	23:00	53,9	40,0	46,2
	23:00	00:00	49,6	39,3	44,1
03.09.2020	00:00	01:00	55,0	40,2	47,1
	01:00	02:00	49,8	40,2	45,2
	02:00	03:00	55,4	40,2	46,8
	03:00	04:00	51,7	39,7	45,1
	04:00	05:00	52,1	40,3	45,8
	05:00	06:00	53,8	39,5	44,7
	06:00	07:00	50,6	39,4	45,6
	07:00	08:00	54,9	40,0	46,2
	08:00	09:00	51,0	40,0	45,1
	09:00	10:00	55,4	40,3	46,9
	10:00	11:00	51,8	40,1	45,2

Bu raporda bulunan ölçüm sonuçları sadece ölçümün yapıldığı konumlara ait olup, raporda yapılmış olan yorum ve öneriler raporun bütünü dışında kullanılamaz. Bu rapor, DOKAY'ın yazılı izni olmaksızın kısmen ya da tamamen çoğaltılamaz. Damgasız ve imzasız raporlar geçerli değildir.



MUNICIPAL SERVICES IMPROVEMENT PROJECT

Tablo 5 Gürültü Ölçüm Sonuçlarının Değerlendirilmesi

Ölçüm Kayıt No	Ölçüm Yeri	LA _{gündüz} dBA (07:00-19:00)	LA _{akşam} dBA (19:00-23:00)	LA _{gece} dBA (23:00-07:00)
DKL-20/G953-1	Nokta -1	58,1	44,8	44,6
DKL-20/G953-2	Nokta -2	45,7	45,9	45,7

Tablo 6 Gürültü Ölçüm Sonuçlarının Değerlendirilmesi

Ölçüm Kayıt No	Ölçüm Yeri	LA _{gündüz} dBA (07:00-22:00)	LA _{gece} dBA (22:00-07:00)
DKL-20/G953-1	Nokta -1	58,2	44,8
DKL-20/G953-2	Nokta -2	46,7	46,2



Bu raporda bulunan ölçüm sonuçları sadece ölçümün yapıldığı konumlara ait olup, raporda yapılmış olan yorum ve öneriler raporun bütünü dışında kullanılamaz. Bu rapor, DOKAY'ın yazılı izni olmaksızın kısmen ya da tamamen çoğaltılamaz. Damgasız ve imzasız raporlar geçerli değildir.

Ambient Air Quality Measurement Results

Annexes

MUNICIPAL SERVICES IMPROVEMENT PROJECT

dokay
LABORATUVAR

DOKAY Laboratuvar ve Mühendislik Hizmetleri Ltd. Şti.
Ata Mah. Kabil Cad. 140/A 06460 Çankaya/Ankara
Telefon: 0(312) 475-7131 Faks: 0(312) 475-7130
e-posta: dokaylab@dokay.info.tr



Test
TS EN ISO/IEC 17025
AB-0062-T

AB-0062-T

DKL-20/H1851

10.2020

PM₁₀ ve PM_{2,5} ÖLÇÜM RAPORU (DKL-20/H1851)

Müşterinin Adı ve Adresi	IO ENVIRONMENTAL SOLUTIONS RE-DE LTD. ŞTİ. Beştepe Mah. Meriç Caddesi B Blok Apt No:5B / 27 Yenimahalle /Ankara Tel : (312) 215 98 36	
İstek/Proje Numarası	Dokay Proje Kod No: 019.01.02.171	
Ölçüm İle İlgili Açıklamalar	TS EN 12341 Standardına uygun olarak Airmetrics Minivol Portatif PM ₁₀ ve PM _{2,5} Örnekleme Cihazları ile 2 noktada 24 saat ölçüm yapılmıştır. Ölçüm sonuçları Tablo 2'de verilmiştir.	
Ölçüm Yeri	Tablo 2'de verilmiştir. (ILGIN AAT)	
Ölçüm Tarihi	02 - 03 Eylül 2020	
Yetkili Ölçüm Personeli	Ali Murat COŞAR	
Deneş Şartları	Ölçümler 989 mbar ve 33 ° C 'de yapılmıştır.	
Raporun Sayfa Sayısı	2 Sayfa	
<i>Deneş Laboratuvarı olarak faaliyet gösteren DOKAY Çevre Laboratuvarı, Türk Akreditasyon Kurumu (TÜRKAK) tarafından TS-EN-ISO/IEC-17025 Standardına göre akredite edilmiştir. TÜRKAK deneş raporlarının tanınması konusunda Avrupa Akreditasyon Birliği (EA) ve Uluslararası Laboratuvar Akreditasyon Birliği (ILAC) ile karşılıklı tanınma antlaşmasını imzalamıştır.</i>		
Yetkili Ölçüm Personeli Ali Murat COŞAR	Yetkili Raporlama Personeli Elif KEMAL	Laboratuvar Yöneticisi Çiğdem BAL
Mühür Tarih 06.10.2020	Laboratuvar Kalite Sorumlusu H. Serpil YURTERİ	Şirket Müdürü Prof. Dr. Coşkun YURTERİ

Bu rapor çevre mevzuatına ilişkin resmi işlemlerde kullanılamaz.

Bu raporda bulunan ölçüm sonuçları sadece ölçümün yapıldığı konumlara ait olup, raporda yapılmış olan yorum ve öneriler raporun bütünü dışında kullanılamaz. Bu rapor, DOKAY'ın yazılı izni olmaksızın kısmen ya da tamamen çoğaltılamaz. Damgasız ve imzasız raporlar geçerli değildir.

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Tablo 1 Kısaltmalar

EN	European Norms
EPA	Environmental Protection Agency
m ³	Metreküp
µg	Mikrogram
µm	Mikrometre
PM _{2,5}	Havada asılı partikül maddelerin aerodinamik çapı 2,5 µm'den küçük fraksiyonu
PM ₁₀	Havada asılı partikül maddelerin aerodinamik çapı 10 µm'den küçük fraksiyonu
TS	Türk Standardı
UTM	Universal Transverse Mercator (Coordinate System)

Tablo 2 Ölçüm Lokasyonları ve Ölçüm Sonuçları

Ölçüm Kayıt No	Ölçüm Yeri	Ölçüm Tarihi	Koordinat			PM ₁₀ Ölçüm Sonucu (µg/m ³)	PM _{2,5} Ölçüm Sonucu (µg/m ³)
			Zone	Doğu	Kuzey		
DKL-20/H1851-1	Nokta -1	02 - 03 Eylül 2020	36 S	409149	4236427	23 ¹	25 ¹
DKL-20/H1851-2	Nokta -2	02 - 03 Eylül 2020	36 S	407456	4236685	23 ¹	28 ¹

¹ Ölçümler 24 saat örnekleme metodu ile gerçekleştirilmiş olup; örneklenen filtreler gravimetrik metot ile tartım yapılması sonrası hesaplanmıştır.

Bu rapor çevre mevzuatına ilişkin resmi işlemlerde kullanılamaz.

Bu raporda bulunan ölçüm sonuçları sadece ölçümün yapıldığı konumlara ait olup, raporda yapılmış olan yorum ve öneriler raporun bütünü dışında kullanılamaz. Bu rapor, DOKAY'ın yazılı izni olmaksızın kısmen ya da tamamen çoğaltılamaz. Damgasız ve imzasız raporlar geçerli değildir.




MUNICIPAL SERVICES IMPROVEMENT PROJECT

Annex 8: Photographs, Minutes and Participant Lists of the Stakeholder Consultation Meetings

ANNOUNCEMENT ON THE WEBSITE OF KOSKI FOR THE MEETING DATED FEBRUARY 24TH, 2020

<https://www.koski.gov.tr/duyuru/konya-su-ve-kanalizasyon-idaresi--koski--paydas-katirim--toplantilari-ilani-2020-02-14-33>



Konya
Su ve Kanalizasyon
İdaresi Genel Müdürlüğü

KONYA SU VE KANALİZASYON İDARESİ (KOSKİ) PAYDAŞ KATILIM TOPLANTILARI İLANI

“Mültecilerden etkilenen Bölgelerde Hizmetlerin İyileştirilmesi Projesi -FRITT (II)” kapsamında Dünya Bankası tarafından finanse edilecek olan “Akşehir Su Temini, Ilgın Atıksu Arıtma Tesisi ve Çumra Atıksu Arıtma Tesisi” projeleri için Paydaş Katılım Planı toplantıları yapılacaktır.

Yapılacak olan toplantılarda projelerin detayları paylaşılacak ve katılımcılardan projeler ile ilgili geri bildirimler alınacaktır. Toplantılar, katılmak isteyen herkese açıktır.

Çumra Atıksu Arıtma Tesisi için yapılacak olan “Paydaş Katılım Toplantısı”

Toplantı Tarihi: 20.02.2020
Toplantı Saati: 10.00
Toplantı Yeri: Çumra Belediye Salonu

Ilgın Atıksu Arıtma Tesisi için yapılacak olan “Paydaş Katılım Toplantısı”:

Toplantı Tarihi: 24.02.2020
Toplantı Saati: 10.30
Toplantı Yeri: Sedirlihan Restoran

Akşehir Su Temini için yapılacak olan “Paydaş Katılım Toplantısı”:

Toplantı Tarihi: 24.02.2020
Toplantı Saati: 14.30
Toplantı Yeri: Akşehir Kültür Merkezi

MUNICIPAL SERVICES IMPROVEMENT PROJECT

ADVERTISEMENTS FROM LOCAL NEWSPAPERS FOR THE MEETING DATED FEBRUARY 24TH, 2020

KONYA SU VE KANALİZASYON İDARESİ (KOSKİ) PAYDAŞ KATILIM TOPLANTILARI

"Mülteçilerden etkilenen Bölgelerde Hizmetlerin İyileştirilmesi Projesi -FRIT (B)" kapsamında Dünya Bankası tarafından finanse edilecek olan "Akşehir Su Temini, İlgün Akbaşı Arıtma Tesisi ve Çumra Akbaşı Arıtma Tesisi" projeleri için Paydaş Katılım Planı toplantıları yapılacaktır. Yapılacak olan toplantılarda projelerin detayları paylaşılacak ve katılımcılardan projeler ile ilgili geri bildirimler alınacaktır. Toplantılar, katılmak isteyen herkesin katılımına açıktır.

Çumra Akbaşı Arıtma Tesisi için yapılacak olan "Paydaş Katılım Toplantıları"

Toplantı Tarihi : 25.02.2020
Toplantı Saati : 16.00
Toplantı Yeri : Çumra Belediye Salonu
İlgün Akbaşı Arıtma Tesisi için yapılacak olan "Paydaş Katılım Toplantıları"

Toplantı Tarihi : 24.02.2020
Toplantı Saati : 13.30
Toplantı Yeri : Sırdılıhan Restoran
Akşehir Su Temini için yapılacak olan "Paydaş Katılım Toplantıları"

Toplantı Tarihi : 24.02.2020
Toplantı Saati : 14.30
Toplantı Yeri : Akşehir Kültür Merkezi

Detaylı bilgiler için: www.kon.gov.tr/ile Basın-1134288

İlgün'in projeleri anlatıldı

İlgün İlçe Başkanı İbrahim Yılmaz, Akşehir'de yapılacak olan "Akşehir Su Temini, İlgün Akbaşı Arıtma Tesisi ve Çumra Akbaşı Arıtma Tesisi" projeleri için Paydaş Katılım Planı toplantılarını yaptı. İlgün İlçe Başkanı İbrahim Yılmaz, Akşehir'de yapılacak olan "Akşehir Su Temini, İlgün Akbaşı Arıtma Tesisi ve Çumra Akbaşı Arıtma Tesisi" projeleri için Paydaş Katılım Planı toplantılarını yaptı. İlgün İlçe Başkanı İbrahim Yılmaz, Akşehir'de yapılacak olan "Akşehir Su Temini, İlgün Akbaşı Arıtma Tesisi ve Çumra Akbaşı Arıtma Tesisi" projeleri için Paydaş Katılım Planı toplantılarını yaptı.



İlgün İlçe Başkanı İbrahim Yılmaz, Akşehir'de yapılacak olan "Akşehir Su Temini, İlgün Akbaşı Arıtma Tesisi ve Çumra Akbaşı Arıtma Tesisi" projeleri için Paydaş Katılım Planı toplantılarını yaptı. İlgün İlçe Başkanı İbrahim Yılmaz, Akşehir'de yapılacak olan "Akşehir Su Temini, İlgün Akbaşı Arıtma Tesisi ve Çumra Akbaşı Arıtma Tesisi" projeleri için Paydaş Katılım Planı toplantılarını yaptı.

KONYA SU VE KANALİZASYON İDARESİ (KOSKİ) PAYDAŞ KATILIM TOPLANTILARI İLANI

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Toplantı Tarihi : 24.02.2020
Toplantı Saati : 13.30
Toplantı Yeri : Sırdılıhan Restoran
Akşehir Su Temini için yapılacak olan "Paydaş Katılım Toplantıları"

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Toplantı Saati : 14.30
Toplantı Yeri : Akşehir Kültür Merkezi

ARŞİTEK ÇEVRE ÇÖZÜMLERİ ARAŞTIRMA GELİŞTİRME LTD.ŞTİ.
 Beşikçi Caddesi, Beşikçi Çayırbaşı Binası, No: 302 Şişli, KONYA

Detaylı bilgiler için: www.kon.gov.tr/ile Basın-1134288

YARIŞMASI

KONYAŞPOR Eğitim Sporları yarışması düzenlenecek. "Sezen Günaydın" yarışması 42-9433 verilecek. Başvurular 31 Mart'a kadar olacak. Yarışmada verilecek ödüllere şunlar olacaktır: 3.000 TL + Konyaspor forması, ikinciyse, 3.000 TL + Konyaspor forması, üçüncüyse, 1.000 TL + Konyaspor formalet. Mücadele ödülleri 100 TL + Konyaspor forması olacaktır. Yarışmaya katılmak isteyenler için 17 Mart'ta 100 TL + Konyaspor forması ödülleri olacaktır.

AMATÖR KATEGORİ
 Amatör Kategoride birinciyse 1000 TL + Konyaspor forması, ikinciyse, 1000 TL + Konyaspor forması, üçüncüyse, 1000 TL + Konyaspor forması ödülleri olacaktır. Yarışmaya katılmak isteyenler için 17 Mart'ta 100 TL + Konyaspor forması ödülleri olacaktır.

OCUL YÖRENTİ VE SERGİ YARIŞMASI İÇİN DANIŞMANLIK İLANI İZDİLECEK
 Başvuru Akşehir, Hacıhalil, Taşlı, Çaylak, İlçelerinde yapılacak olan yarışma için Ocak Yörenti ve Sergi Yarışması için Danışmanlık İlanı izdilecek. Yarışmaya katılmak isteyenler için 17 Mart'ta 100 TL + Konyaspor forması ödülleri olacaktır.

"Robot Günleri" etkinliği

Konya Bilim Merkezi tarafından düzenlenen "Hayata Dokunan Bilim Günleri" kapsamında "Robot Günleri" etkinliği gerçekleştirildi. Programda her yaş grubundan bilim meraklıları robot gösterileri, kodlama yarışmaları, robotik etkinliklerine katılarak bilime ilgiyle katıldılar.

KONİTEK Büyükşehir Belediyesi tarafından düzenlenen Hayata Dokunan Bilim Günleri kapsamında düzenlenen "Robot Günleri" etkinliğinde katılımcılar robotlarla ilgili merak ettikleri sorulara yanıt buldular. Her yaş grubundan bilim meraklılarından oluşan etkinlikler kapsamında katılımcılar robot gösterileri, kodlama yarışmaları, robotik etkinliklerine katılarak bilime ilgiyle katıldılar. Katılımcılar ayrıca robotları programlayarak doğrudan teknolojiyi denediklerini de belirttiler. Etkinlikte Prof. Dr. Mustafa Kemal Çiğdem'in de katılımıyla düzenlenen etkinlikte katılımcılar robotlarla ilgili sorulara yanıt buldular.

Basın-1134288

KONYA SU VE KANALİZASYON İDARESİ (KOSKİ) PAYDAŞ KATILIM TOPLANTILARI İLANI

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Seperler Akademi, Konya'da düzenlenen "Hayata Dokunan Bilim Günleri" kapsamında "Robot Günleri" etkinliği gerçekleştirildi. Programda her yaş grubundan bilim meraklıları robot gösterileri, kodlama yarışmaları, robotik etkinliklerine katılarak bilime ilgiyle katıldılar.

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PARTICIPANT LIST FOR THE MEETING DATED FEBRUARY 24TH, 2020



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Akşehir Su Temini, Ilgın Atıksu Arıtma Tesisi ve Çumra Atıksu Arıtma Tesisi Projeleri" için
Paydaş Katılım Toplantısı Katılımcı Listesi

Yer : Sedirlihan / ILGIN
Tarih : 24/02/2020
Saat : 10:30

No	AD SOYAD	KURUM	UNVAN	E-POSTA	TELEFON	İMZA
1	Mehmet Akis	KOSKI ANTRENÖRÜ				
2	Muhammed Ceylan	Sube Müdürü				
	Hayatullah Şişman					
3	Çağrıhan Ertürkmen	Koski Ga. Md.	Şb Md.			
4	Seyit Ali Usta	KOSKI İlgin Şube Müdürü	İlgin Şube Md.			
5	Cem Bektaşoğlu	İlgin Şubekurulu				
6	Hayatullah Şişman	KOSKI	Müdür Yard.			
7	Abdül Güzel	KOSKI	Tekniker			
8	Şenol İnan	KOSKI	İnşaatçı			
9	Yakup YERİNGER	KOSKI	İlgin Şube Md.			
10						



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No	AD SOYAD	KURUM	UNVAN	E-POSTA	TELEFON	İMZA
	İsmail GÜNAY	KOSKI	Şube Müdürü			
	Zeynep Koc	İlgin Şube	İlgin Şube Md.			
	Yakup Özlü	İlgin Şube	Yardımcı			
	Mehmet BİLİR	KOSKI	İlgin Şube Md.			
	Nispetullah AYDIN	İlgin Şube	Şube Müdürü			
	Mehmet AYDIN		Şube Müdürü			



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No	AD SOYAD	KURUM	UNVAN	E-POSTA	TELEFON	İMZA
	Ali Yıldırım	Ilgın Belediyesi				
	Mihraç Muratlı	Afgon	Mülheci			
	Hasretullah Burhani	Afgon	Mülheci			
	Celal Kalkanlı	Afgon	Mülheci			
	Abdulhakı Abdi	Afgon	Mülheci			
	Mehmet Yalçın	Z. K. Ç. P. Ş. Ş.				
	İsmet Çiğdem Toprak	MCT	İnsaat Müh.			
	Ali Amrak	Afgon	Mülheci			
	İsmet Akı	Ulaştırma Odası	Başkan Yardımcısı			



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No	AD SOYAD	KURUM	UNVAN	E-POSTA	TELEFON	İMZA
	Mehmet Akın					
	Yüksel Akın					
	Alihan Çiğdem					
	Mehmet Akın	Emmüye Müdürlüğü				
	İsmail Turgut	Kızıldereli Derneği				
	Ömer Kaya	Sofar				
	Gökçe Akın	Beyin Hastaneleri Kurumu				
	Kürşat Kocabaş	Ilgın Bel.	KİHİSİ Sosyal İşler			
	Hasan Veldi	Ilgın Bel.	KİHİSİ Sosyal İşler			
	Mehmet Akın	Afgon	Mülheci			



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No	AD SOYAD	KURUM	UNVAN	E-POSTA	TELEFON	İMZA
11	Sabit Abdullatif	Afyon	Müdür			
12	Hişamettin Abdullatif	Afyon	Müdür			
13	Muhammed Ahmet	Afyon	Müdür			
14	Canan Mergil	Afyon	Müdür			
15	Yüksel DEMİRCİ	İlbank Konya	Bölge Müd.			
16	Ahmet TARKIN	"	T. Uzman			
17	Cihangir SAFAK	"	T. Uzman			
18	Cemil SAHİN	S.S. Akademi İlgün Proje	Müş. Müd.			
19	Muhammed İskender	Şirketler Odası Reg. Kesp.	Başk. M.			
20	Yıldırım Beyazıt	T. Uzman Konya Ş.	Şt. Başkanı			
21	Mahmet Gökçe	İlaç. C. M. D.	Müş. Müd.			



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Yer : Sedirlihan / İLGIN
Tarih : 24/02/2020
Saat : 10:30

No	AD SOYAD	KURUM	UNVAN	E-POSTA	TELEFON	İMZA
	Hülya SEVİK	Akşehir Su Temini İ.İ. Müdürlüğü	İl Müdürü			
	Özgür Sarıhan	Akşehir Su Temini İ.İ. Müdürlüğü	Şube Müdürü			
	Nazire Kılıç	Belediye Başkanlığı				
	Uğur CANAZA	İl Göz. id. Müd.	İl Göz. Uzmanı			
	Ali ERGİL	Ak Parti İlgin İlçe B.Ş.				
	Ali TEKİR	Belediye Meclisi				
	Mehmet Demirci	İl Bankası Akşehir Müd.	Bölge Müd.			
	Nihat ÇAY	Orman İşletme	Mühürhan			
	Muhammed Değirmenci	Koski Genel Müd.	Müdür			
	Osman TAŞLICA	Koski Genel Müd.	Şube Müd.			



MUNICIPAL SERVICES IMPROVEMENT PROJECT



This Project is co-funded by the European Union, the Republic of Turkey and the World Bank
Bu Proje Avrupa Birliği/Türkiye Cumhuriyeti ve Dünya Bankası tarafından ortaklaşa finanse edilmektedir.
Mültecilerden Etkilenen Bölgelerde Hizmetlerin İyileştirilmesi Projesi-FRIT (II)
Akşehir Su Temini, Ilgın Atıksu Arıtma Tesisi ve Çumra Atıksu Arıtma Tesisi Projeleri" için
Paydaş Katılım Toplantısı Katılımcı Listesi

Yer : Sedirlihan / ILGIN
Tarih : 24/02/2020
Saat : 10:30

No	AD SOYAD	KURUM	UNVAN	E-POSTA	TELEFON	İMZA
	Cemil TEMEL	KOSKİ Genel Müdür	Müdür			
	Celal ONAT	Ilgın Belediyesi	İzci			
	Kadir GAZİN	"	"			
	Murat SABAN	"	"			
	Şehinşah ÖZAN	İlçe Esnaf ve Sanatkarlar Birliği	Başkan			
	Veli UĞUR	İlçe Tarımsal Müdürlük	Müdür			
	Mehmet Ali SAĞIN	KOSKİ	Daire Başkanı			
	Ömer Faruk KALAY	İller Bankası	Şef			
	Kerem YILDIZ	"	Şef			
	Ali UYAR	Ilgın Belediyesi	Personel			
	Fatime ŞEN	"	Kütüphane			



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Mültecilerden Etkilenen Bölgelerde Hizmetlerin İyileştirilmesi Projesi-FRIT (II)
Akşehir Su Temini, Ilgın Atıksu Arıtma Tesisi ve Çumra Atıksu Arıtma Tesisi Projeleri" için
Paydaş Katılım Toplantısı Katılımcı Listesi

Yer : Sedirlihan / ILGIN
Tarih : 24/02/2020
Saat : 10:30

No	AD SOYAD	KURUM	UNVAN	E-POSTA	TELEFON	İMZA
	Hasan Tanel	stajyer				
	Adem Güllüoğlu	Belediye				
	Gülşahret Hançın					
	Emir İğtisu					
	Mevlüt Şen	Belediye				
	Fatih Kocak	Belediye				
	Cihan Gümüş					
	Ahmet Karer	Ziraat Odası Başkanı				
	Fehi Kocay					



MUNICIPAL SERVICES IMPROVEMENT PROJECT

PHOTOS FOR THE MEETING DATED FEBRUARY 24TH, 2020



MUNICIPAL SERVICES IMPROVEMENT PROJECT

ANNOUNCEMENT ON THE WEBSITE OF KOSKI FOR THE MEETING DATED JANUARY 03RD, 2023

The screenshot shows the website of Konya Su ve Kanalizasyon İdaresi (KOSKI). The header includes the KOSKI logo and the text "Konya Su ve Kanalizasyon İdaresi Genel Müdürlüğü". A search bar is visible. The main content area displays a list of documents with PDF icons and titles: ÇUMRA BROCHURE (Arabic), ILGIN Atıksu Arıtma Tesisi ÇSED, ILGIN Waste Water Treatment Plan ESIA, ILGIN TOPLANTI İLANI, ILGIN BROŞÜR, ILGIN BROCHURE (Arabic), and Türkiye'nin Mültecilerden Etkilenen Bölgelerinde Belediye Hizmetlerinin İyileştirilmesi Projesi (FRIT II). A sidebar on the left contains navigation links: Başkan, Kurumsal, Su-Atıksu, Abone Hizmetleri, and a person icon. The right sidebar has a link for "Düzenlenen Başvuru Teyaz Alınır" and the "e-KOSKI Online İşlemler" logo.

TOPLANTI İLANI

Konya Su ve Kanalizasyon İdaresi (KOSKI) tarafından, "AB'nin Türkiye'deki Sığınmacılara Yönelik Mali Yardım Programı (FRIT-II) Belediye Hizmetlerinin İyileştirilmesi Projesi" kapsamında, Konya ili, Ilgın ilçesinde yapılması planlanan ve Dünya Bankası tarafından finanse edilecek olan "Ilgın Atıksu Arıtma Tesisi Projesi" için "**Paydaş Bilgilendirme Toplantısı**" yapılacaktır.

Düzenlenecek toplantıda bugüne kadar yürütülen çevresel ve sosyal çalışmalar kapsamında halkı bilgilendirmek, halkın görüş ve önerilerini almak ve inşaat ve işletme dönemlerinde halk ile işbirliği tesis etmek hedeflenmektedir. Toplantı, katılmak isteyen tüm kişilere ve kuruluşlara açıktır.

Halkımıza saygı ile duyurulur.

Toplantı Tarihi : 03.01.2023

Toplantı Saati : 14:00

Toplantı Yeri : Ilgın Ticaret ve Sanayi Odası Toplantı Salonu
Ayvatdede Mahallesi 11400 Sokak No:1 Ilgın /KONYA

Proje Sahibi : Konya Su ve Kanalizasyon İdaresi (KOSKI)

Tel : 0 332 221 61 00

Faks : 0 332 235 46 34

MUNICIPAL SERVICES IMPROVEMENT PROJECT

ADVERTISEMENTS FROM LOCAL NEWSPAPERS FOR THE MEETING DATED JANUARY 03RD, 2023



Tüm İlanlar

Kurumsal

Destek

İletişim



Üye Ol

Giriş Yap

Ana Sayfa / Tüm İlanlar / Tebliğat ve Duyurular / Kurumsal Tebliğat ve Duyurular / ÇED ve ÇSED Başvuru ve Toplantı Davetleri

Kelime ya da ilan numarası ile arayınız



Paydaş Bilgilendirme Toplantısı "Ilgın Atıksu Arıtma Tesisi Projesi"

İlan Metni | [Tam Ekran](#) | Dosyalar

TOPLANTI İLANI

Konya Su ve Kanalizasyon İdaresi (KOSKİ) tarafından, "AB'nin Türkiye'deki Siğimacılara Yönelik Mali Yardım Programı (FRIT-II) Belediye Hizmetlerinin İyileştirilmesi Projesi" kapsamında, Konya ili, Ilgın ilçesinde yapılması planlanan ve Dünya Bankası tarafından finanse edilecek olan "Ilgın Atıksu Arıtma Tesisi Projesi" için "Paydaş Bilgilendirme Toplantısı" yapılacaktır.

Düzenlenecek toplantıda bugüne kadar yürütülen çevresel ve sosyal çalışmalar kapsamında halkı bilgilendirmek, halkın görüş ve önerilerini almak ve inşaat ve işletme dönemlerinde halk ile iş birliği tesis etmek hedeflenmektedir. Toplantı, katılmak isteyen tüm kişilere ve kuruluşlara açıktır.

Halkımıza saygı ile duyurulur.

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Proje Sahibi : Konya Su ve Kanalizasyon İdaresi (KOSKİ)

Tel : 0 332 221 61 00

Faks : 0 332 235 46 34

İlan Bilgileri

İlan Sahibi
KONYA SU VE KANALİZASYON İDARESİ
GENEL MÜDÜRLÜĞÜ (KOSKİ)

İlan Numarası
ILN01757035

[Dikdörtgen](#)

Şehir
KONYA

İlçe
Ilgın

İlan Türü
TEBLİGAT

Tebliğat Muhatabı
Kamu

Yayımlandığı Gazeteler
29/12/2022 : [ILGIN'IN SESİ](#)

MUNICIPAL SERVICES IMPROVEMENT PROJECT

PARTICIPANT LIST FOR THE MEETING DATED JANUARY 03RD, 2023



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Türkiye'deki Sığınmacılara Yönelik Mali Yardım Programı (FRIT-II) Belediye Hizmetleri Geliştirme Projesi

PAYDAŞ BİLGİLENDİRME TOPLANTISI

İlgin Atıksu Arıtma Tesisi

Toplantı Yeri: İlgin Sanayi ve Ticaret Odası
Toplantı Tarihi ve Saati: 03.01.2023, 14:00

Sıra No	Adı Soyadı	Kurum Kuruluş	Ünvan	Telefon numarası	e-Posta Adresi	İmza
1	İbrahim Sığircıoğlu	KOSKİ	Mühendis	5334164222	ibrahim.sigerdig@koski.gov.tr	
2	Semsettin CİRA	İlgin Belediyesi (Kansu)	Muhtarlık	5455555030	scirad@ildeg.gov.tr	
3	M. Süle KANİTAS	" "	"	505 397 76 09	skanac@ilbank.gov.tr	
4	Seyit Ali USLU	KOSKİ	İlgin Koski Müd.	0535 105 22 91	seyitok.uslu@koski.gov.tr	
5	Tuncer ULAS	Vatandaş	İlgin İlçesi	05353167567	tuncer.ulas2009@netnet.com	
6	Hayatı KAYA	Vatandaş	İlgin İlçesi	05433824052		
7	Yavuz SEN	Vatandaş	İlgin İlçesi	0555234070	yavuzsen@gmail.com	
8	Kudret Ali	Vatandaş	İlgin İlçesi	05373237953		



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Türkiye'deki Sığınmacılara Yönelik Mali Yardım Programı (FRIT-II) Belediye Hizmetleri Geliştirme Projesi

PAYDAŞ BİLGİLENDİRME TOPLANTISI

İlgin Atıksu Arıtma Tesisi

Toplantı Yeri: İlgin Sanayi ve Ticaret Odası
Toplantı Tarihi ve Saati: 03.01.2023, 14:00

Sıra No	Adı Soyadı	Kurum Kuruluş	Ünvan	Telefon numarası	e-Posta Adresi	İmza
9	Ali Camurlu	Vatandaş	İsai	0544 662 0610		
10	Fazlı YILMAZER	İlgin Sosyal Hizmetler Merkezi	Kuruluş Müdürü	0551 432 10 43	fazli.yilmazer@ile.gov.tr	
11	Mustafa AVCI	Vatandaş	Serbest	05433533540	mustafac@hokmeil.tr	
12	Muhammed Yıldız	Muhtar		05776157003		
13	OSMAN ERGİN	ŞİHARLIYAN	MUHTAR	05369460652		
14	Musa ATILMAZ	B. Bay	Muhtar	05391974525		
15	Mehmet DEVRİK	SİHBEDETTİN	MUHTAR	05427839212		
16	Hüsnü ATEŞ	ESENTEPE MAHALLESİ	MUHTAR	05452051215		



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Türkiye'deki Sığınmacılara Yönelik Mali Yardım Programı (FRIT-II) Belediye Hizmetleri Geliştirme Projesi PAYDAŞ BİLGİLENDİRME TOPLANTISI

İlgın Atıksu Arıtma Tesisi

Toplantı Yeri: İlgın Sanayi ve Ticaret Odası
Toplantı Tarihi ve Saati: 03.01.2023, 14:00

Sıra No	Adı Soyadı	Kurum Kuruluş	Ünvan	Telefon numarası	e-Posta Adresi	İmza
17	Pekcan BACIR	İLİCA MAHALESİ	Muhtar	05439558800		
18	Selver Gahik	mihli aygulu	muhtar	05422941500		
19	Necdet Yıldız	Sahp Ata	muhtar	0577201542		
20	Adem DAL	İlçe Müf. Müd.	Sebe Müdür	544 4545027		
21	Aminullah Özbek	Mhli Esenentik	öğrenci	05382071475		
22	İslam Nazari	Şih curullah mah.	İŞÇİ	05418760782		
23	Ufuk Ahmet Özbek	Şih curullah mah.	İŞÇİ	05462077095		
24	Beğmurat rahberi	Şih curullah mah.	İŞÇİ	05354217960		



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Türkiye'deki Sığınmacılara Yönelik Mali Yardım Programı (FRIT-II) Belediye Hizmetleri Geliştirme Projesi PAYDAŞ BİLGİLENDİRME TOPLANTISI

İlgın Atıksu Arıtma Tesisi

Toplantı Yeri: İlgın Sanayi ve Ticaret Odası
Toplantı Tarihi ve Saati: 03.01.2023, 14:00

Sıra No	Adı Soyadı	Kurum Kuruluş	Ünvan	Telefon numarası	e-Posta Adresi	İmza
25	Mevlut Kozan	Vatandaş	Memur	0542 531 20 99	-	
26	Hosan Dıp	Camiatik Muhtar	muhtar	5333303386		
27	Mustak UYSAL	İlgın Ömür İşletme M.Ş.	İşletme Sek.	0554 6702378		
28	Aydın Anilik	İlgın İİİD	Kült. ve Sos. İşl. Müd.	05066719978		
29	Muhammed Cyla	Koski Gm. Ud.	Şb. Ud.	05056402843		
30	Uelbi ÖZLEM	İlgın TSO Bek.	Yön. K. BŞL	0544291288		
31	Yalçın FETİP	İlgın Belediye Bşk.	Belediye Bşk.	05445824242	yalcin@ilgin.bel.tr	
32	Z. Fatma YARAR ERDEM	İlgın DSİ	İşletme Sekr.	05340644425		



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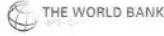
Türkiye'deki Sığınmacılara Yönelik Mali Yardım Programı (FRIT-II) Belediye Hizmetleri Geliştirme Projesi

PAYDAŞ BİLGİLENDİRME TOPLANTISI

İlgın Atıksu Arıtma Tesisi

Toplantı Yeri: İlgın Sanayi ve Ticaret Odası
Toplantı Tarihi ve Saati: 03.01.2023, 14:00

Sıra No	Adı Soyadı	Kurum Kuruluş	Ünvan	Telefon numarası	e-Posta Adresi	İmza
49	Muaf BAYRAM	İlgın Mah.	Meclis	543 6312401		
50	Emre TAŞKIN	in Sene	Sene M	535 212 2727		
51						
52						
53						
54						
55						



MUNICIPAL SERVICES IMPROVEMENT PROJECT

MEETING NOTES FOR THE MEETING DATED JANUARY 03RD, 2023



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Türkiye'deki Sığınmacılara Yönelik Mali Yardım Programı (FRIT-II) Belediye Hizmetleri Geliştirme Projesi

PAYDAŞ BİLGİLENDİRME TOPLANTISI

İlgün Atıksu Arıtma Tesisi

Toplantı Yeri: İlgün Sanayi ve Ticaret Odası

Toplantı Tarihi ve Saati: 03.01.2023, 14:00

TOPLANTI TUTANAĞI

Soru

Musa AYYÜREK (Muhtarlar Derneği Başkanı):

Atıksu Arıtma Tesisinde arıtılan su nerede kullanılacak?

Cevap

Muhammed CEYLAN (Atıksu Arıtma Tesisleri Şube Müdürü):

İlgün Atıksu Arıtma Tesisinde ileri biyolojik arıtma prosesine göre tasarlanmıştır. Ülkemizin mevzuatında atıksu arıtma tesisinin arızlı suyunun kullanılması için Atıksu Arıtma Tesisleri Teknik Usul Tebliği vardır İlgün AAT arızlı suyu B sınıfı su kalitesine uygun ve tarımda kullanılabilir uygundur. Gevre Şehircilik ve İklim Değişikliği Bakanlığınca yapılacak başvuru ile tarlada kullanılacak bitki deseni ve sulama sistemi gibi kriterler dikkate alınarak arıtılmış suyun sulamada kullanılması için izin alınmaktadır



MUNICIPAL SERVICES IMPROVEMENT PROJECT

BROCHURE FOR THE MEETING DATED JANUARY 03RD, 2023

İzleme gereklilikleri de ÇSED kapsamındaki izleme tablolarında tanımlanmış ve sunulmuştur. Buna göre projenin inşaat ve işletme aşamasında raporlama, iş sağlığı ve güvenliği, acil durumlar, şikâyet mekanizması, su kalitesi, kimyasallar, tehlikeli maddeler, toplum sağlığı ve güvenliği konuları ÇSED'de belirlenen şartlara uygun olarak izlenecektir.

Bu ÇSED'in uygulanmasından sorumlu ana kurum, projenin inşaatından ve işletme aşamalarından da sorumlu olan KOSKİ'dir. Ayrıca, Proje'nin farklı aşamalarında çeşitli taraflar (Yükleniciler, Proje Uygulama Birimi, İLBANK vb.) ÇSED kapsamında çeşitli konularda sorumluluk alacaklardır. Sözü edilen tüm çalışmalar KOSKİ tarafından koordine edilecektir.

Hazırlanan Proje dokümanları ayrıca KOSKİ internet sitesi üzerinden yayınlanacaktır ve talep edilmesi halinde bu dokümanlar KOSKİ tarafından paylaşılacaktır.

İlgin ilçesi halkının ve ilgili tüm paydaşların hem inşaat hem de işletme aşamasında Proje ile ilgili endişelerini, görüşlerini, şikâyetlerini ve önerilerini almak adına bir **Şikâyet Mekanizması** kurulacaktır. Bu mekanizma aracılığıyla iletilen şikâyetler, hızlı ve hassas bir şekilde ele alınacaktır.

Şikâyet Mekanizması'nın kurulmasından ve uygulanmasından sorumlu kurum KOSKİ olacaktır. Bu kapsamda proje ile ilgili beklenti, görüş, öneri ve şikâyetlerin paylaşılması için aşağıda verilen iletişim kanalları da ayrıca kullanılabilir:

Paydaş Bilgilendirme Toplantıları

Alo 185 Arıza İhbar Hattı

Telefon: 0 332 221 61 00
E-posta: bilgi@koski.gov.tr
İnternet: <https://www.koski.gov.tr/>

4



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5



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هذا المشروع تم تمويله من قبل الاتحاد الأوروبي

**İLGİN ATIKSU ARITMA TESİSİ
PROJESİ**

PAYDAŞ BİLGİLENDİRME TOPLANTISI

BROŞÜRÜ

Toplantı Tarihi : 03.01.2023
Toplantı Saati : 14:00
Toplantı Yeri : İlgın Ticaret ve Sanayi Odası
Toplantı Salonu Ayvatdede Mahallesi 11400
Sokak No:1 İlgın / KONYA



1

Türkiye, geçici koruma altındaki Suriyelilerden en çok etkilenen ülkelerden biridir. Geçici koruma altındaki Suriyeli nüfus, başta Adana, Kahramanmaraş, Kayseri, Konya ve Osmaniye olmak üzere olmak üzere Türkiye genelinde birçok il ve ilçe belediyesinin nüfusunda önemli bir artışa neden olmuştur.

Avrupa Birliği (AB) ve Dünya Bankası (DB) tarafından finanse edilen ve sığınmacı akınında etkilenen illerde uygulanan AB Türkiye'deki Sığınmacılar için Mali Yardım Programı (FRIT) kapsamındaki Belediye Hizmetlerinin Geliştirilmesi Projesi (BELGEP) çerçevesinde finanse edilecek yatırımlar bulunmaktadır. Bu yatırımlar özellikle Türkiye'de Suriyeli sığınmacılardan etkilenen beş hedef ilde (Adana, Kahramanmaraş, Kayseri, Konya ve Osmaniye) su temini, su ve kanalizasyon şebekelerinin inşaatı, atıksu ve katı atık tesislerinin inşaatı ve rehabilitasyonu ile doğrudan belediye hizmeti önceliklerini hedef almaktadır. Her bir yatırım, BELGEP kapsamında finanse edilecek alt proje olarak belirtilmiştir.

2014-2023 Konya-Karaman Bölge Planı kapsamında 2016 yılında yapılan bir çalışmada, nüfusu 50 bine yaklaşan kayıtlı ve kayıtsız Suriyeli göçmenlerin büyük çoğunluğunun Halep'ten geldiği ve orta ve alt gelir grubuna mensup olduğu tespit edilmiştir. Türkiye Göç İdaresi'nin güncel verilerine göre 21 Ekim 2021 tarihi itibarıyla Konya'da 122.019 kayıtlı sığınmacı bulunmaktadır olup, il nüfusuna oranı %5,49'dur. Güncel veriler de İlgın ilçesindeki sığınmacı nüfusunun yaklaşık 5.000 olduğunu göstermektedir

İlgın Atıksu Arıtma Tesisi (AAT) alt projesi, faaliyette olan bir atıksu arıtma tesisi bulunmayan Konya ilinin İlgın ilçesinde gerçekleştirilecektir. Bu alt proje, bölgedeki artan altyapı talebini karşılamak için BELGEP kapsamında finanse edilecektir.

2

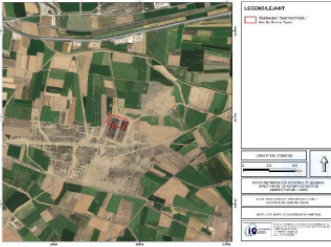
Proje, Uluslararası İmar ve Kalkınma Bankası ve AB FRIT-II Programı tarafından finanse edilecektir. Türk tarafında İller Bankası A.Ş. (İLBANK), Projenin ana yürütme organıdır. Konya Su ve Kanalizasyon İşleri Genel Müdürlüğü (KOSKİ), Proje'nin hem faydalanıcısı hem de yürütücü kuruluşudur.

İlgın AAT Projesi, çevreye arıtılmamış atıksu deşarjını önlemeyi amaçlamaktadır. Bu kapsamda İlgın AAT'nin Proje Tanıtım Dosyası 2017 yılında KOSKİ tarafından görevlendirilen tasarım danışmanı tarafından hazırlanmış ve hem İLBANK Bölge Müdürlüğü hem de İLBANK Genel Müdürlüğü tarafından onaylanmıştır. İlgın AAT Projesi, 2033 yılında ortalama 7.000 m³/gün kapasite ile 41.000 kişiye, 2048 yılında ise ortalama 8.500 m³/gün kapasite ile 46.000 kişiye hizmet verecek şekilde tasarlanmıştır. Hibe fonu ile 2033 yılında 41.000 kişiye hizmet verecek ortalama 7.000 m³/gün kapasiteli tesis ilk etapta kurulacaktır.

İlgın AAT Projesi, İlgın ilçesi, Şihbedrettin mahallesi İdari sınırları içerisinde yer almaktadır. AAT alanı, 1980 yılından bu yana AAT arazisi olarak tescil edilen ve hazineye ait olan 25.125 m²'lik bir saha olarak tasarlanmıştır. AAT Projesi için herhangi bir arazi satın alınmamıştır veya alınmayacaktır. Bu alan daha önce atık su arıtma amaçlı stabilizasyon havuzu olarak kullanılmıştır. Bu havuz 1980 yılında kurulmuştur, ancak 2005 yılından bu yana yaklaşık 15 yıldır işletilmemektedir.

İlgın ilçesinde yer alan yerleşim yerlerinden gelen arıtılmamış evsel atık su, 2017 yılında inşa edilen kolektör hattı ile Bulasan Deresi'nin bir koluna deşarj edilmektedir. Mevcut durumda, kolektör hattı İlgın ilçesinin evsel nitelikli atık suyunu toplamakta ve planlanan AAT arazisine aktarmaktadır. AAT henüz inşa edilmediğinden, kolektör hattı AAT alanının kuzey kenarından doğu yönünde geçerek deşarj noktasına devam etmekte ve sonrasında AAT alanının kuzey doğusu boyunca Bulasan deresinin yan koluna kadar gitmektedir. Bu yan kol her mevsim kurudur. İlgın AAT'nin kurulmasıyla birlikte mevcut kolektör hattı AAT'ye bağlanacak ve atıksu deşarj edilmeden önce arıtılacaktır.

Projenin inşaat faaliyetlerinin 2023 yılı ilkbaharı itibarıyla başlaması öngörülmektedir. **Projenin personeli ihtiyaçları henüz belirlenmemiş olmakla beraber, özellikle inşaat aşamasında işe alımlarda öncelik yerel halka verilecektir.**



Projenin inşaat ve işletme aşamalarında çevresel etkileri olacaktır. Projenin muhtemel etkileri genellikle yerel ölçekte, düşük ile orta büyüklükte fakat kısa vadeli olacaktır.

Beklenen etkilerin yönetimi için bir Çevresel ve Sosyal Etki Değerlendirme (ÇSED) geliştirilmiştir. ÇSED, Proje'nin geliştirilmesinden kaynaklanan olası çevresel ve sosyal etki ve riskleri belirlemek ve önemli olumsuz çevresel etkiler için etki azaltma önlemleri önermek amacıyla hazırlanmıştır.

Ayrıca, ÇSED kapsamında uygulanacak **izleme ve denetim faaliyetleri** de tanımlanmıştır. ÇSED çalışmaları kapsamında toprak ve hava, mevcut gürültü ve koku seviyesi, su kaynakları, sosyoekonomik durum ve trafik üzerinde oluşabilecek etkiler belirlenmiş ve ilgili etki azaltma önlemleri belirlenmiştir.

4

MUNICIPAL SERVICES IMPROVEMENT PROJECT

PHOTOS FOR THE MEETING DATED JANUARY 03RD, 2023



MUNICIPAL SERVICES IMPROVEMENT PROJECT



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IMPROVEMENT PROJECT

Annex 9: Letter about Voluntary Leave of the Informal Land User

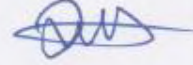
KONYA SU VE KANALİZASYON İDARESİ GENEL MÜDÜRLÜĞÜNE

Konya Su ve Kanalizasyon idaresine ait olan Arıtma Tesisindeki yeri kendi isteğimle
02.11.2021 tarihinde boşalttım.

Gereğini, bilgilerinize arz ederim.

02.11.2021

Şevket TEKER



Adres:

Ucan Mahallesi: 118999 Sok.
100. 10 D.1
0949 390 9170

MUNICIPAL SERVICES IMPROVEMENT PROJECT

Annex 10: Code of Conduct

CODE OF CONDUCT

[Note to Client: for supervision of civil works contracts:

A minimum requirement for the Code of Conduct should be set out by the Client, taking into consideration the issues, impacts, and mitigation measures identified, for example, in:

project reports e.g., ESIA/ESMP

any particular GBV/SEA requirements

consent/permit conditions (regulatory authority conditions attached to any permits or approvals for the project)

required standards including World Bank Group EHS Guidelines

relevant international conventions, standards or treaties, etc., national, legal and/or regulatory requirements and standards (where these represent higher standards than the WBG EHS Guidelines)

relevant standards e.g., Workers' Accommodation: Process and Standards (IFC and EBRD)

relevant sector standards e.g., workers' accommodation

grievance mechanisms.

The types of issues identified could include. risks associated with: labor influx, spread of communicable diseases, sexual harassment, gender based violence, illicit behavior and crime, and maintaining a safe environment etc.]

Amend the following instructions to the Consultant taking into account the above considerations.]

A satisfactory code of conduct will contain obligations on all Consultant's Experts that are suitable to address the following issues, as a minimum. Additional obligations may be added to respond to particular concerns of the region, the location and the project sector or to specific project requirements. The code of conduct shall contain a statement that the term "child" / "children" means any person(s) under the age of 18 years.

The issues to be addressed include:

1. Compliance with applicable laws, rules, and regulations
2. Compliance with applicable health and safety requirements to protect the local community (including vulnerable and disadvantaged groups), the Consultant's Experts, the Client's personnel, and the Contractor's personnel, including sub-contractors and day workers (including wearing prescribed personal protective equipment, preventing avoidable accidents and a duty to report conditions or practices that pose a safety hazard or threaten the environment)
3. The use of illegal substances
4. Non-Discrimination in dealing with the local community (including vulnerable and disadvantaged groups), the Consultant's Experts, the Client's personnel, and the Contractor's personnel, including sub-contractors and day workers (for example, on the basis of family status, ethnicity, race, gender, religion, language, marital status, age, disability (physical and mental), sexual orientation, gender identity, political conviction or social, civic, or health status)
5. Interactions with the local community(ies), members of the local community (ies), and any affected person(s) (for example to convey an attitude of respect, including to their culture and traditions)
6. Sexual harassment (for example to prohibit use of language or behavior, in particular towards women and/or children, that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate)
7. Violence, including sexual and/or gender based violence (for example acts that inflict physical, mental or sexual harm or suffering, threats of such acts, coercion, and deprivation of liberty)

MUNICIPAL SERVICES IMPROVEMENT PROJECT

8. Exploitation including sexual exploitation and abuse (for example the prohibition of the exchange of money, employment, goods, or services for sex, including sexual favors or other forms of humiliating, degrading behavior, exploitative behavior or abuse of power)
9. Protection of children (including prohibitions against sexual activity or abuse, or otherwise unacceptable behavior towards children, limiting interactions with children, and ensuring their safety in project areas)
10. Sanitation requirements (for example, to ensure workers use specified sanitary facilities provided by their employer and not open areas)
11. Avoidance of conflicts of interest (such that benefits, contracts, or employment, or any sort of preferential treatment or favors, are not provided to any person with whom there is a financial, family, or personal connection)
12. Respecting reasonable work instructions (including regarding environmental and social norms)
13. Protection and proper use of property (for example, to prohibit theft, carelessness or waste)
14. Duty to report violations of this Code
15. Non-retaliation against personnel who report violations of the Code, if that report is made in good faith

The Code of Conduct should be written in plain language and signed by each Expert to indicate that they have:

1. received a copy of the code;
2. had the code explained to them;
3. acknowledged that adherence to this Code of Conduct is a condition of employment; and
4. understood that violations of the Code can result in serious consequences, up to and including dismissal, or referral to legal authorities.

A copy of the code shall be displayed in the Engineer's office. It shall be provided in appropriate languages.



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هذا المشروع تم تمويله من قبل الاتحاد الأوروبي



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