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Supplementary Information Package

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1. Introduction

Mersin Water and Sewerage Administration (MESKİ) planned to construct a Wastewater Treatment Plant (WWTP) in the western side of the province for the use of Mezitli, Davultepe and Tece Districts by Metropolitan Municipality Law No. 5216 dated July 10, 2004 for the purpose of public weal.

MESKİ was established with Council of Minister's Decision No. 95/6750 dated May 04, 1995 in order to provide water and sewerage services for Mersin Metropolitan Municipality, to build, operate and manage all facilities required for this purpose. MESKİ is also the authorized body for the activities related with protection of water resources in the province.

The European Bank for Reconstruction and Development (the "EBRD" or the "Bank") signed a loan agreement for financing for the construction of the Greenfield Mezitli Wastewater Treatment Plant (Mezitli WWTP, the "Project") MESKİ on 18 June 2012. The Project included the construction of a WWTP including mechanical, biological and tertiary treatment (nitrogen and phosphorus removal) and sludge treatment (stabilization, dewatering and drying), the construction of pressure lines in the serviced areas between the Mezitli-Viranşehir Pumping Station to the Mezitli WWTP and the construction of a discharge line from the Mezitli WWTP to be connected to the existing deep sea outfall in Viranşehir District constructed by the Bank of Provinces in 2004-2005. The construction and operation of the pressure lines and the discharge line are not within the scope of EBRD financing.

Initially, the project was categorized as B as the WWTP's capacity was at the threshold limit of 150,000 population equivalent (p.e.). This project was also screened by the national competent authority and no Environmental Impact Assessment (EIA) study was required under the national EIA legislation and thus the Project received an EIA exemption letter from the Mersin Provincial Directorate of Environment and Urbanization (PDoEU) on December 28, 2010.

After some delays, the construction of the WWTP started in February 2016. In April 2016, EBRD became aware that the project capacity was increased after the project signing to 346,000 p.e. for Phase I and 556,000 p.e. for Phase II. A national EIA process was carried out and the EIA Positive Certificate was issued on January 2, 2014. As the revised Project significantly exceeds the initial 150,000 p.e. capacity threshold, a local EIA process was carried out for the Project after which environmental approval of the project was obtained in 2014. Due to the capacity increase, the Project was also re-categorized as Category A by the EBRD requiring that a comprehensive Environmental and Social Impact Assessment (ESIA) inclusive of a public disclosure and consultation process be undertaken of the project. .

This Supplementary Information Package (SIP) is prepared to provide supplementary information to complement the national EIA based on the comprehensive E&S Assessment carried out as required by the EBRD's Environmental and Social Policy and Performance Requirements (PRs). Within the Category A Project Disclosure Package a Stakeholder Engagement Plan (SEP), an Environmental and Social Action Plan and a Non-Technical Summary are also included.

2. Project Description

MESKİ is planning to construct and operate Mezitli WWTP and the associated Pressure Lines and Discharge Line (the Project). The construction activities started in February 2016 and is planned to continue for 24 months. The Project includes the construction of a WWTP with mechanical, biological and tertiary treatment (nitrogen and phosphorus removal) and sludge treatment (stabilization, dewatering and drying), the construction of the associated pressure lines in the serviced areas between the Mezitli-Viranşehir Pumping Station to the Mezitli WWTP and the construction of a discharge line from the Mezitli WWTP to be connected to the existing deep sea discharge in Viranşehir District. The deep sea discharge was constructed by the Turkish Bank of Provinces in 2004-2005. The necessary pumping stations and the sewerage system were constructed within the scope of a separate project.

The Mezitli WWTP Project includes the following main units:

- Physical Treatment Units
 - Mechanically cleaned fine screens
 - Aerated oil and grit chamber

- Primary clarifier
- Biological Treatment Units
 - Anaerobic bio-phosphate tanks
 - Aeration tanks
 - Secondary clarifiers
- Sludge Management
 - Sludge thickening by gravity
 - Sludge thickening mechanically
 - Sludge mixing tank
 - Anaerobic sludge digester
 - Cogeneration unit
 - Sludge dewatering
 - Sludge drying
 - Odour control

Mezitli WWTP Project also includes:

- Pressure line and discharge line (already have been established by MESKI) the construction and operation of these lines is not within the scope of EBRD financing)

The construction of pressure line and discharge line has been completed as declared by MESKI representatives. After the completion of Mezitli WWTP construction, the lines will be connected to the treatment plant.

Schematic view of the proposed WWTP is provided in Figure 2-1.



Figure 2-1 Schematic View of the proposed Mezitli WWTP

Mezitli WWTP will be located on 76,600 m² area and the area is located approximately 1.5 km north of the Mediterranean Sea with an urban area lying adjacent to the sea within just over 200m of the site to the north, west and north-east. The nearest residential area to the Project Area is Esenbağlar District. The center of the district is at 1,300 m distance to the Project Area. The pressure and discharge lines will pass along the existing roads and streets. Thus, there is no existing natural vegetation and the land mostly belongs to the Mersin Metropolitan Municipality and General Directorate of Highways on the route of pressure and discharge lines. The location of the proposed Mezitli WWTP, the pressure lines and the discharge line connected to the deep sea discharge in Viranşehir are shown below in Figure 2-2. And also as of June 2017, there are residential properties under construction which are at a distance of approximately 14 meters to the east of the Project Area (See Figure 2-3).



Figure 2-2 Project Layout



Figure 2-3 Nearest Residential Property located at 14 m distance to the construction border line (June, 2017)

AECOM was informed that before MESKİ started its activities officially at the Project Area, it was required to secure consent from the Provincial Directorate of Agriculture as a legal requirement in Turkey to use the Plant Area for non-agricultural purposes. MESKİ secured the consent on May 10, 2010. The WWTP site is located between Mezitli creek to the west and State Hydraulic Works' (DSİ) irrigation channel to the north. MESKİ secured the consent for the project from the VI. Regional Directorate of the DSİ on November 10, 2009. The project area is also designated as wastewater treatment plant area in Master Plans (1/5000 and 1/1000 scale) with the Town Council Decision dated 15/10/2010.

The milestones of the Mezitli WWTP Project are as follows:

- According to the former Environmental Impact Assessment (EIA) regulation (Official Gazette No. 26939, date July 17, 2008), wastewater treatment plant projects with capacity of 150,000 population equivalent (p.e.) or lower are exempt from the EIA review process. Thus, MESKİ applied to the Mersin Provincial Directorate of Environment and Urbanization (PDoEU) to secure development consent for the first stage of the Mezitli WWTP (150,000 p.e.). The proposed Project received an EIA exemption letter from the PDoEU on December 28, 2010.
- Although the Project was exempt from the EIA regulation and despite that a public participation or public disclosure was not required under the EIA procedure, a disclosure meeting was held on June 30, 2011 as a requirement of Environmental Management Plan (EMP) prepared by MESKİ for a project to be financed by the World Bank that included the construction of the sewerage system of Mersin Western Basin including sewer mains, forced mains, pumping stations and sewer lines. It should be noted that the project did not include the construction of the proposed WWTP. The meeting was announced to various associations and non-governmental organizations (NGOs) (32), professional chambers (17), labor unions (6) and neighborhood headmen (15) through correspondences and phone calls. 13 people attended to the meeting. These people were mostly from MESKİ (10 people) and other participated institutions were Municipality and Local Administrations Labor Union, Turkish Red Crescent and Mersin Chamber of Marine Commerce.
- Feasibility study report for the WWTP was issued in September 2011.
- A Public Disclosure Meeting was organized on March 5, 2012 (at the Technical Services Departments Building of MESKİ), in which the scope and stages of the Project, project benefits, associated construction and operation activities, environmental and social impacts, risks and mitigation and monitoring activities were explained. 11 people attended to the meeting.
- On 18 June 2012, a loan agreement was signed between the EBRD and MESKİ. EBRD categorized the 150,000 p.e. capacity project as B. After signing, the construction activities had been delayed due to issues related to procurement.
- In 2013, the project capacity was increased to 346,000 p.e. for Phase I and 556,000 p.e. for Phase II.
- According to Turkish EIA Regulation (Official Gazette No. 29186, date November 25, 2014), with its increased capacity, Mezitli WWTP Project falls under Annex-I (Item 16: Wastewater treatment plants with capacity greater 150,000 p.e. and/or 30,000 m³/day). Accordingly a local EIA process was carried out for the Project in 2013 and EIA Positive Certificate was secured on January 22, 2014.
- Within the scope of the local EIA process MESKİ organized a Public Participation Meeting on September 3, 2013 in the wedding hall of Mezitli Municipality. Attendees were from MESKİ, other governmental institutions and EIA consultant company. No local people attended the meeting.
- As the revised Project significantly exceeds the 150,000 p.e. capacity threshold for WWTPs, the EBRD recategorised the project as A.
- The construction activities of the Mezitli WWTP started in February 2016 and is planned to be completed at the end of 24 months construction period. As of mid-August construction has progressed at a rate of 50%.

Unit Operations and Processes of Mezitli WWTP

According to the information provided in Conceptual Design Project Process Report, wastewater will be transferred from Mezitli and Davultepe pumping stations to the treatment plant via two separate sewerage lines. The construction of pumping stations and sewerage lines was completed as declared by MESKİ.

The wastewater collected in the catchment basin at the entrance of the facility will be transferred to pre-treatment units.

The first unit of the WWTP is fine screens to collect the large particles that may damage the biological treatment units. Since the wastewater is treated through coarse screens at Mezitli and Davultepe pumping stations, coarse screens are not required at Mezitli WWTP.

Fine screens will have channel width of 1.7 m and bar spacing of 6 mm. 3 fine screens for the 1st stage; 4 fine screens for the 2nd stage are required. The screens are designed as mechanically cleaned. The wastes collected in the screens will be transferred to waste storage containers with conveyors.

The wastewater will then be transferred to oil and grit removal unit. 3 oil and grit chambers for the 1st stage; 4 oil and grit chambers for the 2nd stage are planned to be used. Total volume of the unit will be 260 m³ and the water height will be 2.67 m. The air required in the grit chamber will be provided with blowers with 300 m³/hr capacity. After the oil and grit chamber the wastewater will be sent to primary clarifiers.

The number primary clarifiers designed to minimize the organic pollutant load and suspended particles will be 3 for the 1st stage and 4 for the 2nd stage. The tank diameter will be 25 m and water depth will be 4 m.

In order to meet the required carbon amount for nitrogen removal in the biological treatment units, hydraulic retention time is kept low. The pre-treatment operations are completed with the primary clarifiers and then the wastewater is transferred to anaerobic bisphosphate tanks which are the first step of biological treatment. Number of anaerobic tanks will be 3 for the 1st stage and 4 for the 2nd stage.

The biophosphate tanks designed as carousel will have total tank length of 33 m and width of 8 m. The wastewater will be transferred to aeration tank after 42 minutes retention time.

There will be 3 aeration tanks, which are the second step of biological treatment, are designed as carousel for the 1st stage and 4 for the 2nd stage. The dimensions of the tank will be 119 m x 24 m and the tank depth will be 6.5 m. Nitrification, denitrification and carbon removal process will take place simultaneously in the same reactor. Since phosphate removal has the most strict discharge criteria, chemical phosphate removal will take place in the facility from time to time. Therefore discharge standards will be met in terms of total phosphate parameter.

Biological treatment is designed according to German ATV-DVWK-A 131 E Standard. The stabilization of biological sludge cannot be carried out in aeration tanks due to low sludge age. Total sludge age for the system is 8.5 days. The oxygen required for aeration will be provided with blowers having 9,660 m³/hr capacity. The number of blowers will be 3 for the 1st stage and 4 for the 2nd stage. The number of diffusers required is 4,800 for the 1st stage and 9,660 for the second stage. Membrane disk diffusers will be used in aeration.

After the biological reactors, secondary clarifiers will be used to separate active biomass and treated wastewater. Treated wastewater will then be sent to Mezitli pumping station and discharged in deep sea.

3 secondary clarifiers for the 1st stage, 4 secondary clarifiers for the 2nd stage are planned to be constructed. Tank diameter is 31 m and side water height is 3.65 m. The sewage sludge separated from the clarifiers will be returned to the bio-phosphate tanks at a rate of 0.75 and the sludge age required by the system will be achieved.

Sludge thickening will be carried out in order to manage the sludge generated in biological treatment and settled in primary clarifier. The sludge in biological treatment and sludge in primary clarifier will be thickened separately.

The sludge settled in primary clarifier will be thickened by means of gravity settling on a continuous basis and 1 tank is designed for this purpose. The solid content of the sludge will be increased from 2% to 5-6%. The retention time in thickener is 3.6 hours.

Thickening of biological sludge will be carried out with decanters with 50 m³/hr capacity. There will be 2 decanters in 1st stage and 3 decanters in 2nd stage. Decanters will be in operation 24 hrs in a day. Some portion of the thickened sludge will be transferred to mechanical disintegration unit. Digestion of the sludge will be carried out easily with deterioration of the organic content in sludge. The sludge generated in primary clarifiers cannot be sent to disintegration unit due to low organic content.

The sludge generated in the facility will be mixed in sludge mixing tank and sent to anaerobic sludge digester. Sludge mixing tank will be circular in shape having 53 m³ volume and 5 m diameter.

Since the sludge generated in the system is unstable due to low sludge age and cannot be disposed as is, sludge stabilization system is required. Stabilization of the sludge will be conducted with anaerobic sludge digesters.

The sludge taken from thickener will be sent to digester with pumps. The biogas generated in the digester will be converted to electrical energy with gas engines. Besides, waste heat will be used for heating required in digester and sludge drying.

The digester tank with 7,500 m³ capacity will have 16.3 m height and 18 m diameter. The biogas generated in the digester will be collected in a gas storage area with 7,150 m³ capacity. The biogas will then be transferred to gas engine with a transmission line.

Retention time in the digester will be 18 days for the 1st stage and 15 days for the 2nd stage. After the digestion process the sludge will be sent to sludge storage tank with 126 m³ capacity for temporary storage.

The digested sludge will be transferred to sludge dewatering. Since the concentration in the sludge will be increased due to anaerobic reactions during the stabilization period, the solid concentration will be 3.5-4.5% at the beginning of sludge dewatering. Dewatering of the sludge will be carried out with decanter centrifuge and the solid concentration will be 25%.

After dewatering the sludge will be transferred to sludge drying to have 90% solid concentration. Drying will be carried out at 80-120°C temperature.

Odour management will be provided by bio-filtration system at wastewater catchment basin, screens and sludge building and odour generation will be minimized.

3. Project Alternatives

3.1 Site Location

The Feasibility Study prepared for MESKI highlighted the need for two wastewater treatment plants to serve the city to ensure no untreated wastewater is discharged to the sea or to rivers: one at the eastern basin, Karaduvar WWTP and the other one at the western basin of the city, namely Mezitli WWTP. Initially the plan was to construct both plants in parallel during the period 2007-2009 as part of a single contract. The Bank of Provinces (İller Bankası) was planning to construct Mezitli WWTP in Viranşehir. However, as the proposed area for the WWTP was an archaeological site, the area could not be acquired and the Bank of Provinces could only construct a pumping station with a grit chamber and a deep sea discharge line during 2004-2005.

Then in 2006, MESKI intended to construct the WWTP in Kuyuluk in parallel to Karaduvar WWTP that was proposed in the eastern basin. However, the WWTP could not be constructed due to the requirement of expropriation. Expropriation cost of the area in Kuyuluk was very high since the number of privately owned lands was high. As a result, only Karaduvar WWTP which currently serves Yenışehir, Toroslar, and Akdeniz municipalities, was completed in 2009. Karaduvar WWTP was designed to treat a wastewater flow of 190,000 m³/day from a PE of 1 million. This WWTP contributes to the improvement of the sea water quality in Mersin Bay.

Another site location alternative for Mezitli WWTP was owned by the Treasury. The area was 76,600 m² and adequate for Phase I and Phase II of the project. the elevation of the area was suitable for the gravity flow to the sea, far from the residential areas with an urban area lying adjacent to the sea within just over 200 m of the site to the north, west and north-east at the time of the EIA process (on 2013, EIA Report), and the service area of the plant would be Mezitli, Davultepe and Kuyuluk). Therefore, this location was chosen as the project site.

3.2 Treatment Technology

During the design studies of Mezitli WWTP three different alternatives are assessed for treatment technology.

Technology alternatives considered for Mezitli WWTP are;

- Conventional activated sludge process
- Extended aeration activated sludge process
- Membrane Biological Reactors (MBRs)

Conventional Activated Sludge Process

In conventional activated sludge process there are three basic components:

- A reactor in which the microorganisms are kept in suspension, aerated and in contact with the wastewater that will be treated.
- Liquid-solid separation, usually in a sedimentation tank
- A sludge recycling system for returning solids removed from the liquid-solids separation unit back to the beginning of the process

Activated sludge process can be appropriate where high removal of organic pollution is required; funds and skilled personnel are available for operation and maintenance and land is scarce or expensive. A steady energy supply is a key requirement in this process since activated sludge requires the continuous operation of oxygen blowers and sludge pumps. The system usually needs some form of pre-treatment, such as screening and primary sedimentation.

Efficient removal of BOD, COD and nutrients can be achieved when the system is well designed and professionally operated. The process has flexibility in itself and numerous modifications can be applied to meet the specific requirements. However the system is expensive in terms of capital cost and operation and maintenance costs as well. It also requires constant energy supply and trained operators to keep the system under control and take prompt actions to the changes in the system.

Extended Aeration Activated Sludge Process

This process is used extensively for pre-engineered plants for small communities. Generally, primary clarification is not used. Secondary clarifiers are designed at lower hydraulic loading rates than conventional activated sludge clarifiers to better handle large flowrate variations typical for small communities.

The extended aeration systems are advantageous since;

- High quality effluent is possible
- The system has relatively uncomplicated design and operation
- The system is capable of treating shock/toxic loads
- The system has well-stabilized sludge and therefore low biosolids production.

However there are also disadvantages for extended aeration activated sludge process:

- Aeration energy use is high
- The system requires relatively large aeration tanks
- The system is adaptable mostly to small plants.

Membrane Biological Reactors (MBRs)

The concept of Membrane Biological Reactor (MBR) systems includes utilization of a bioreactor and microfiltration as one unit process for wastewater treatment therefore replacing the solids separation function of secondary clarification and effluent filtration. The ability to eliminate secondary clarification and operate at higher suspended solids concentration provides following advantages:

- Higher volumetric loading rates and therefore shorter reactor hydraulic retention times
- Longer sludge retention times (SRTs) resulting in less sludge production,
- Operation at low dissolved oxygen (DO) concentrations with potential for simultaneous nitrification-denitrification in long SRT designs
- High-quality effluent in terms of low turbidity, bacteria, total suspended solids (TSS) and biochemical oxygen demand (BOD) and
- Less space required for wastewater treatment

Disadvantages of MBRs include high capital costs, limited data on membrane life, potential high cost of periodic membrane replacement, higher energy costs and the need to control membrane fouling.

In consequence of design and engineering studies carried out, the Mezitli WWTP is planned to be constructed as conventional activated sludge system including pre-denitrification. The selection of this system was based on the following benefits:

- Biogas production and energy generation
- Low energy requirement for sludge drying
- Operational convenience
- Less area requirement
- Less initial investment cost
- Less aeration requirement and energy consumption
- Less sludge production and sludge disposal cost.

3.3 No Action Alternative

In case of no action alternative, no changes will take place at the Project Site. This alternative will eliminate the opportunity of treatment of wastewater in an environmentally and healthwise acceptable and sustainable manner.

According to the information provided in the EIA Report only 16% of the WWTP's in Turkey have the capacity to treat the wastewater according to European standards. Therefore the Mezitli WWTP is planned be constructed in accordance with the internationally recognized standards and will provide service as much residents as possible.

Realization of the Project will be a good opportunity for implementation of a clean and sustainable management of wastewater. In addition, the socioeconomic benefits will be achieved mainly from the operational phase and partially from the construction phase due to increase in employment opportunities.

4. Environmental and Social Management System and Monitoring

Mersin Metropolitan Municipality was established with Decree Law No. 504 on September 09, 1993. After that, Mersin Water and Sewerage Administration (MESKİ) was established with Council of Minister's Decision No. 95/6750 on May 04, 1995 in order to provide water and sewerage services for Mersin Metropolitan Municipality, to establish all facilities required for the purpose, take over the established facilities and consolidated management of all facilities. MESKİ also conducts activities related with protection of water resources.

4.1 MESKI Organizational Structure

MESKI is managed by a General Manager appointed by the Mayor of Mersin. The organization has eight corporate support departments and three deputy general managers in charge of a total of 14 line departments. Corporate support departments are as follows:

- Quality Management System Department
- Media, Publications and Public Relations Department
- Registry and Decrees Department
- Contracts Unit
- Supervisory Board Department
- Internal Audit Department
- Legal Consultancy Department
- Private Secretary Office

Line departments are as follows:

- Human Resources and Training Department
- Strategy Development Department

- Subscription Services Department
- Financial Services Department
- Support Services Department
- IT Department
- Investment and Construction Department
- Property and Expropriation Department
- Planning and Project Department
- Operations Department
- Sewerage Department
- Treatment Plants Department
- Drinking Water Department
- Machinery Supply and Facilities Department

While the Investment and Construction Department is responsible for all activities during the construction of treatment plants, the Treatment Plants Department is responsible during the operation phase of the facilities.

There are eleven wastewater treatment plants and one drinking water treatment plant under the responsibility of MESKİ. These are:

- Mersin Merkez Karaduvar Wastewater Treatment Plant
- Tarsus Wastewater Treatment Plant
- Erdemli Wastewater Treatment Plant
- Silifke Wastewater Treatment Plant
- Kızkalesi Wastewater Treatment Plant
- Atakent Wastewater Treatment Plant
- Kargıpınarı Wastewater Treatment Plant
- Narlıkuyu Wastewater Treatment Plant
- Anamur Wastewater Treatment Plant
- Bozyazı Wastewater Treatment Plant
- Mut Wastewater Treatment Plant
- Berdan Drinking Water Treatment Plant

Project Implementation Unit (PIU)

According to the Environmental and Social Analysis Report prepared by AECOM on May 2012 a Project Implementation Unit (PIU) was established during the Karaduvar WWTP Project. The MESKİ staff were trained in the activities and operation of the PIU.

A Project Implementation Unit was also established for Mezitli WWTP Project. An assignment letter dated November 03, 2014 was sent from MESKİ indicating the name of team members of the Project Implementation Unit (See Appendix A). According to the Annual Environmental and Social Report prepared in February 2016 by MESKİ, the PIU is responsible to monitor the compliance of all activities ongoing at site with the requirements of EBRD and legislative requirements.

4.2 Management Systems

MESKİ has environmental engineers under the Treatment Plants Department and also an environmental management unit was established by MESKİ in its main organization in order to provide compliance with national requirements and also for the establishment of environmental management system.

All duties and responsibilities of MESKİ are defined in the Metropolitan Municipalities Law No. 5216 and environmental performance of MESKİ and its contractors are monitored by the authorities and related environmental legislation.

According to the 2017 Year Annual Performance Program Document prepared by MESKİ, ISO EN 9001 Quality Management System Certificate was secured in 2015 and the first audit for the certification was carried out in 2016.

In order to have effective management of the internal and external grievances, to better meet expectations and to assess the grievances as a tool for continuous improvement, certification studies for TS ISO 10002 Customer Satisfaction Management System was carried out in August 2016 and certification attained.

MESKİ also aims to construct, maintain and continuously improve a management system in accordance with TS ISO/IEC 27001 Information Security Management System Standard in order to raise the awareness of the personnel and determine the risks on information security; protect the accessibility of institutional and personal information they retain; increase the quality of work with monitoring the supplier relationship; create a dynamic structure in order to adapt the change and development in the field of information technologies; and comply with all legislative requirements on information security.

In the 2017 year annual performance program report, environmental, health and safety and quality policies of MESKİ are provided.

The Environmental Policy commits that MESKİ will;

- Fulfill the environmental responsibilities in compliance with the legislative requirements
- Conduct necessary studies to prevent or to minimize environmental pollution
- Dispose the wastewater avoiding any impact on ecological balance
- Share the experiences and information on environmental awareness with the stakeholders
- Protect human health and environment and carry out the activities in a sustainable manner
- Prevent water pollution and take required measures to protect the water resources and water basins.

The Health and Safety Policy commits that MESKİ will;

- Protect the health of all employees, suppliers and visitors and provide their safety,
- Minimize the number of work related accidents by determining and controlling the risky conditions
- Conduct trainings for employees to provide awareness on Health and Safety.

The Quality Policy commits that MESKİ will;

- Establish international quality standards in all operations
- Provide services to all locations in Mersin with the same quality and standard
- Transfer the drinking water from the source to the consumers with safe and healthy conditions
- Minimize any potential problems with planned and systematic approach
- Adopt maximum quality and minimum cost with high efficiency.

MESKİ Annual Environmental and Social Report dated February 2016 reports that, three environmental officers were appointed by MESKİ to audit existing facilities regarding compliance with national environmental legislation requirements. As stated in the Regulation on Environmental Officer, Environmental Management Unit and Environmental Consultant Company" published in Official Gazette No: 28828 dated 21 November 2013, MESKİ is liable to establish an Environmental Management Unit. This requirement has been fulfilled. According to the assignment letter dated December 12, 2016; seven (7) personnel for Environmental Management System and eight (8) personnel for Occupational Health and Safety Management System was assigned to carry out necessary studies and provide sustainability of the systems (See Appendix A).

In addition to the above mentioned personnel, MESKİ also designated personnel to implement ESAP and monitoring activities (See Appendix C) according to the assignment letter dated February 13, 2017 (See Appendix A).

Mass Aritma, main contractor of Mezitli WWTP Project, has ISO 9001 Quality Management System, ISO 14001 Environmental Management System certificates which are valid until 14 September 2018 and OHSAS 18001 Occupational Health and Safety Management System certificate which is valid until 14 December 2019 for design and contracting services in the field of environmental engineering; design and production of electromechanical equipment; design and production of package type waste water treatment units, as well as after sales and operation services. Certificates are secured from TÜV NORD CERT GmbH.

The construction activities are carried out in compliance with the management system requirements and monitored by Temelsu. Temel-su has certificates for ISO 9001 and ISO 14001 management systems valid until 15 September 2018 and for OHSAS 18001 management system valid until 31 July 2019 for design and realization of consulting engineering services for dams and hydro-plants, irrigation and drainage schemes, water supply and sewerage systems, highways and motorways, urban transport and airports, oil and gas pipelines and environmental projects. Certificates are secured from SGS Supervise Gözetme Etüd Kontrol Servisleri A.Ş. Certification and Business Enhancement.

4.3 Project Specific E&S Management System

In order to assess, control and continuously improve the overall environmental and social performance of the Project, MESKİ should establish an Environmental and Social Management System specifically for Mezitli WWTP Project. The ESMS should include;

- Policy
- Identification of Risks and Impacts
- Management Programs and Plans
- Organizational Capacity and Competency
- Emergency Preparedness and Response
- Stakeholder Engagement
- Monitoring and Review

MESKİ does not have a certified environmental management system, however, all duties and responsibilities of MESKİ are defined in the Metropolitan Municipalities Law No. 5216 and environmental performance of MESKİ and its contractors are controlled by the authorities and related environmental legislation.

An Environmental Management Unit is designated by MESKİ in its main organizational structure. The assignment letter for this unit dated December 12, 2016 refers to the Strategical Plan of MESKİ which sets the objective of establishing TS EN ISO 14001 Environmental Management System and OHSAS 18001 Occupational Health and Safety Management System. For this purpose seven (7) personnel for Environmental Management System and eight (8) personnel for Occupational Health and Safety Management System was assigned to carry out necessary studies and provide sustainability of the systems.

A Health and Safety Management Plan was prepared by the main contractor, Mass Aritma, specifically for the Mezitli WWTP Project. The plan was approved by the controller company, Temelsu and also MESKİ. The management plan includes:

- Legislative framework, standards and other requirements
- Organizational setup that describes in detail the responsibilities for each person assigned,
- Contractor and sub-contractor responsibilities,
- Site control and monitoring procedures,
- Training Procedures.
- Risk Management
- Emergency Response Plan
- General operational requirements

In compliance with national legislation, it is committed in the EIA Report prepared for the Project that all H&S measures would be taken during all operations for all phases of the project in accordance with Health and Safety Law (No: 6331) and Labor Law (No: 4857) and pertinent legislation.

According to the information provided in Annual Environmental and Social Report prepared in February 2016 by MESKİ, MESKİ has established an Occupational H&S department carrying out health and safety related activities to minimize potential risks for the accidents at existing facilities. Also it is stated in the report that contractors are required to establish Occupational H&S Management System for any new facility. Moreover, Occupational H&S department of MESKİ will monitor the contractors' activities to improve contractor H&S performance and reliability.

5. Potential E&S Impacts of the Project

The identified potential environmental and social impacts of the Mezitli WWTP Project are described and mitigation measures for these impacts are proposed in the extent of this Section.

5.1 Odour Emission Assessment

Odour emitted by wastewater treatment plants (WWTPs) is one of the major concerns for local authorities in relation of the nuisance generate in the neighborhoods (Belgiorno et al., 2012). One key impact to be considered during the operation period of the proposed Project would be odour. At the conceptual design stage, odour was planned to be minimized via biofilter system. The details of the biofilter system was required to be determined during the preparation of the final feasibility report and the MESKİ should confirm the compliance of the effluent from biofilter system with the relevant local Regulation.

There are currently no mandatory numerical standards set in Turkey for odour concentration in ambient air at the site boundary or at receptor locations. However the Mezitli WWTP tender document has set out requirements in Volume 2, Part II, Section VI-I Addendum No:2, Changes No:14, "Minimum removal efficiency of the odorous air treatment system related to Odour Units (OU) according to VDI standard 3881 (Olfactometry, Odour Threshold Determination) must not be below 95%". This requirement was fulfilled in the design.

Considering the capacity increase from 150,000 p.e. to 356,000 p.e. and the residential buildings that have been built closer to the WWTP since 2012, the Gap Analysis carried out by AECOM in November 2016 recommended a further odour assessment study including odour modelling and H₂S assessment to supplement the assessment in the local EIA.

It was concluded that an odour dispersion modeling study could also assist the design team with identifying suitable locations for odour generating activities and stack/vent heights or for identifying the size of a buffer zone where development is not permitted. In light of the scale of development planned in this area over the next few decades and the lifespan of this facility, odour dispersion modeling could also help to estimate the odour impact on the amenity of residents and potentially tourists and additional mitigation measures could be developed if any areas were identified where impacts would be unacceptable.

A number of new residential properties have been built since the EIA certificate was achieved. Therefore, the odour assessment study has considered both the new residential properties as receptors and the receptors that were present in the local area prior to the EIA certificate being achieved.

5.1.1 Odour Assessment Criteria

Regulation on the Control of Odour Generating Emissions published in Official Gazette No: 28712 dated July 19, 2013 defines the technical and administrative rules and procedures to control and minimize odorous emissions.

As stated earlier, there are currently no mandatory numerical standards set in Turkey for odour concentration in ambient air at the site boundary or at receptor locations. However the Mezitli WWTP tender document has set out requirements in Volume 2, Part II, Section VI-I Addendum No:2, Changes No:14, "Minimum removal efficiency of the odorous air treatment system related to Odour Units (OU) according to VDI standard 3881 (Olfactometry, Odour Threshold Determination) must not be below 95%".

In the UK a "custom and practice" guideline values have been advised for use with dispersion modelling. The UK Horizontal Guidance Note IPPC H4, issued by the EA in conjunction with NIEA, discusses assessment criteria with reference to the relative offensiveness of odour (hedonic score) for different sources with a benchmark of 1.5

ouE/m^3 as a 98th percentile of the hourly average concentration for one year for the most offensive odours which include processes involving septic effluent or sludge. Moderately offensive odours such as those from intensive livestock rearing are set a benchmark of $3 \text{ ouE}/\text{m}^3$ for the 98th percentile whilst the less offensive odours such as those from brewing have a benchmark of $5 \text{ ouE}/\text{m}^3$ for the 98th percentile. These benchmarks relate to a standard of 'no significant pollution'. A 98th percentile of hourly concentrations allows the specified concentration to be exceeded for 175 hours in a year.

The main source of research into odour impacts in the UK has been the wastewater industry and the most in-depth study published in the UK of the correlation between modelled odour impacts and human response (dose-effect) was published by UK Water industry Research (UKWIR) in 2001. This was based on a review of the correlation between reported odour complaints and modelled odour impacts in relation to nine wastewater treatment works in the UK with ongoing odour complaints. The findings of this research (and subsequent UKWIR research) were used by the Chartered Institution of Water and Environmental Management (CIWEM) to develop the following indicative guidelines:

- At modelled exposures of below $3 \text{ ouE}/\text{m}^3$ for the 98th percentile, complaints are unlikely to occur and exposure below this level is unlikely to constitute significant pollution or significant detriment to amenity unless the locality is highly sensitive or the odour highly unpleasant in nature;
- At modelled exposures between $5 \text{ ouE}/\text{m}^3$ and $10 \text{ ouE}/\text{m}^3$ for the 98th percentile, complaints may occur and depending on the sensitivity of the locality and nature of the odour, this level may constitute a nuisance;
- At modelled exposures greater than $10 \text{ ouE}/\text{m}^3$, complaints are highly likely and odour exposure at these levels represents an actionable nuisance.

The $5 \text{ ouE}/\text{m}^3$ for the 98th percentile impact criterion has since been accepted as being appropriate in a number of WWTP planning applications for avoidance of significant risk of annoyance and a low risk of nuisance. It is also used widely in Northern Ireland.

CIWEM's position on the differing odour impact criteria available is that the selection of the most appropriate criterion should be determined by the objective of the assessment (whether this be against a standard of avoidance of nuisance or 'significant pollution') and the nature of the odour under assessment (CIWEM, 2012). For this assessment, this would suggest that the $5 \text{ ouE}/\text{m}^3$ odour assessment standard would be the most appropriate.

5.1.2 Odour Modelling Study

The US EPA AERMOD (version 15181) atmospheric dispersion model was used to predict odour concentrations at properties and other sensitive locations near the site, and to produce impact plots. AERMOD is a steady-state atmospheric dispersion model that incorporates air dispersion based on modern atmospheric physics, including treatment of both surface and elevated sources, and both simple and complex terrain. The model calculates downwind concentrations in the surrounding area for each hour in the meteorological dataset. Statistics on the frequency and concentration at the receptors are based upon these hourly calculations. This is an advanced model widely accepted for predicting impacts from odour sources.

Detailed dispersion modelling was undertaken to determine potential odour concentrations in the vicinity of the completed Stage II WWTP design and undertake additional modelling to determine the potential works that could be undertaken to reduce odour concentrations in the local area.

Odour concentrations were predicted as the 98th percentile of hourly averages using the AERMOD detailed dispersion modelling software. The results were discussed with reference to the $5 \text{ ouE}/\text{m}^3$ odour assessment standard proposed by CIWEM and the more stringent $1.5 \text{ ouE}/\text{m}^3$ benchmark set by the UK Environment Agency (EA, 2011) for the most offensive odours.

No information was available on background odour or H_2S concentrations in the study area so background odour concentrations have not been taken into account in the modelling. However, concentrations are expected to be low as there are no obvious sources in the area.

Modelling of existing and proposed odour sources at the site was undertaken to determine odour concentrations in the vicinity of the site. The locations of the significant modelled sources are shown in Figure 5-1. Emission rates are given as an amount of pollutant or odour released per unit area per second, i.e. $\text{ouE}/\text{m}^2/\text{s}$. The odour concentration at a receptor location is stated as a concentration in a volume of air, i.e. ouE/m^3 .

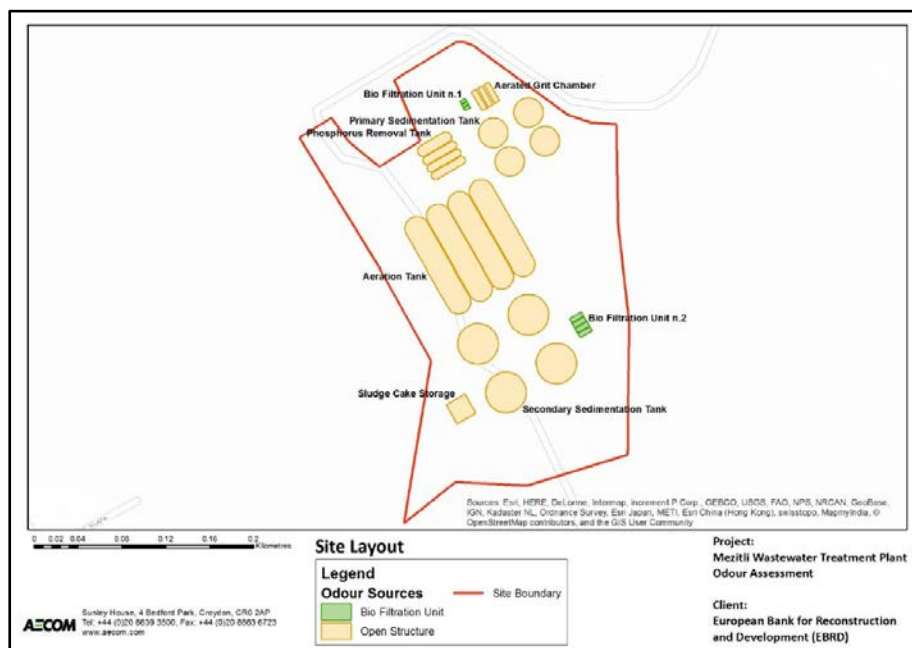


Figure 5-1 Locations of Modelled Open Sources

An odour survey was carried out at the Karaduvar WWTP in Mersin which is a similar facility close to the Mezitli site. The Mezitli WWTP will use ferric chloride (FeCl_3) to increase the removal of phosphorous in the phosphorus removal tanks and subsequent stages of the WWTP process by chemical precipitation in addition to the biological removal. This process is referred to as “ferric dosing”, though the term is also applied to the addition of ferric sulphate or ferrous sulphate.

Many studies have been undertaken regarding the effects of ferric dosing on odour from WWTPs and these have identified that ferric dosing can lead to the reduction in odorous emissions. Sydney Water in Australia routinely adds it to the sewers for corrosion and odour control management (Sydney Water, 2009). This reduction in H_2S emissions is due to the FeCl_3 reacting with dissolved sulphide leading to its precipitation, this reduces H_2S emissions as dissolved sulphide is a precursor to H_2S emissions. It also reacts with other compounds that would, if left, result in odorous emissions. Reductions of 40% can be achieved with larger reductions of more than 70% if the dosing is optimized.

It should be noted, however, that the Karaduvar WWTP does not employ “ferric dosing” as part of the phosphorus removal process. As such monitored odour concentrations from the Phosphorus Removal Tanks at the Karaduvar WWTP have been reduced by 40% to account for the difference in emissions which may be achieved given the different phosphorus removal process.

AECOM maintains a library of emission data from different stages of the treatment process for a wide number of UK, Irish and Australian WWTPs. These data were reviewed in comparison to the monitored rates from the Karaduvar WWTP. This comparison has highlighted that emission rates from the Aeration Tanks on the Karaduvar WWTP are significantly higher than monitored odour concentrations from both Australian and UK WWTPs and it is believed that this monitored odour concentration is incorrect showing very little difference to the previous treatment stages. As such, odour emission rates for the UK have been used in the modelling to more accurately reflect anticipated odour emission from this stage of the treatment process.

The monitored odour emission rates for each stage of the Karaduvar WWTP treatment process are presented in Table 5-1. This table also presented the UK values used to supplement the Karaduvar WWTP monitoring and the final numbers used within the dispersion modelling study.

Table 5-1 Modelled Emission Rates

Treatment Stage	Number of Units	Surface Area per Unit (m ²)	Emissions (ou _E /m ² /s)		
			Karaduvar WWTP Monitored Value	Monitored UK Rate	Modelled Emission Rate
02 – Aerated Grit Chamber	4	115.5	26.2	-	26.2
05 – Primary Sedimentation Tanks	4	530.9	14.3	-	14.3
07 – Phosphorus Removal Tank	4	263.2	7.2	-	4.3*
09 – Aeration Tanks	4	2,041.1	7.8	2.2	1.3*
11 – Secondary Sedimentation Tanks	4	1,075.2	0.3	-	0.3
Sludge Cake Storage	1	400.0	**	3.4	3.4

Note: * Adjusted to take account of ferric dosing (40% reduction in odour concentrations).

** Not undertaken at Karaduvar WWTP so UK rate used

Some of the treatment units on the site will be enclosed with the air from within the enclosed building/tank actively extracted and passed through bio-filters to reduce odour concentration in the extracted air before being released. To estimate odour emissions from the bio-filters the total odour emissions from the enclosed units have been calculated based on monitored odour emissions from the Karaduvar WWTP, in the same way as for open sources, and the resultant odour concentration has then been averaged over the surface area of the biofilter, after being factored to reflect the odour reduction achieved by the bio-filter.

The Karaduvar WWTP biofilters achieves an odour treatment rate of 98% efficiency and as such this has been applied to the two biofilters that form part of the Mezitli WWTP's odour control system.

5.1.3 Assessment Results

Scenario 1 presents exposure to odour from the works at the 37 receptor locations discussed previously with no additional mitigation. This scenario is based on the following assumptions:

- Scenario 1 –No additional odour mitigation, i.e. the Aerated Grit Lanes, PST's, Bio Phosphorus Tanks, Aeration Tanks and SST's are all uncovered.

The exposure during each of the three meteorological years was predicted as a 98th percentile of the hourly average concentrations in a year, and the odour concentration presented based on the modelled maximum concentration in the following tables. The threshold criteria are associated with human response to odour with respect to the level of offensiveness. The UK EA benchmark of 1.5 ou_E/m³ is considered to be applicable to the most offensive odours, such as septic sludge, whilst CIWEM has suggested that an assessment standard of 5 ou_E/m³ correlates with instances of odour nuisance complaints.

Based on the results for Scenario 1, 11 of the 22 receptors present before the WWTP was granted its EIA certificate are predicted to exceed the 5 ou_E/m³ odour criteria and 14 of the 22 receptors exceed the more stringent 1.5 ou_E/m³. All of the receptors built after the site was granted its EIA certificate are predicted to exceed the 5 ou_E/m³ odour criteria. At these concentrations, complaints are highly likely.

The reason for the high predicted concentrations at receptors, especially those closest to the WWTP are therefore anticipated to be due to those sources that are open to air and as such have no odour control/extraction. Further consideration of options to reduce off-site odour concentrations is, therefore, needed including enclosing additional sources on the site.

Regulation on the Control of Odour Generating Emissions published in Official Gazette No: 28712 dated July 19, 2013 defines the technical and administrative rules and procedures to control and minimize the emissions which generate odour.

The regulation lists the methods on mitigation measures in case the facilities are required to take odour preventing measures. The facilities are also permitted to implement other applicable techniques approved by the Ministry. The list classifies methods per type of the operations; preventive measures for Wastewater Treatment Plants (WWTPs) are listed below:

- Use of closed systems: prevention of odour causing emissions by covering the top of the treatment units
- Bio-filtrating: Bio-filtrating of all organic gases
- Flare at stacks-: Combustion of odour causing gases through flare stack

To reduce the impacts of open sources on the Mezitli WWTP given that receptors are already too close to impose an effective exclusion zone, the only remaining option is to reduce the number of open sources that are on the site. To minimize the number of units that need enclosing and therefore reduce additional expense as far as practicable the individual odour contributions have been reviewed. This shows that all open sources with the exception of the Secondary Sedimentation Tanks, Bio Phosphorus Tanks and Sludge Cake Storage are predicted to lead to exceedances of the 5 ouE/m³ standard if left uncovered, irrespective of contributions from other sources on the site. As such, we can conclude that the Aerated Grit Chamber, Primary Sedimentation Tank and Aeration Tanks will need to be enclosed if we are to see a significant reduction in off-site odour concentrations. To this end, the following mitigation scenarios have been considered:

- Scenario 2 –the Aerated Grit Chamber and Primary Sedimentation Tank are covered and have a 98% reduction in odour emissions, other sources remain uncovered.
- Scenario 3 –the Aerated Grit Chamber, Primary Sedimentation Tank and Aeration Tanks are covered and have a 98% reduction in odour emissions, other sources remain uncovered.
- Scenario 4 –the Aerated Grit Lanes, Primary Sedimentation Tanks, Aeration Tanks and Bio Phosphorus Tanks are covered and have a 98% reduction in odour emissions, the Secondary Sedimentation Tanks remain uncovered.

Table 5-2 sets out the odour rates used for each of these scenarios. The table also includes the Scenario 1 in which there is no additional odour mitigation, i.e. the Aerated Grit Lanes, PST's, Bio Phosphorus Tanks, Aeration Tanks and SST's are all uncovered for comparison.

Table 5-2 Modelled Odour Emission Rates (ouE/m²/s)

Modelled Odour Resources	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Biofilter 1	1.2	1.2	1.2	1.2
Aerated Grit Chamber	26.2	0.52	0.52	0.52
Primary Sedimentation Tanks (PST)	14.3	0.29	0.29	0.29
Bio Phosphorus Removal Tanks	4.3*	4.3*	4.3*	0.09*
Aeration Tanks	1.3*	1.3*	0.26*	0.26*
Secondary Sedimentation Tanks (SST)	0.3	0.3	0.3	0.3
Biofilter 2	2.6	2.6	2.6	2.6
Sludge Cake Storage Area	3.4	3.4	3.4	3.4

Note: Shaded cells have been reduced assuming a 98% reduction in odour emissions following mitigation

**Assumes a 40% reduction in odour emissions concentrations as a result of ferric dosing.*

5.1.4 Modelling Results and Recommendations

The key points of the assessment are summarized as follows:

- Scenario 1: With the proposed Mezitli Stage 2 WWTP operating as currently designed,
 - 11 of the 22 receptors present before the WWTP was granted its EIA certificate are predicted to exceed the 5 ouE/m³ odour criteria and 14 of the 22 receptors exceed the more stringent 1.5 ouE/m³
 - All of the receptors built after the site was granted its EIA certificate are predicted to exceed the 5 ouE/m³ odour criteria.
 - At these concentrations, complaints are highly likely.
 - All the open sources had significant contributions of greater than 5 ouE/m³ at sources with the exception of the Secondary Sedimentation Tanks, Bio-Phosphorus Tanks and Sludge Cake Storage.

- At these concentrations, complaints are highly likely.
- Scenario 2: Enclosure of the Aerated Grit Chamber and Primary Sedimentation Tanks but the Aeration Tanks, Bio-Phosphorus Tanks, Secondary Sedimentation Tanks and Sludge Cake Storage left open. It has been assumed that the extracted air from the newly enclosed sources will be discharged via additional biofilters.
 - 10 of the 22 receptors present before the WWTP was granted its EIA certificate are predicted to exceed the 5 ouE/m³ odour criteria and 11 of the 22 receptors exceed the more stringent 1.5 ouE/m³.
 - 9 of the 15 receptors built after the site was granted its EIA certificate are predicted to exceed the 5 ouE/m³ odour criteria and all 15 receptors are predicted to exceed the more stringent 1.5 ouE/m³.
 - At these concentrations, complaints are highly likely.
- Scenario 3: Enclosure of the Aerated Grit Chamber, Primary Sedimentation Tanks and Aeration Tanks but the, Bio-Phosphorus Tanks, Secondary Sedimentation Tanks and Sludge Cake Storage left open. It has been assumed that the extracted air from the newly enclosed sources will be discharged via additional biofilters.
 - None of the 22 receptors present before the WWTP was granted its EIA certificate are predicted to exceed the 5 ouE/m³ odour criteria but 10 of the 22 receptors still exceed the more stringent 1.5 ouE/m³.
 - 1 of the 15 receptors built after the site was granted its EIA certificate are predicted to exceed the 5 ouE/m³ odour criteria though all of these receptors are predicted to exceed the more stringent 1.5 ouE/m³.
 - All predicted maximum concentrations are less than 10 ouE/m³ so odour complaints are less likely than under Scenarios 1 and 2.
 - As concentrations remain above 5 ouE/m³ at some receptors, complaints are likely to occur.
- Scenario 4: Enclosure of the Aerated Grit Chamber, Primary Sedimentation Tanks, Aeration Tanks and Bio-Phosphorus Tanks but the Secondary Sedimentation Tanks and Sludge Cake Storage left open. It has been assumed that the extracted air from the newly enclosed sources will be discharged via additional biofilters.
 - None of the 22 receptors present before the WWTP was granted its EIA certificate are predicted to exceed the 5 ouE/m³ odour criteria though 4 of the 22 receptors so still exceed the more stringent 1.5 ouE/m³.
 - Only one of the 15 receptors built after the site was granted its EIA certificate is predicted to exceed the 5 ouE/m³ odour criteria, this being Receptor 37 which is currently under construction close to the eastern boundary of the application site.
 - 12 of the 15 receptors built following the granting of the WWTPs EIA certificate are predicted to exceed the more stringent 1.5 ouE/m³.
 - As odour concentrations remain above the odour criteria, complaints could still occur at a few receptors

Recommendations:

Given the scenarios and the results of the modelling study the most odorous open sources on the site be enclosed, i.e. the Aerated Grit Chamber and Primary Sedimentation Tanks (Scenario 2), prior to the site starting to accept wastewater. Active monitoring will be undertaken during the first year of operations while the WWTP is being tested to determine odour emission rates from the Aeration Tanks and Bio-Phosphorus Tanks. These values will be compared to the values used within this odour study. In case the emission rates used in the modelling are consistently exceeded and odour is detectable beyond the sites boundary, the Aeration Tanks and Bio-Phosphorus Tanks will also be enclosed. An odour complaints log will be maintained on site to record any odour complaints that are made by local residents.

This data should be reviewed at the end of the monitoring period and an odour mitigation plan prepared for the site detailing any measures what should be implemented to minimize off-site odour nuisance.

5.2 Environmental Noise

The main source of noise during the construction is the operation of heavy construction vehicles. Noise levels during construction at a receptor depends on several factors such as number and type of equipment and machinery used, the distance between noise sensitive receptor and the construction site and level of attenuation likely due to ground absorption, air absorption and barrier effects.

The noise assessment for the project was conducted during EIA process for the Project and assessment results were included in the EIA Report. The noise levels of the vehicles and equipment to be used in the construction phase of the project are also provided in the report.

The noise limits for the construction sites are given in Table-5 in Annex-7 of the Regulation on Assessment and Management of Environmental Noise (RAMEN). The limits are provided in Table 5-3.

Table 5-3 Turkish Noise Level Limits for Construction Phase

Type of Activity (construction, demolition and restoration)	L _{day} (dBA)
Building	70
Road	75
Other resources	70

No noise limit is defined for construction and decommissioning activities in IFC/WB EHS General Guideline for Construction and Decommissioning. Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise does not define noise limits but refer "limit value" to be determined by the Member States. Therefore RAMEN limits were used for the assessment of noise limits for the construction phase.

The noise limit for building construction is 70 dBA for daytime according to RAMEN. According to the EIA Report, the noise level due to construction activities of the project at 110 m is calculated as 70 dBA and noise level generated at the nearest receptor (220 meters to the east) is calculated as 63.66 dBA. Therefore the noise levels during construction phase are in compliance with the regulation requirements for the existing conditions during the time of EIA studies.

However it was observed during the site visit in June, 2016 within the scope of gap analysis study conducted by AECOM that construction of a new building at around 60 meters to the east of the project site has been on-going. And also as of June 2017, there are residential properties under construction which are at a distance of approximately 14 meters to the east of the Project Area. If the construction of the residential properties is completed before the construction of treatment plant and people begin to live at these properties the nearest sensitive receptor will be the building which is at a distance of approximately 14 m. According to the noise level calculations in the EIA report, the noise level at the building located at 60 m distance is 75.6 dBA. Therefore the limit value of 70 dBA will be exceeded. If the construction of the WWTP is completed and operation starts before the building then operation limits will be compared with the noise level of the treatment plant.

On the other hand it was observed during the site visit that there was no remarkable noise generation at the construction area. Construction noise can be controlled through good site working practices, limiting construction hours and adopting noise control measures. Therefore noise measurements should be conducted if the construction of the new building is completed before the project and people start living at the building. If the noise level exceeds the limit of 70 dBA for construction activities noise mitigation measures should be taken. Noise modelling/assessment is recommended in order to define the required mitigation measures.

Regarding the operation phase of the project, main noise sources during the routine activities at the proposed WWTP will be blowers, engines and pumps. Since, the proposed WWTP will be in continuous operation in a day, noise levels are expected to be similar during day and night time.

In the scope of the proposed Project, sound power levels of equipment will also be considered while selecting equipment and equipment with lower sound power levels will be selected as much as possible. In addition, noise generating equipment will be inside of the building and they will be isolated from the environment.

It should be noted that wastewater treatment plants are exempt from noise assessment in the scope of the Environmental Permits and Licenses Regulation. However, an Acoustic Report should be submitted if required by the related authority.

According to the RAMEN, the noise level criteria (for night, day and evening periods) for the industrial facilities are categorized into four groups according to sensitivity of the area (Table 5-4). The Project is subject to limits given in the category which is referred to as “noise sensitive areas such as place of education, cultural activities, health center and summer resorts and camping sites”. Noise levels due to industrial sources for the areas included in this category should not exceed the daytime (07.00–19.00) limit of 60 dBA, the evening time (19.00–23.00) limit of 55 dBA and the night time (23.00–07.00) limit of 50 dBA at the closest sensitive receptor.

Table 5-4 Turkish Noise Level Limits

Areas	L _{day} (dBA)	L _{evening} (dBA)	L _{night} (dBA)
Noise sensitive areas such as place of education, cultural activities, health center and summer resorts and camping sites	60	55	50
Areas with both noise sensitive areas and industrial activities (predominantly residential)	65	60	55
Areas with both noise sensitive areas and industrial activities (predominantly industrial)	68	63	58
For each facilities that are in organized industrial zone or industrial region	70	65	60

The IFC General EHS Guideline addresses the impacts of noise beyond the property boundary of the facilities. According to the Guideline, noise impacts should not exceed the levels presented in Table 5-5 below, or result in a maximum increase in background levels of 3 dBA at the nearest receptor location off-site. Since, noise sensitive receptor is located in a residential area in this project, noise level limits of 55 dBA and 45 dBA are considered for daytime and nighttime guideline L_{Aeq} limits, respectively. EU Directive on the assessment and management of environmental noise does not define noise limits but refer “limit value” to be determined by the Member States.

Table 5-5 IFC General EHS Guidelines Noise Limits

Receptor	One Hour L _{Aeq} (dBA)	
	Day Time (07:00 – 22:00)	Night Time (22:00 – 07:00)
Residential, Institutional, Educational	55	45
Industrial, Commercial	70	70

Since, noise limits given in the IFC General EHS Guideline is the most stringent, the proposed Mezitli WWTP will comply with these limits.

The noise levels during the operation phase of the project are also assessed in the EIA Report.

According to the results of the noise level calculation the maximum noise level during operation phase will be 67.98 dBA at 0 m and 40 dBA at 40 m. Therefore the facility is expected to be in compliance with the RAMEN and IFC noise limits. If the construction of the building which is mentioned above at a distance of about 60 m is completed and people begin to live at that building the noise limit of 45 dBA is also not expected to be exceeded during operation of the plant.

Noise levels during decommissioning are expected to be similar to the noise levels during construction. However decommissioning noise will be temporary and transient in nature and like the construction activities, it can be controlled through good site working practices, limiting decommissioning hours and adopting noise control measures where and when necessary. Thus, noise impacts associated with the decommissioning activities are not expected to be a significant issue for the Project.

5.3 Waste Management

In line with EBRD PR3 MESKİ will avoid or at least minimize the generation of hazardous and non-hazardous waste materials and reduce their harmfulness as far as practicable. Where waste generation cannot be avoided but has been minimized, the wastes will be reused recycled or recovered or they will be disposed of in an environmentally sound manner. The hazardous wastes will be disposed with technically and financially feasible and cost-effective alternatives. When the wastes are disposed by third parties MESKİ will use contractors that are licensed by the relevant regulatory agencies. AECOM reviewed that the national EIA report covered the waste management issues in accordance with the local legislation. Main hazardous wastes expected to be generated during the construction phase of Mezitli WWTP Project are waste oils, used batteries and accumulators, contaminated wastes (cables, PPEs, packages), electronic wastes, medical wastes and fluorescents and main non-hazardous wastes are solid wastes, recyclable wastes, scrap metal and timber scraps.

A Waste Management Plan in line with Turkish legislation and EBRD requirements was prepared by the main contractor in Turkish for the construction phase of Mezitli WWTP Project and provided to AECOM. The types, waste codes, disposal methods of hazardous and non-hazardous wastes are provided in the plan. However, there is no agreement between the main contractor and licensed facilities for disposal of hazardous and non-hazardous wastes. According to Article-9 of Waste Management Regulation the waste producers should have an agreement with licensed disposal facilities and provide disposal of the wastes in compliance with the requirements of the regulation. According to the information provided by the site representatives stated that currently construction activities were ongoing and the wastes were segregated according to their types and stored at site. There has been no waste disposal since the beginning of the construction phase. In 2017, it is planned to make contracts with the licensed disposal facilities for transportation and disposal of the wastes stored on site.

A company has been contracted for the disposal of the excavated soil. The excavated soil is sent to disposal areas determined by Mersin Metropolitan Municipality.

During the operation phase, sludge produced as a by-product during treatment of the wastewater will be the main waste. Sludge thickening will be carried out in order to reduce the sludge volume generated in biological treatment and settled in primary clarifier. The sludge taken from thickener will be sent to digester with pumps. The biogas generated in the digester will be converted to electrical energy with gas engines. Besides, waste heat will be used for heating required in digester and sludge drying.

The digested sludge will be transferred to sludge dewatering. Dewatering of the sludge will be carried out with decanter centrifuge and the solid concentration will be 25%. After dewatering the sludge will be transferred to sludge drying to have 90% solid concentration.

The dried sludge will be sent to licensed disposal facilities. MESKİ will sign agreements with licensed facilities for proper disposal of the sludge.

Any small amount of hazardous waste generated during the operation phase will be temporarily stored in an area with a concrete surface and a proper secondary containment to prevent potential spills and leakages reaching to the soil and groundwater. Waste storage containers will be properly labelled and this label will also indicate the amount of stored waste as well as storage time of the hazardous wastes. In addition, as required by Waste Oil Control Regulation, waste oils will be stored red coloured tanks/ containers with a label of "Waste Oil".

Hazardous wastes will be sent to the licensed recovery/disposal facilities via licensed transporters. Protocol will be signed with different waste recovery/disposal facilities for different types of hazardous wastes.

Medical wastes will be delivered to Medical Waste Collection Vehicles to be disposed of in a licensed disposal facility.

Amount of wastes will be monitored via waste recording. Annual waste declaration forms will be filled for waste oils and hazardous wastes every year within the determined time period with the information of previous year and these forms will be submitted digitally to PDoEU.

During the decommissioning, similar to construction and operation period, hazardous waste will be segregated and stored on site temporarily until they are sent to the licensed treatment and disposal facilities. None of the hazardous waste will be left on site permanently. Adverse environmental impact is not expected during decommissioning.

5.4 Health and Safety

The Performance Requirement 4 on Health and Safety requires that clients

- protect and promote the safety and health of workers by ensuring safe and healthy working conditions and implementing a HS management system; and
- anticipate, assess, and prevent or minimise adverse impacts on the health and safety of project-affected communities.

As stated in the local EIA Report, MESKI commits taking all necessary precautions for community health and safety such as dust and noise prevention measures, precautions for odour, pests and flies by a series of mitigation measures such as periodical cleaning of the treatment units, low storage time for sludge, closing the top of odour generating units, increasing the aeration rate, regular disposal of sludge, plantation around the WWTP etc. However the mitigation measures for odour issue have been limited to compliance with the regulatory odour limits without a detailed assessment of potential odour levels. To address this gap an odour assessment has been carried out within the scope of supplementary assessment as described above. The details are provided in Section 5.1 of this report.

As an important community health and safety issue, a traffic management plan (TMP) is in place, prepared by the main contractor in March 2016 to manage the traffic in the construction area, designating necessary precautions to minimize the life and material loss and to maintain the works as planned. The plan was revised in February 2017 to include the accident management procedure

According to the plan the construction area is divided into three excavation sites as Zone-1, Zone-2 and Zone-3. Access to these areas is provided through the roads indicated with red lines in Figure 5-2. Signboards are provided to inform and warn the drivers.

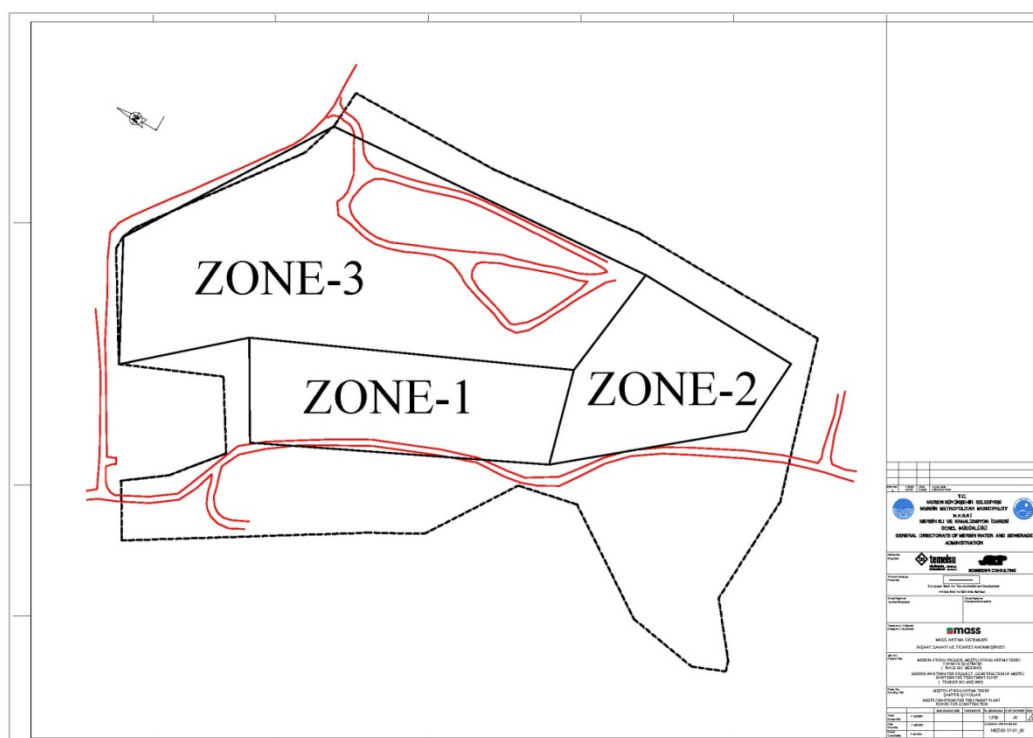


Figure 5-2 Access roads in Mezitli WWTP construction area

The TMP sets the routes to be used for the access of workers and heavy vehicles (concrete mixers and vehicles carrying construction material) to the Project Area as well as the personnel assigned for the control of the traffic while using the specified routes.

Mass Arirma that is the main contractor for the construction stage has conducted risk assessments for different workplaces in the construction site with the participation of employer representative, H&S expert, workplace doctor, workers' representative and support personnel. The risk assessment document dated December 2016 is inclusive of identification of risk issues, workforce exposed to hazards, current hazards and control measures and

additional measures to decrease the level of risks. The resulting Health and Safety Report Management Plan is inclusive of management of risk issues of emergency response plan for fire emergencies, accidents and earthquake emergency; general requirements of housekeeping; ppe use; hand and power tools; electrical works; working at height; scaffolding; ladders and mobile platforms; general lifting safety; cranes; motor vehicles; excavation works; confined spaces; noise exposure and medical issues. The HS Management Plan lays out the legal framework, roles and responsibilities, and defines procedures for training, communication, accident/incident investigation and reporting, and inspections.

A risk assessment for the operation stage is yet to be prepared for both personnel and the close-by communities. Mass Aritma has standard risk assessment documents and procedures and revises these documents according to the project requirements. MESKI will ensure that Mass Aritma delivers trainings on the project-specific operation stage HS risks and mitigation measures.

MESKI will also ensure that a communication is established between MESKI and district health directorate for the risk of communicable diseases associated with the WWTP and will contribute with mitigations.

According to the project design the treated wastewater will be discharged to deep sea and no chlorination will be applied. Therefore there will be no chlorine storage tank on site. Additionally there will be no fuel (natural gas, LPG) storage at site. There will be gas storage tank with 3,500 m³ capacity for the storage of methane gas generated during treatment process. This gas will be used for energy generation. Based on information available for products used on site and corresponding usage and storage volumes, the Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances (Seveso-III Directive) does not apply to the site. Still, an operation stage risk analysis is to be performed and should consider any risks associated with methane generation from the digestion process.

5.5 Biodiversity and Living Natural Resources

This section of the report outlines the biodiversity assessment of Mezitli Wastewater Treatment Plant Project in line with EBRD PR6. Within the scope of the local EIA study a baseline biodiversity assessment in line with the Turkish EIA legislative requirements was made.

The objectives of PR6 (EBRD ES Policy in 2008) are:

- to protect and conserve biodiversity
- to avoid, minimise and mitigate impacts on biodiversity and offset significant residual impacts, where appropriate, with the aim of achieving no net loss or a net gain of biodiversity
- to promote the sustainable management and use of natural resources
- to ensure that Indigenous Peoples and local communities participate appropriately in decision-making
- to provide for fair and equitable sharing of the benefits from project development and arising out of the utilisation of genetic resources
- to strengthen companies' license to operate, reputation and competitive advantage through best practice management of biodiversity as a business risk and opportunity
- to foster the development of pro-biodiversity business that offers alternative livelihoods in place of unsustainable exploitation of the natural environment.

Some key concepts relevant to PR6 are summarised below.

- Mitigation hierarchy - A tool commonly applied in Environmental Impact Assessments (EIAs) which helps to manage biodiversity risk. Includes measures taken to avoid impacts to biodiversity from the outset of development activities and, where this is not possible, to implement measures that would minimise, then reinstate and, as a last resort, offset any potential residual adverse impacts
- Biodiversity offsets - Measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts. These residual impacts may result from project development after appropriate prevention and mitigation measures have been taken into account. The goal of biodiversity offsets is to achieve "no net loss" (see definition below) and preferably a net gain of biodiversity on the ground. The characteristics of offsets could include those designed to improve species composition, habitat structure and ecosystem function and people's use and cultural values associated with biodiversity.

- No net loss - The point at which project-related impacts on priority biodiversity features are reduced by avoidance, minimisation and/or reinstatement measures, and offsetting compensates fully for all significant residual impacts – that is to say, no significant net impacts on biodiversity remain.
- Net gain - Going beyond “no net loss”, through achievement of additional conservation outcomes for the biodiversity features for which critical habitat was designated. Net gains will usually be achieved through the development of a biodiversity offset.

According to the EBRD Environmental and Social Policy, 2008, all habitats support complexities of living organisms which vary in terms of species diversity, abundance and ecosystem and economic value. For this reason, the assessment includes considering not only of natural undisturbed habitats, including that of critical conservation value, which may be affected by the Project, but also of habitats which have been disturbed or degraded by human activity, and new manmade habitat areas.

5.5.1 Habitat Protection and Conservation

Flora/fauna survey results given in the local EIA Report is reviewed and updated taking into account CITES, EU Habitats and EU Birds Directives. Additional flora/fauna field survey was not conducted within the scope of this SIP study. The flora/fauna species evaluated according to the EU Habitats and EU Birds Directives are detailed below. The species list is given in Appendix B.

The EU Habitats Directive ensures the conservation of a wide range of rare, threatened or endemic animal and plant species. Over 1,000 animal and plant species, as well as 200 habitat types, listed in the Directive's annexes are protected in various ways:

- Annex II species (about 900): core areas of their habitat are designated as sites of Community importance (SCIs) and included in the Natura 2000 network. These sites must be managed in accordance with the ecological needs of the species.
- Annex IV species (over 400, including many annex II species): a strict protection regime must be applied across their entire natural range within the EU, both within and outside Natura 2000 sites.
- Annex V species (over 90): Member States must ensure that their exploitation and taking in the wild is compatible with maintaining them in a favourable conservation status.

The EU Birds Directive aims to protect all of the 500 wild bird species naturally occurring in the European Union. The 500 wild bird species naturally occurring in the European Union are protected in various ways:

- Annex 1: 194 species and sub-species are particularly threatened. Member States must designate Special Protection Areas (SPAs) for their survival and all migratory bird species.
- Annex 2: 82 bird species can be hunted. However, the hunting periods are limited and hunting is forbidden when birds are at their most vulnerable: during their return migration to nesting areas, reproduction and the raising of their chicks.
- Annex 3: overall, activities that directly threaten birds, such as their deliberate killing, capture or trade, or the destruction of their nests, are banned. With certain restrictions, Member States can allow some of these activities for 26 species listed here.
- Annex 4: the directive provides for the sustainable management of hunting but Member States must outlaw all forms of non-selective and large scale killing of birds, especially the methods listed in this annex.
- Annex 5: the directive promotes research to underpin the protection, management and use of all species of birds covered by the Directive, which are listed in this annex.

The Corine land cover assessment of the Project revealed that the dominant habitat type in the Project Area is fruit trees and berry plantations classified as modified habitat. According to the results of the ArcGIS calculations of Corine Satellite Land Cover, the total calculated habitat loss due to the Project will not be more than 0.015% in Mersin and 0.0006% in Turkey as given below.

Table 5-6 Corine Land Cover Assessment due to Habitat Loss

Corine Land Cover Code	EU Habitat ID	Corine Land Cover Class	Land Cover in Turkey (m ²)	Land Cover in Mersin (m ²)	Land Cover of the Construction in the Project	Percentage of Loss in Mersin	Percentage of Loss in Turkey
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Area (m²)

222	EU-670117	Fruit trees and berry plantations	12286964217.31	522236764.7	76818.893872	0.015	0.0006
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The Project specific biodiversity issues in line with EBRD PR6 are given below:

- There is one nationally protected area within 3 km radius surrounding the Project Area which is Gümüşkum Nature Park (at 1.36 km distance).
- As there are no KBA/IBA/IPA overlapping with the Project Area, Mersin Hills Key Biodiversity Area (KBA) is located at approximately 2.20 km distance on the southern west side of the Project. 12 plant taxa established the KBA criteria and none of them are identified within the Project Area.
- During the local EIA studies, no endemic flora and fauna species were determined within the Project Area. This was also confirmed through desktop and literature studies conducted within this SIP.

Since the majority of the plant species in Turkey are not evaluated in the IUCN Red List official website, the flora assessment in this report is based on The Red Data Book of Turkish Plants and Threatened Plants List (<http://www.tehditaltindabitkiler.org.tr>), the official website of Nezahat Gökyiğit Botanical Garden and ANG Foundation which uses the identical methodology and criteria with the IUCN Red List for the evaluation.

- Amongst the flora species identified within the local EIA study, *Ononis adenotricha* BOISS has three varieties that one of them (*Ononis adenotricha* BOISS var. *nuda*) has EN (Endangered) conservation status according to Red Data Book of Turkish Plants, However, this variety has no updated records from Mersin province and the other two varieties of the species (var. *adenotricha* and var. *stenophylla*) that are known to have distribution in the vicinity; it is widespread in Turkey and neighbouring Greece, Bulgaria, Lebanon and Syria. Thus, the importance of the Project Area for the species can be considered of minor importance.
- *Testudo graeca* (Spur-thighed Tortoise) is a reptilian species and *Streptopelia turtur* (European Turtle-dove) is a bird species listed as Vulnerable (VU) by the IUCN occurs in the Project Area. However, both are widespread species in Turkey.
- *Rhinolophus ferrumequinum* (Greater Horseshoe Bat) and *Rhinolophus hipposideros* (Lesser Horseshoe Bat) are mammalian species, given in local EIA to exist in the Project Area, are listed in Annex- II under the EU Habitats Directive. Both species are resident in Turkey but are not expected to occur at the Project Area due to their habitat preferences (believed to be mistakenly included in the EIA fauna list).
- Invasive alien species are defined as non-native species that pose a risk of spreading quickly can create significant environmental and socioeconomic impacts (for example, crop pests, disease vectors, new predators). None identified during the local EIA and the preparation of this SIP from the current databases.

Irrespective of whether it is natural or modified, some habitat may be considered to be critical. The assessment of critical habitat features for the Project Area and its vicinity as per Article 13 of PR6 is given below.

Table 5-7 Assessment of Critical Habitat Features in the Project Area and its Vicinity

Critical Habitat Trigger (as per Article 13, EBRD PR6, 2008)	Mezitli WWTP Project and its vicinity
(i) High biodiversity value	There isn't any Endangered or Critically Endangered area according to the IUCN Red List of Ecosystems
(ii) Habitats of importance to endangered or critically endangered species	<p><i>Bufo viridis</i> (Green Toad), <i>Lacerta trilineata</i> (Balkan Green Lizard) and <i>Ophisops elegans basoglui</i> (Snake-eyed Lizard) that are given as occurring in the Project Area have Annex IV status according to EU Habitats Directive.</p> <p>Although they are listed in Annex IV according to the EU Habitats Directive, their distribution is widespread in Turkey and except <i>Ophisops elegans basoglui</i>, the other two species do not occur in the Project Area according to their distribution map as presented at the IUCN Red List official website.</p>

Critical Habitat Trigger (as per Article 13, EBRD PR6, 2008)**Mezitli WWTP Project and its vicinity**

(iii) Habitats of importance to endemic or geographically restricted species and sub-species	There isn't any habitat of importance to endemic or geographically restricted species and sub-species such as AZE site in Project Area and the vicinity.
(iv) Habitats of importance to migratory or congregatory species	The Project Area and its vicinity do not fall under any habitats of importance to migratory or congregatory species such as Ramsar Convention and any IBA or KBA.
(v) Areas supporting assemblages of species associated with key evolutionary processes	N/A
(vi) Areas supporting biodiversity of significant social, economical or cultural importance to local communities	The Project Area and its vicinity is considered to be areas supporting biodiversity of significant social, economical or cultural importance to local communities
(vii) Habitats of importance to species that are vital to the ecosystem as a whole (keystone species)	There isn't any habitat of importance to species that are vital to the ecosystem as a whole such as keystone species.

5.6 Labour and Working Conditions

Currently the EPC Contractor employs 42 persons at the Site; 30 of them are blue collars. The number of workers will make a peak to 60 by the commencement of mechanical and electrical assembly works. Contractor is inspected for workers payments monthly at the time of application of progress billing. Despite the well reputation of the Contractor and its compliance with the national labour regulations, there is no written policy of human resources and recutting that the Contractor can present to its employees.

MESKI will ensure that Mass Aritma provides and communicates with all workers during the construction stage a written human resources policy document underlining their rights under national labour and employment law and any applicable collective agreements, working conditions and terms of employment including their entitlement to wages, hours of work, overtime arrangements and overtime compensation, any benefits, and when any material changes occur. MESKI will also comply with all relevant national laws or international labour standards regarding employment. Hence MESKI, and its contractor Mass Aritma, commit at all project stages that they will:

- not employ children,
- not to employ forced labour,
- not impose any discrimination based on race, nationality, political opinion, affiliation to a union, ethnic, social or indigenous origin, religion or belief, marital or family status, disability, age, sexual orientation or gender identity, unrelated to inherent job requirements;
- provide wages, benefits and conditions of work offered (including hours of work) at least comparable to those offered by equivalent employers in the relevant country/region and sector concerned;
- not discourage workers from electing workers' representatives, forming or joining workers' organisations of their choosing or from bargaining collectively.
- identify migrant workers and ensure that they are engaged on substantially equivalent terms and conditions to non-migrant workers carrying out the same work.

5.7 Land Acquisition, Involuntary Resettlement and Economic Displacement

Project land has been acquired by means of transfer of ownership from state-owned land. The land was rented by 8 local people who had planted citrus orchards on Parcel no. 2745. These land users who use the state-owned lands (also referred as "treasury lands") without title deed are designated as "occupant" according to Treasury Lands Management Regulation dated 19.06.2007 and numbered 26557 in Official Gazette. The occupants were subject to pay rent "adequate pay" to the Treasury as of the Regulation. Three of the occupants

were not entitled for an “adequate pay” as no agricultural activity was identified on the parts of the land they occupied. Other 5 occupants were entitled to obtain compensation for their losses due to this project according to Article 19 of the Expropriation Law. Three of the 5 occupants have been paid compensation for lost assets after a mutual agreement, however the two users have opened dispute cases as regards the number of trees and compensation amounts.

No involuntary resettlement is triggered by the Project. Compensation of the economic displacement of the occupants is in progress.

A monitoring process should be undertaken, involving all of the 8 occupants, whether their livelihoods are affected by the land acquisition process.

MESKI made the site selection for the WWTP with the consideration to isolate the plant from settlements and to avoid any land acquisition of privately owned land. However, the environs of the project site has been open to urban development in time and several tall residential buildings rose in the adjacent lands and in close proximity. If adequate mitigation measures are not taken, this could pose negative impacts mainly associated with odour nuisance on near-by-residential areas, which in turn may cause falls in prices of land and apartments, or dwellers may have to move out due to nuisance. Yet, based on mitigation measures for odour control (see Section 5.1.4), the impact is assessed to be unlikely and insignificant. MESKI commits undertaking an odour monitoring programme and if major odour impacts are identified, taking further actions in order to minimize odour impacts on communities.

5.8 Information Disclosure and Stakeholder Engagement

Previous attempts of MESKI for information disclosure and stakeholder engagement were undertaken during the EIA stage. As the national EIA Regulation requires, a public participation meeting was organized on September 3rd, 2013. The meeting was announced on the local newspaper and invitations were sent to all local stakeholders. However, no community members or representatives attended this meeting. All of the 13 participants were from five different local branches of central government authorities. Although the meeting meets the needs of the national legislation, compliance with PR 10 in stakeholder engagement is considered to be quite low. There is some extent of ongoing information disclosure only by means of news about the progress of the WWTP construction in the local newspapers. No structured stakeholder engagement is in place currently. To ensure adequate stakeholder engagement a Stakeholder Engagement Plan has been prepared for the project and will be implemented by MESKI.

If any substantial odour emissions occur, MESKI may receive grievances from the new dwellers in the adjacent parcels developed as an urban residential area. There is a need to develop and implement a detailed stakeholder engagement plan for the residents living around the WWTP on a systematic basis. MESKI shall actively engage both the primary stakeholders (the residents) and the authorities to monitor any potential issues during operations and discuss possible solutions for the issues identified.

MESKI has a corporate level grievance procedure that is accessible on its web site. The grievance system comprises of designation of responsibilities, procedures for assessment, recording and reporting. Information tools that are used are mail, electronic mail, SMS, telephone and face-to-face interviews. There is also a hotline “185” which is accessible 24/7 for any emergencies and grievances. MESKI should establish a link to the Project by referring to the corporate grievance system when disclosing project information with respect to the SEP document. Contact details and information about grievance mechanism will be distributed to each Household living close to WWTP.

The environmental monitoring results shall also be shared with the stakeholders in a systematic and transparent way (at least in case of a complaint/ in case of a conflict).

5.9 Cultural Heritage

There is no cultural heritage with archeological, historical and/or natural protection status in the Project Area according to the EIA report.

The closest archaeological site (4 km to the northeast) is Soli (Pompeiopolis) which is a 1st Degree Archaeologically Protected Site. The construction activities started in February 2016 and no archeological artefacts and remains were discovered since the excavation works started.

A Chance Find Procedure was prepared by the controller company, Temel-Su (See Appendix D). The procedure includes the purpose and scope and the responsibilities in case of discovery of an archeological entity. A form for the chance finds and actions required to be taken with respect to the significance level of archeological artifacts are also provided.

6. Potential Cumulative E&S Impacts of the Project

Cumulative impacts are those 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 assessment of cumulative impacts considers the environmental and socio-economic cumulative effects of the Project in combination with other existing, planned and reasonably predictable future projects and development activities in that region.

Mezitli WWTP Project is located in Mezitli District of Mersin Province. The project area is surrounded with dwellings. The nearest residential area to the project site is Esenbağlar Neighborhood and the center of neighborhood is located at 1,300 m distance to the project area. There is no other existing or predictable future wastewater treatment plant or an industrial facility in close vicinity of the project area that cause additional impact on surrounding areas. Therefore there will be insignificant cumulative impact caused as a result of this project.

In line with the CIA methodology defined by IFC in its Cumulative Impact Assessment (CIA) Good Practice Handbook, potential for cumulative impacts are based on the determination of;

- Valued Environmental Components (VECs), Spatial and Temporal Boundaries
- Other Activities and Environmental Drivers

If the assessment done indicates a potential, cumulative impacts on Valued Environmental and Social Components (VESC) are then assessed, significance of predictive cumulative impacts are assigned and possible measures for the management of cumulative impacts are proposed as appropriate.

VECs, Spatial and Temporal Boundaries for Mezitli WWTP

The good Cumulative Impact Assessment (CIA) practice suggests that the CIA studies are conducted with a focus on the valued ecosystem components that would be environmentally or socially important in assessing the risks of a Project, which are in this report referred to as valued environmental and social components (VESC).

Accordingly, the CIA studies should be looked at “from the VESC point of view” in which the combined (i.e., cumulative) effects of various projects/activities on each VESC are assessed, instead of a Project-centered perspective as in the case in the ESIA studies. As suggested by IFC in its Good Practice Handbook on CIA, the Project-centered perspective of the ESIA and the VEC-centered perspective of Cumulative Impact Assessment processes are comparatively illustrated in Figure 6-1.

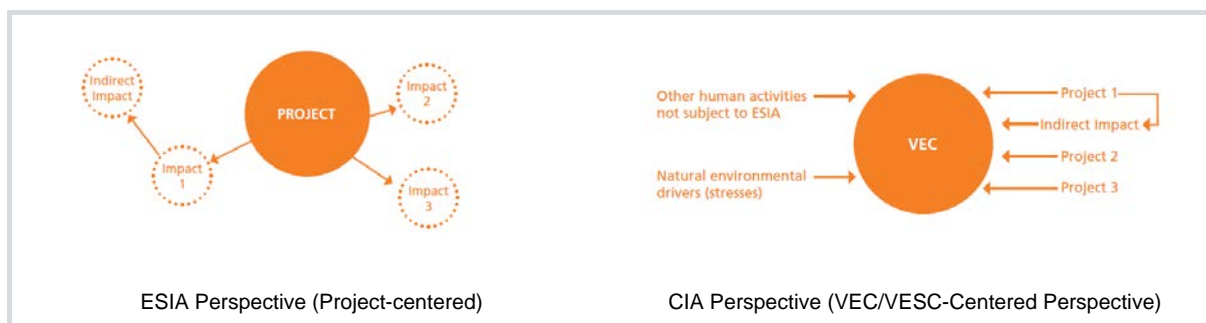


Figure 6-1 Project-centered Perspective of ESIA

In line with the good CIA perspectives as explained above, the CIA study for the Mezitli WWTP Project has focused on the effects on the selected VESCs that are to be affected by the Project activities. In other words, any VESC that would be affected by any other projects/activities, but not by the Mezitli WWTP Project, have not been assessed in the scope of the CIA.

In line with the VESC-centered approach of good CIA practice, VESCs that would be subject to the potential cumulative impacts have been selected based on the assessments done in Section 5 of this document. In consideration of the results of the assessment, odour, land use change (associated biodiversity impacts) and sea water quality have been identified as the key issues for which cumulative impacts would be further assessed (See Table 6-1). Since the Project will not cause any significant noise impact or impact on the cultural heritage, or the Project will not cause any biodiversity impact on the Gümüşkum Nature Park or Mersin Hills KBA due to their distance to the Project Area, these environmental components have not been selected as VESCs in the scope of the CIA study.

Table 6-1 Valued Environmental and Social Components in the Scope of the CIA

Key Issue	Valued Environmental/Social Component
Air Quality (Odour)	Residents of the nearby dwellings of Esenbaglar neighborhood Project personnel
Land Use/Biodiversity	Agricultural area (Fruit trees and berry plantations)
Sea water quality	Sea water quality in Mersin Bay

Regarding the temporal extent of the impacts, the assessment has covered the impacts of past, present and reasonably foreseeable future developments that would correspond to the economic life of the Project to the maximum extent practical. Since the construction impacts of the Project will be temporary, cumulative impacts have been assessed in consideration of the long-term operation phase impacts. Regarding the geographical extent of impacts, the boundaries of Mezitli district has been considered as the CIA area for the assessment of potential adverse cumulative impacts; while a wider area has been considered for the assessment of positive cumulative impacts.

Other Activities and Environmental Drivers for Mezitli WWTP

Mezitli WWTP Project is located in Mezitli district of Mersin province. The Project Area is surrounded with dwellings. The nearest residential area to the Project Site is Esenbağlar neighborhood and the center of neighborhood is located at 1,300 m distance to the project area.

For cumulative impacts to emerge, other activities that would affect the same VESCs to be affected (e.g. odour causing activities, activities causing the acquisition of agricultural lands) by the Mezitli WWTP Project have to be present in the CIA area. To identify other activities, the EIA Positive and EIA Not Required decisions issued by the Ministry of Environment and Urbanization (or Mersin Provincial Directorate) in the Mezitli district have been identified through Ministry's database (<http://www.csb.gov.tr/gm/ced/index.php>). In addition, the projects that obtained electricity generation licenses (or preclicenses) in Mezitli district of Mersin have also been searched through the database of the Electricity Market Regulatory Authority (EMRA) and no licensed energy project has been identified in the area (<http://www.epdk.org.tr/TR/Dokumanlar/Elektrik/Lisanslar>). Activities identified in the Mezitli district are listed in Table 6-2. Due to their location and nature of activities, none of these activities have been evaluated as a contributor to potential cumulative impacts together with the Mezitli WWTP.

Table 6-2 Other Activities/Projects that obtained EIA Positive/Not Required Decision in Mezitli District

Activity/Project	Type of EIA Decision	Date of Decision	Project Location
Mezitli Coastal Fortification Project	EIA Positive	07.08.1997	Mezitli
Chrome Pit Capacity Extension Project	EIA Positive	14.06.2013	Mezitli, Akarca neighborhood
Mezitli Wastewater Treatment Plant Project	EIA Positive	22.01.2014	Mezitli district
Degirmencay Dam, Drinking Water and Irrigation Facilities	EIA Positive	19.01.2016	Mezitli and Yenisehir districts
Chrome Pit Capacity Extension and Beneficiation Project	EIA Not Required	08.07.2015	Mezitli, district, Demirisik neighborhood
Capacity Extension for Underground Mining and Chrome Concentration Facility	EIA Not Required	13.04.2015	Mezitli, Akarca neighborhood
Broiler Facility Project	EIA Not Required	17.03.2015	Mezitli, Tol neighborhood
Mass Housing	EIA Not Required	08.05.2014	Mezitli, Tece neighborhood

As can be seen from the table, number of industrial activities in Mezitli district is limited. In general, the area is planned as housing zone (<http://www.mezitli.gov.tr/idari-durum>). Existing Adana-Erdemli Motorway (Toll Road) is passing from the north of the WWTP and Esenbağlar neighbourhood. Some of the agricultural lands near this settlement have been affected (due to land take and fragmentation) by the construction and operation of the Motorway. The western side of the WWTP is widely covered by agricultural lands (orchards, fruit gardens and plantations). The development of Mezitli WWTP has resulted in the acquisition of around 7.6 ha of agricultural land. The agricultural lands in the area may further be under the stress of housing developments to be realized in the future. The gaseous emissions from the vehicles using the Motorway section near Esenbağlar neighbourhood would also affect the general air quality in the area; even though it would not make any contribution to the odour impact to be caused by the WWTP.

There is no other existing or predictable future wastewater treatment plant or an industrial facility in close vicinity of the Project Area that would cause additional impact on the selected VESCs. The Karaduvar WWTP, which is the existing wastewater treatment facility serving Mersin Metropolitan Municipality located more than 20 km northeast of Mezitli WWTP, also has deep sea discharge facilities; thus, the two WWTPs together would only contribute to the improvement of sea water quality of Mersin Bay. Other than that, there is no possibility for these two WWTPs to adversely impact the same VESCs.



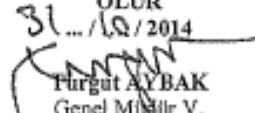
Potential cumulative interactions in the CIA area are summarized in Table 6-3.

Table 6-3 Potential Cumulative Interactions

Project/Development		Valued Environmental and Social Components			
Status	Name	Air Quality in Neighboring Local Communities (Welfare of Esenbağlar residents)	Agricultural Lands	Project Personnel	Water Quality of Mersin Bay
Under construction	Mezitli WWTP				
Existing	Karaduvar WWTP				
Existing	Adana-Erdemli Motorway				
Reasonably foreseeable	Future Housing Development in Mezitli District				
Cumulative Impact Potential		Yes	Yes	No	Yes (Beneficial)
			Adverse cumulative impact potential		
			Beneficial cumulative impact potential		


Appendix A Official Letters from MESKi

Assignment Letter for Project Implementation Unit


	<p>T.C. MERSİN SU VE KANALİZASYON İDARESİ GENEL MÜDÜRLÜĞÜ Yatırım ve İnşaat Dairesi Başkanlığı</p>
<p>Sayı : 75641462.020 /1159</p> <p>Konu : Proje Uygulama Birimi</p>	<p>31.12.2014</p>
<p>GENEL MÜDÜRLÜK MAKAMINA</p>	
<p>Avrupa İmar ve Kalkınma Bankası'ndan (EBRD) temin edilecek olan 20 milyon Avro dış kredi finansmanı ile gerçekleştirilmesi planlanan Mezitli Atıksu Arıtma Tesisi Projesi ile ilgili bütün iş ve işlemlerin yürütülebilmesi için aşağıda adı, soyadı ve ünvanları belirtilen Genel Müdürlük personellerimizden güncellenmiş Proje Uygulama Birimi'nin onaylanması hususunu olur emirlerinize arz ederim.</p>	
<p><u>PROJE UYGULAMA BİRİMİ</u></p>	
<p>1- Handan SOLMAZ 2- Osman TOPÇU 3- Hasan YILDIZ 4- Emre ÇOBAN 5- Erkan ÖZCAN 6- Hüseyin İBİLOĞLU</p>	<p>Yat.ve İnş.Dai.Bşk. (İnş.Müh.) Mali Hizmetler Dai.Bşk. Planlama ve Proje Müd. (İnş.Müh.) Yat.ve İnş.Dai.Bşk.Şefi (Har.Tek.) İnş. Yük. Mühendisi Makine Mühendisi</p>
<p> Handan SOLMAZ Yat.ve İnş.Dai.Bşk.</p>	
<p>OLUR 31.12.2014  Purgut AYBAK Genel Müdür V.</p>	
<p>31.12.2014 Bilg. Opt. : D.AKSIN DOĞRU 31.12.2014 Yat. ve İnş.Dai.Bşk.Şefi. : E.ÇOBAN</p>	
<p>Mahmudiye Mah. Zeytinlibahçe Cad. No : 99 P.K: 33070 MERSİN İrtibat: Handan SOLMAZ Tel: (0324) 337 08 41 (5 Hat) Fax : (0324) 336 02 77 Yat.ve İnş.Dai.Bşk. e-posta: yatirimlar@meski.gov.tr Elektronik Ağ : www.meski.gov.tr</p>	

Assignment Letter for Environmental Management Unit

Evrak Tarih ve Sayısı: 12/12/2016-30315



T.C.
MERSİN SU VE KANALİZASYON İDARESİ GENEL
MÜDÜRLÜĞÜ
İnsan Kaynakları ve Eğitim Dairesi Başkanlığı



Sayı :93505266-903.07.01/
Konu :Kurum içi

GENEL MÜDÜRLÜK MAKAMINA

Kurumumuzda uygulanmakta olan Kurumsal Mükemmellik çalışmaları kapsamında TS EN ISO 9001:2008 Kalite Yönetim Sistemi, TS EN ISO/IEC 17025:2012 Sistemi ve TS ISO 10002 Müşteri Memnuniyeti Yönetim Sistemi belgeleri alınmıştır.

Kurum Stratejik Planımızda TS EN ISO 18001 İş Sağlığı ve Güvenliği Yönetim Sistemi ve TS EN ISO 14001:2015 Çevre Yönetim Sistemi kurulması ve belgelerinin alınması hedeflenmiştir.

Bu amaçla; Kalite Yönetim Merkezi Şube Müdürlüğü koordinatörlüğünde gerekli çalışmalar yapmak, sistemlerinin sürekliliğini sağlamak üzere; ekli listedeki personellerin yeni kurulacak yönetim sistemlerinin kurulum ve belgelendirme çalışmalarında yer almak üzere görevlendirmeleri hususunu; Olurlarınıza arz ederim.

e-imzalıdır
Abdullah SARIKABAK
Daire Başkanı

OLUR

e-imzalıdır
Baha Günhan GÜNGÖRDÜ
Genel Müdür V.


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Unvan: Sözleşmeli Memur
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Bu belge, 5070 Sayılı Elektronik İmza Kanununa göre Güvenli Elektronik İmza ile imzalanmıştır

Assignment Letter for Implementation of ESAP

Evrak Tarih ve Sayısı: 13/02/2017-3790



T.C.
MERSİN SU VE KANALİZASYON İDARESİ GENEL
MÜDÜRLÜĞÜ
Yatırım ve İnşaat Dairesi Başkanlığı
Yatırım Proje Şube Müdürlüğü


d-star
Recognized for
Excellence - 2016

Sayı : 76224385-903.07.01/
Konu : Görevlendirme

GENEL MÜDÜRLÜK MAKAMINA

Finansmanı Avrupa İmar ve Kalkınma Bankası ile 18 Haziran 2012 tarihinde imzalanan Kredi Sözleşmesinden karşılanmakta olup Genel Müdürlüğümüzce ihale edilen "Mezitli Atıksu Arıtma Tesisi Projesi" kapsamında hazırlanmakta olan ESAP Raporunun içeriklerinin uygulanması ve izlenmesi için Daire Başkanlığımız personeli Merve TEPRETMEZ'in görevlendirilmesi hususunu, Olur emirlerinize arz ederim.

e-imzalıdır
Handan SOLMAZ
Daire Başkanı

OLUR

e-imzalıdır
Baha Günhan GÜNGÖRDÜ
Genel Müdür V.

Mahdadiye Mah. Zeytinlibahçe Cad. No 99 Akdeniz/MERSİN
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Bu belge, 5070 Sayılı Elektronik İmza Kanununa göre Güvenli Elektronik İmza ile imzalanmıştır. Telefon No: (324) 322 10 10-321 46 54

Appendix B Flora and Fauna Species List

B.1 Updated Fauna Tables

Family	Scientific Name of the Species	Turkish Name of the Species	English Name of the Species	END	IUCN	CITES	BERN	EU Habitats Directive	Habitat	Id Method
AMPHIBIA										
BUFONIDAE	<i>Bufo viridis</i>	Gece Kurbağası	European Green Toad	–	LC	–	App-III	Annex - IV	Under soil and stones	L
	<i>Bufo bufo</i>	Kara Kurbağası	Common Toad	–	LC	–	App-II	–	Dry areas, under stones and soil	L
REPTILIA										
TESTUDINIDAE	<i>Testudo graeca</i>	Tosbağa	Spur-thighed tortoise	–	VU	App-II	App-II	Annex - II	Sandy, stony and dry areas, sometimes vineyards and gardens	L
SCINCIDAE	<i>Trachylepis vittata</i>	Şeritli Kertenkele	Bridled Mabuya	–	LC	–	–	–	Open areas, under shrubs	L
LACERTIDAE	<i>Lacerta trilineata</i>	Büyük Yeşil Kertenkele	Balkan Green Lizard	–	LC	–	–	Annex - IV	Open areas and bushes, plant abundant vineyards and gardens	L
	<i>Ophisops elegans basoglui</i>	Tarla Kertenkelesi	Snake-eyed lizard	–	LC	–	–	Annex - IV	Steppe, fields, vineyards and gardens	L
TYPHLOPIDAE	<i>Typhlops vermiculas</i>	Kör Yılan	European blind snake	–	LC	–	–	–	Moist soft soils	L
COLUBRIDAE	<i>Eirenis modestus</i>	Uysal Yılan	Ring-Headed Dwarf Snake	–	LC	–	–	–	Rare vegetation areas, vineyards and gardens	L
	<i>Dolichophis schmidtii</i>	Hazer Yılanı	Red-Bellied Racer	–	LC	–	–	–	Streamsides, slopes	L
	<i>Platyceps najadum</i>	Ok Yılanı	Dahl's Whip Snake	–	LC	–	–	–	Stony, shrubs, vineyards and gardens	L

Family	Scientific Name of the Species	Turkish Name of the Species	English Name of the Species	RDB	IUCN	CITES	BERN	EU Birds Directive*	Id Method
AVES									
CICONIDAE	<i>Ciconia ciconia</i>	Leylek	White Stork	A.3.1	LC	-	App-II	Annex - I	O
ACCIPITRIDAE	<i>Accipiter nisus</i>	Atmaca	Eurasian Sparrowhawk	A.3	LC	App-II	App-II	Annex - I	L
	<i>Falco tinnunculus</i>	Kerkenez	Common Kestrel	A.2	LC	App-II	App-II	-	L
	<i>Buteo rufinus</i>	Kızıl şahin	Long-legged Buzzard	A.3	LC	App-II	App-II	Annex - I	L
	<i>Larus michahellis</i>	Gümüş martı	Yellow-legged Gull	A.4	LC	-	App-II	-	L
CUCULIDAE	<i>Cuculus canorus</i>	Guguk	Common Cuckoo	A.2	LC	-	App-II	-	L
MEROPIIDAE	<i>Merops apiaster</i>	Arı kuşu	European Bee-eater	A.3.1	LC	-	App-II	-	L
PHASIANIDAE	<i>Alectoris chukar</i>	Kıvalı keklik	Chukar	A.2	LC	-	App-II	Annex - II Part B	L
	<i>Coturnix coturnix</i>	Bıldırcın	Common Quail	A.3	LC	-	App-II	Annex - II Part B	L
BURHINIDAE	<i>Burhio oedicephalus</i>	Kocagöz	Eurasian Stone-curlew	A.2	LC	-	App-II	-	L
APODIDAE	<i>Apus apus</i>	Ebabil	Common Swift	A.3.1	LC	-	App-II	-	L
COLUMBIDAE	<i>Columba palumbus</i>	Tahtalı	Common Wood Pigeon	A.4	LC	-	App-II	-	L
	<i>Streptopelia decaocta</i>	Kumru	Eurasian Collared Dove	A.5	LC	-	App-II	-	O
	<i>Streptopelia turtur</i>	Üveyik	European Turtle-dove	A.3.1	VU	-	App-II	Annex - II Part B	O
SITTIDAE	<i>Sitta europea</i>	Sıvacı kuşu	Eurasian Nuthatch	A.3	LC	-	App-II	-	L
ALAUDIDAE	<i>Galerida cristata</i>	Tepeli toýgar	Crested Lark	A.3	LC	-	App-II	-	L
	<i>Lullula arborea</i>	Orman toýgarı	Woodlark	A.3	LC	-	App-II	Annex - I	L
STRIGIDAE	<i>Athene noctua</i>	Kukumav	Little Owl	A.2	LC	App-II	App-II	-	L
PICIDAE	<i>Dendrocopos syriacus</i>	Alaca ağaçkakan	Syrian Woodpecker	A.2	LC	-	App-II	Annex - I	L
HIRUNDINIDAE	<i>Hirundo rustica</i>	Kır kırlangıcı	Barn Swallow	A.5	LC	-	App-II	-	O

Family	Scientific Name of the Species	Turkish Name of the Species	English Name of the Species	RDB	IUCN	CITES	BERN	EU Birds Directive*	Id Method
	<i>Ptyonoprogne rupestris</i>	Kaya kırlangıcı	Eurasian Crag Martin	A.5	LC	–	App-II	–	L
	<i>Delichon urbicum</i>	Ev kırlangıcı	Northern House Martin	A.3	LC	–	App-II	–	O
MOTACHILLIDAE	<i>Motacilla flava</i>	Sarı kuyruksallayan	Western Yellow Wagtail	A.3.1	LC	–	App-II	–	O
CORVIDAE	<i>Pica pica</i>	Saksağan	Eurasian Magpie	A.5	LC	–	App-II	Annex - II Part B	O
	<i>Corvus corone</i>	Leş kargası	Carrion Crow	A.5	LC	–	App-II	Annex - II Part B	L
STURNIDAE	<i>Sturnus vulgaris</i>	Sığırcık	Common Starling	A.5	LC	–	App-III	–	L
PASSERIDAE	<i>Passer montanus</i>	Ağaç serçesi	Eurasian Tree Sparrow	A.3	LC	–	App-II	–	O
	<i>Passer hispaniolensis</i>	Söğüt serçesi	Spanish Sparrow	A.3	LC	–	App-II	–	L
	<i>Passer domesticus</i>	Serçe	House Sparrow	A.5	LC	–	App-III	–	O
EMBERIZIDAE	<i>Emberiza hortulana</i>	Kirazkuşu	Ortolan Bunting	A.3	LC	–	App-II	Annex - I	L
	<i>Emberiza melanocephala</i>	Karabaşlı kirazkuşu	Black-headed Bunting	A.4	LC	–	App-II	–	L
	<i>Miliaria calandra</i>	Tarla kirazkuşu	Corn Bunting	A.4	LC	–	App-II	–	L
TURDIDAE	<i>Turdus philomelos</i>	Öter ardıç	Song Thrush	A.2	LC	–	App-II	Annex - II Part B	L
MUSCICAPIDAE	<i>Oenanthe oenanthe</i>	Kuyrukkakan	Northern Wheatear	A.3	LC	–	App-II	–	L
	<i>Oenanthe hispanica</i>	Karakulaklı kuyrukkakan	Black-eared Wheatear	A.2	LC	–	App-II	–	L
	<i>Luscinia megarhynchos</i>	Bülbül	Common Nightingale	A.2	LC	–	App-II	–	O
REGULIDAE	<i>Regulus regulus</i>	Çalığıkuşu	Goldcrest	A.1.2	LC	–	App-II	–	L
PHYLLOSCOPIDAE	<i>Phylloscopus collybita</i>	Çıvgın	Common Chiffchaff	A.3.1	LC	–	App-II	–	L
	<i>Phylloscopus trochilus</i>	Söğütbülbülü	Willow Warbler	A.3.1	LC	–	App-II	–	L
PARIDAE	<i>Parus major</i>	Büyük baştankara	Great Tit	A.3.1	LC	–	App-II	–	L
LANIIDAE	<i>Lanius minor</i>	Karaalınlı örümcekkuşu	Lesser Grey Shrike	A.3	LC	–	App-II	Annex - I	L

Family	Scientific Name of the Species	Turkish Name of the Species	English Name of the Species	RDB	IUCN	CITES	BERN	EU Birds Directive*	Id Method
	<i>Lanius senator</i>	Kızılbaşlı örümcekkuşu	Woodchat Shrike	A.2	LC	–	App-II	–	L
PYCNONOTIDAE	<i>Pycnonotus xanthopygos</i>	Arap bülbülü	White-spectacled Bulbul	A.2	LC	–	App-II	–	O
	<i>Fringilla coelebs</i>	İspinoz	Common Chaffinch	A.4	LC	–	App-II	Annex - I	L
FRINGILLIDAE	<i>Carduelis chloris</i>	Florya	European Greenfinch	A.3	LC	–	App-II	–	L
	<i>Carduelis carduelis</i>	Saka	European Goldfinch	A.3	LC	–	App-II	–	L

Family	Scientific Name of the Species	Turkish Name of the Species	English Name of the Species	END	IUCN	CITES	BERN	EU Habitats Directive	Habitat	Id Method
MAMMALIA										
ERINACEIDAE	<i>Erinaceus concolor</i>	Beyazgöğüslü kirpi	Southern White-breasted Hedgehog	-	LC	-	App-III	Shrubbery and bushes	-	L
SORICIDAE	<i>Crocidura leucodon</i>	Sivriburunlu tarla faresi	Bicolored Shrew	-	LC	-	-	Open and shrub areas	-	L
	<i>Rhinolophus ferrumequinum</i>	Büyük nalburunlu yarasa	Greater Horseshoe Bat	-	LC	-	App-III	Forest, woodland and shrubs	Annex-II	L
	<i>Rhinolophus hipposideros</i>	Küçük nalburunlu yarasa	Lesser Horseshoe Bat	-	LC	-	App-III	Forest, woodland and shrubs	Annex-II	L
VESPERTILIONIDAE	<i>Pipistrellus pipistrellus</i>	Cüce yarasa	Common Pipistrelle	-	LC	-	App-II	Forest, open areas, parks and cultivated areas	-	L
LEPORIDAE	<i>Lepus europaeus</i>	Yabani tavşan	European Hare	-	LC	-	App-III	All kinds of habitat	-	L
CRICETIDAE	<i>Microtus nivalis</i>	Karfaresi	Caucasian Snow Vole	-	LC	-	App-III	Cultivated areas and haylofts	-	L
SCIURIDAE	<i>Citellus xanthophrymnus</i>	Tarla sincabı	Anatolian Souslik-Ground Squirrel	-	NE	-	App-III	Forest, fields and orchards	-	L
	<i>Rattus rattus</i>	Ev sıçanı	House Rat	-	LC	-	-	Soft soil areas	-	L
	<i>Mus musculus</i>	Ev faresi	House Mouse	-	LC	-	-	Fields and open areas	-	L
	<i>Apodemus sylvaticus</i>	Orman faresi	Long-tailed Field Mouse	-	LC	-	-	The settlements that are close to forest sides	-	L
CANIDEA	<i>Canis familiaris</i>	Evcil köpek	Domestic Dog	-	NE	-	-	They live in all areas that are eligible for them	-	O

B.2 Updated Flora Table

Family	Genus	Scientific Name of the Species	Turkish Name of the Species	IUCN	EU Habitats Directive	Abundance					Habitat	PGR	ID Method
						1	2	3	4	5			
APIACEAE	Scandix	<i>Scandix iberica</i> BIEB	Atkışnek Otu	NE	-			X			Steppe, oak or juniper shrubs, grassy slopes, Cultivated areas		L
APIACEAE	Scandix	<i>Scandix australis</i>		NE	-			X			Granite, serpentine or Limestone slopes, steppe, fields and road sides		L,O
APIACEAE	Malabaila	<i>Malabaila secacul</i>	Koyun Ekmeği	NE	-			X			Rocky slopes, Cliffs, sub-base oaks		L
ASTERACEAE	Senecio	<i>Senecio vernalis</i> WALDST. ET KIT.	Kanarya Otu	NE	-			X			Wasteland and sandy areas , fields, rocky slope		L
ASTERACEAE	Anthemis	<i>Anthemis cretica</i> L.	Papatya	NE	-			X			Limestone shrubs, juniperus or cedrus		L
ASTERACEAE	Anthemis	<i>Anthemis cotula</i> L.	Köpek Papatyası	NE	-	X					Meadows, road sides, sandy areas, wasteland		L
ASTERACEAE	Jurinea	<i>Jurinea consanguinea</i> DC.		NE	-			X			Steppe, fallow field, cultivated area, forest, rocky habitats.		L,O
ASTERACEAE	Crepis	<i>Crepis alpina</i> L.		NE	-	X					Forest, basalt rock, slopes, steppe		L
ASTERACEAE	Crepis	<i>Crepis sancta</i> (L.) BABCOCK		NE	-			X			Rocky and volcanic slopes, rocky limestone slopes, artemise, steppe, lush grassy slopes		L
BRASSICACEAE	Sinapsis	<i>Sinapsis arvensis</i> L.	Hardal Otu	NE	-			X			Road sides and wastelands		L,O
BRASSICACEAE	Lepidium	<i>Lepidium perfoliatum</i> L.		NE	-			X			Cultivated areas, wastelands and rocky slopes		L
BRASSICACEAE	Isatis	<i>Isatis buschiana</i> SCHISCHKIN		NE	-			X			Uncovered dryland		L
BRASSICACEAE	Alyssum	<i>Alyssum strigosum</i> BANKS ET SOL		NE	-			X			Damaged area		L
CARYOPHYLLACEAE	Silene	<i>Silene italica</i> (L.) PERS.	Salkım Çiçeği	NE	-			X			Open areas, usually <i>Pinus nigra</i> open areas		L,O
CARYOPHYLLACEAE	Silene	<i>Silene otites</i> (L.) WIBEL	Sinek Kapan	NE	-			X			Steppe, fields and sand dunes		L
CAMPANULACEAE	Campanula	<i>Campanula phrygia</i> JAUB. ET SPACH		NE	-			X			Wet grassy places		L
CAMPANULACEAE	Asyneuma	<i>Asyneuma rigidum</i> (W)		NE	-			X			Forest, shrubs, steppe, rocky slopes		L

Family	Genus	Scientific Name of the Species	Turkish Name of the Species	IUCN	EU Habitats Directive	Abundance					Habitat	PGR	ID Method
						1	2	3	4	5			
ELAEAGNACEAE	Elaeagnus	<i>Elaeagnus angustifolia</i> L.	İğde	NE	-		X				Streams and river sides (its culture made in Turkey)		L,O
FABACEAE	Calicotome	<i>Calicotome villosa</i>	Keçiboğan	NE	-		X				shrubs, dry rocky lands		L
FABACEAE	Anagyris	<i>Anagyris foetida</i> L.	Katırkuyruğu	NE	-		X				Rocky slopes and deciduous coppice		L
FABACEAE	Genista	<i>Genista albida</i> WILLD.		NE	-		X				Rocky, calcareous slopes and Pinus brutia forests		L
FABACEAE	Ononis	<i>Ononis adenotricha</i> BOISS.		NE	-		X				Rocky slopes,oak shrubs, pine coppice	Eastern mediterranean	L,O
FABACEAE	Trifolium	<i>Trifolium angustifolium</i> L.		NE	-			X			Fallow fields, steppe, sandy areas		L
FABACEAE	Trifolium	<i>Trifolium purpureum</i> LOIS.		NE	-			X			Fields, road sides and stony areas		L
FABACEAE	Medicago	<i>Medicago orbicularis</i> (L.) BART.	Yonca	NE	-			X			Cultivated and fallow fields, rocky slopes, heavy soils		L
FABACEAE	Coronilla	<i>Coronilla scorpioides</i> (L.) KOCH		NE	-			X			Cultivated and damaged areas		L
FABACEAE	Alhagi	<i>Alhagi pseudalhagi</i> (BIEB.) DESV	Deve Dikeni	NE	-			X			Ditch sides and barrens		L
LAMIALES	Sideritis	<i>Sideritis montana</i> L.	Dağ Çayı	NE	-			X			Cultivated and fallow fields, steppe, dry slopes, Quercus shrubs, Pinus forests, etc.	Mediterranean	L
LAMIALES	Melissa	<i>Melissa officinalis</i> L.	Oğul Otu	NE	-			X			Open forests, shrubs, rocky slopes, stream sides, barrens, roads	Mediterranean	L,O
LAMIALES	Prunella	<i>Prunella vulgaris</i> L.		NE	-			X			Fields,coppice, road sides and humid regions, streams	Euro - Siberian	L
LAMIALES	Micromeria	<i>Micromeria myrtifolia</i> BOISS. ET HOHEN.	Taş Nanesi	NE	-			X			Rocky slopes, clefts (usually limestones), Pinus brutia glades, shrubs	Eastern mediterranean	L
LAMIALES	Salvia	<i>Salvia pinnata</i> L.	Adaçayı	NE	-			X			Cereal and fallow fields, dry shrubs	Mediterranean	L
LAMIALES	Salvia	<i>Salvia napifolia</i> JACQ.	Adaçayı	NE	-			X			Rocky sides, Quercus cocifera shrubs, road sides	Eastern mediterranean	L,O

Family	Genus	Scientific Name of the Species	Turkish Name of the Species	IUCN	EU Habitats Directive	Abundance					Habitat	PGR	ID Method
						1	2	3	4	5			
LAMIALES	Stachys	<i>Stachys lavandulifolia</i> VAHL		NE	-			X			Calcerous volcanic rocky slopes and shrubs	Irano - Turanian	L
POACEAE	Brachypodium	<i>Brachypodium sylvaticum</i>		NE	-			X			Forestlands, (Pinus abies, picea, fagus etc.), hazelnut shrubs, calcerous slopes	Euro - Siberian	
POACEAE	Aegilops	<i>Aegilops speltoides</i> TAUSCH		NE	-			X			Oak shrubs, rocky and calcerous hills, meadows, sides		
POACEAE	Hordeum	<i>Hordeum geniculatum</i> ALL.		NE	-			X			The moist river beds in the hills, mountain pastures, steppe, seaside, salt marsh road	Euro - Siberian	
POACEAE	Taeniatherum	<i>Taeniatherum caput-medusae</i>		NE	-			X			Steppe, grassy mountain slopes, stony slopes, mountain shrubs, sandy meadows		
POACEAE	Arrhenatherum	<i>Arrhenatherum palaestinum</i> BOISS.		NE	-			X			Limestone rocks, volcanic cliff, oak and dry grass	Eastern mediterranean	
POACEAE	Avena	<i>Avena sativa</i> L.		NE	-			X			Cultivated areas		
POACEAE	Psilurus	<i>Psilurus incurvus</i>		NE	-			X			Oak shrubs, stony slopes, fallow fields, dump site		
POACEAE	Brachiaria	<i>Brachiaria eruciformis</i>		NE	-			X			Herb, especially shadow and moist places		
POACEAE	Piptatherum	<i>Piptatherum coerulescens</i> (DESF.) P. BEAUV.		NE	-			X			Steep hills, limestone slopes, serpentine rocks (on rivers and slopes) oak and Turkish pine.		
PINACEAE	Pinus	<i>Pinus nigra</i> J. F. ARNOLD	Kara Çam	NE	-	X					Forest		L,O
PAPAVERACEAE	Papaver	<i>Papaver rhoeas</i> L	Gelincik	NE	-			X			Fields, wastelands		L
PAPAVERACEAE	Fumaria	<i>Fumaria cilicica</i> HAUSSKN.		NE	-	X					Wastelands and road sides		L
RANUNCULACEAE	Clematis	<i>Clematis vitalba</i> L.	Akasma	NE	-	X					shrubs, forest		L
RANUNCULACEAE	Adonis	<i>Adonis annua</i> L.	Kanavcı Otu	NE	-			X			Field	Mediterranean	L
RANUNCULACEAE	Ranunculus	<i>Ranunculus arvensis</i> L.		NE	-			X			Cultivated area, crop field		L
RUTACEAE	Citrus	<i>Citrus limon</i>	Limon	NE	-					X	Culture forms are cultivated.		L,O
RUTACEAE	Citrus	<i>Citrus sinensis</i>	Portakal	NE	-			X			Culture forms are cultivated.		L,O

Family	Genus	Scientific Name of the Species	Turkish Name of the Species	IUCN	EU Habitats Directive	Abundance					Habitat	PGR	ID Method
						1	2	3	4	5			
RUTACEAE	Citrus	<i>Citrus reticulata</i>	Mandalina	NE	-			X			Culture forms are cultivated.		L,O
MALVACEAE	Lavatera	<i>Lavatera punctata</i> ALL.	Pamuk çiçeği	NE	-			X			Seasides, fields, cliffs and maquis.		L
MALVACEAE	Malva	<i>Malva nicaeensis</i> ALL.		NE	-				X		Fields that are close to the seasides		L,O
SCROPHULARIACEAE	Linaria	<i>Linaria simplex</i> (WILLD.) DC.		NE	-			X			Sparse maquis, rocky and stone places, fallow fields		L
SCROPHULARIACEAE	Linaria	<i>Linaria genistifolia</i> (L.) MILLER		NE	-				X		Forests, shrubs, rocky, soil slopes, road sides		L,O
SCROPHULARIACEAE	Euphrasia	<i>Euphrasia pectinata</i> TEN.		NE	-				X		Coppice sides, stubbles, alpine pastures		L,O

Abbreviations in the table;

L: Literature O: Observation

IUCN : The International Union for Conservation of Nature

CITES : The Convention on International Trade in Endangered Species of Wild Fauna and Flora

PGR: Phytogeographical Region

Appendix C Monitoring Plan for Construction and Operation Phases

C.1 Monitoring Plan for Construction Phase

Monitoring Parameter	Place of Monitoring	Method of Monitoring	Frequency of Monitoring	Monitoring Cost	Responsibility	Reporting Requirements
Noise	At the nearest sensitive receptor to the construction site	Noise measurement with a calibrated sound level meter	Measurements will be performed depending on the complaints from the public particularly during the activities that increase noise levels.	Included in the construction works	Contractor/Operator	Report to the EBRD and MoEU (upon request) (measurement results of noise levels)
Dust emissions from excavation activities and truck movement	At the nearest sensitive receptors to the construction site	Visual inspection and measurements with a PM10 device	Daily visual observation by the Project staff for routine control; Measurements will be performed depending on the complaints from the public particularly during the activities that increase dust emissions.	Included in the construction works	Contractor/Operator	Report to the EBRD and MoEU (upon request)
Excavated top soil	At the WWTP site and along pressure and discharge lines	Visual inspection	Daily	No cost	Contractor/Operator	Report to the EBRD
Erosion and landslide	At the excavated surfaces	Visual inspection	Daily and particularly after rainy and windy days	No cost	Contractor/Operator	Report to the EBRD
Domestic wastewater	At the camp site	Visual inspection of septic tank (imperviousness and the quantity of the wastewater)	Daily	Included in the construction works	Contractor/Operator	Recordings of waste transfer Report to the EBRD
Non-hazardous solid wastes generation (organic and recyclable wastes)	Temporary storage areas on the construction site and the camp site	Visual inspection of storage areas Periodic control of the waste transfer records	Daily	Included in the construction works	Contractor/Operator	Recordings of waste transfer Waste Minimization Plan Report to the EBRD
Hazardous Wastes (waste oil, waste batteries and accumulators, contaminated containers, etc.)	Temporary storage areas on the construction site and the camp site	Visual inspection of storage areas Periodic control of the waste transfer records	Daily	Included in the construction works	Contractor/Operator	Recordings of waste transfer 3-Year Waste Management Plan Recordings of annual waste declaration forms filled through online system of

Monitoring Parameter	Place of Monitoring	Method of Monitoring	Frequency of Monitoring	Monitoring Cost	Responsibility	Reporting Requirements
						MoEU Report to the EBRD
Excavated material and construction waste	Excavation and storage sites	Visual inspection Periodic control of the waste transfer records	Daily	Included in the construction works	Contractor/ Operator	Recordings of waste transfer Report to the EBRD
Hazardous Materials/ Chemicals	Storage areas and tanks for hazardous materials and chemicals	Visual inspection for a potential spill/leak	Daily	No cost	Contractor/ Operator	Report to the EBRD Recordings of environmental incident Declaration of environmental incident to MoEU
Historical, Cultural and Archaeological Assets	All excavation sites	Visual inspection	Continuous observation during excavation works	Included in the construction works	Contractor/ Operator	Declaration to the authorities in case an asset is found Report to the EBRD
Community Health and Safety	Around excavation sites where public can access and along access roads where construction vehicles work	Visual inspection and restrictions for the construction areas.	Continuous observation	Included in the construction works	Contractor/ Operator	Report to the EBRD Grievance forms
Occupational Health and Safety	All construction and camp sites.	Visual control of the personal protective equipments of the workers Regular health and safety inspections of the workers for proper handling of chemicals, availability of Material Safety Data Sheets (MSDS).	Daily	Included in the construction works	Contractor/ Operator	Recordings of accidents and near-misses Declarations of the accidents to the authorities- Report to the EBRD
Worker engagement (as worker feedback mechanism to enable workers to raise issues, grievances and make suggestions)	Construction Site and the Camp Site	Site Labour Audit	Monthly and Annual	Fee for external consultant team	Contractor/ Operator	Labour Audit Report
Human Resource Policies and Procedures Accessible by the workforce	Construction Site and the Camp Site	Site Labour Audit	Monthly and Annual	Fee for external consultant team	Contractor/ Operator	Labour Audit Report HR Policy of Contractor displayed at easily accessible locations on the

Monitoring Parameter	Place of Monitoring	Method of Monitoring	Frequency of Monitoring	Monitoring Cost	Responsibility	Reporting Requirements
(working hours, contracting terms, wages, leave, equality and diversity, retrenchment, collective bargaining, hiring and recruitment, etc.)						Site. Annex of Workers' Contracts Training Agenda inclusive of HR Policies and Procedures List of workers that received training
Occupational Health and Safety	All construction and camp sites.	- Visual control of the personal protective equipments of the workers - Regular health and safety inspections of the workers for proper handling of chemicals, availability of Material Safety Data Sheets (MSDS).	Daily	Included in the construction works	Contractor/Operator	- Recordings of accidents and near-misses - Declarations of the accidents to the authorities- Report to the EBRD
Worker engagement (as worker feedback mechanism to enable workers to raise issues, grievances and make suggestions)	Construction Site and the Camp Site	Site Labour Audit	Monthly and Annual	Fee for external consultant team	Contractor/Operator	Labour Audit Report
Human Resource Policies and Procedures Accessible by the workforce (working hours, contracting terms, wages, leave, equality and diversity, retrenchment, collective bargaining, hiring and recruitment, etc.)	Construction Site and the Camp Site	Site Labour Audit	Monthly and Annual	Fee for external consultant team	Contractor/Operator	Labour Audit Report HR Policy of Contractor displayed at easily accessible locations on the Site. Annex of Workers' Contracts Training Agenda inclusive of HR Policies and Procedures List of workers that received training
Workers Grievance Mechanism	Construction Site and the Camp Site	Site Labour Audit	Monthly and Annual	Fee for external consultant team	Contractor/Operator	Presence of Workforce Grievance Procedures Number of grievances raised related to hours worked / overtime, etc.
Delivery of fair wages and	Construction Site and the	Site Labour Audit	Monthly and Annual	Fee for external	Contractor/	Record of the review of daily

Monitoring Parameter	Place of Monitoring	Method of Monitoring	Frequency of Monitoring	Monitoring Cost	Responsibility	Reporting Requirements
benefits	Camp Site			consultant team	Operator	workers rates Payslips Contracts that include wages and benefits
Non-discriminatory accommodation policies and practices	Camp Site	Site Labour Audit	Monthly and Annual	Fee for external consultant team	Contractor/ Operator	Accommodation rules and policies developed Number of non-conformances addressed accommodation Inspection records
Worker Code of Conduct	Camp Site	Site Labour Audit	Monthly and Annual	Fee for external consultant team	Contractor/ Operator	Report of Consultation with nearby communities Record of incidences
Contractor Control System	Camp Site	Contractor Audit	Quarterly	Supervision Consultant Fee	Contractor/ Operator	Contractor Control Plan Tender documentation regarding environment, labour, health and safety and community relations performance.
Compensation of Former Occupants	Occupants to be reached at their addresses	Consultation	Once off	No cost	Contractor/ Operator	Compensation Payments
Grievance mechanism accessible by local communities	Construction Site and MESKI	External Audit	Quarterly	Fee for external consultant team	Contractor/ Operator	Record of grievances and tracking forms
Project disclosure	Construction Site and MESKI	External Audit	Quarterly	Fee for external consultant team	Contractor/ Operator	Publicized disclosure materials
Stakeholder engagement	MESKI	Consultation	Quarterly	Fee for external consultant team	Contractor/ Operator	Records of meetings, gatherings, etc. Lists of participants

C.2 Monitoring Plan for Operation Phase

Monitoring Parameter	Place of Monitoring	Method of Monitoring	Frequency of Monitoring	Monitoring Cost	Responsibility	Reporting Requirements
Noise	At the nearest sensitive receptor to the WWTP and pumping stations	Noise measurement with a calibrated sound level meter	Measurements will be performed depending on the complaints from the public (no regular noise monitoring since the WWTP is exempted from the noise related provisions of Environmental Permit)	Included in the operational costs	Operator	Report to the EBRD and MoEU (upon request) (measurement results of noise levels)
Odour	At the nearest sensitive receptor to the WWTP and along sludge transportation route at the Aeration Tanks and Bio-Phosphorus Tanks (at least 2-3 locations)	Measurement of odour at the WWTP	Measurements will be performed at least once in winter period (December or January) and once in summer period (July or August) and in case of complaints from the public	Included in the operational costs	Operator	Report to the EBRD and MoEU (upon request) (measurement results of odour immissions)
Sludge from wastewater treatment	Temporary storage areas at the WWTP after stabilization	Visual inspection of storage areas Periodic control of the sludge transfer records	Daily	Included in the operational costs	Operator	Recordings of waste transfer Sludge Management Plan Sludge Analysis Report Recordings of annual waste declaration forms filled through online system of MoEU Waste Management Plan Report to the EBRD
Leakage from sewage lines	Along all sewage lines	Recordings of failures	Daily reporting of failure records and monthly review of the records.	Included in the operational costs	Operator	Report to the EBRD
Discharge water quality to the sea	At the outlet of the WWTP	Sampling and analysis of the discharge water	Daily sampling and analysis	Included in the operational costs	Operator	Declarations of the analysis results to MoEU Report to the EBRD
Non-hazardous solid wastes generation (organic and recyclable wastes)	Temporary storage areas at the WWTP and along the sewerage lines during maintenance works	Visual inspection of storage areas Periodic control of the waste transfer records	Weekly	Included in the operational costs	Operator	Recordings of waste transfer Waste Minimization Plan Report to the EBRD
Hazardous Wastes	Temporary storage areas at	Visual inspection of storage	Weekly	Included in the	Operator	Recordings of waste transfer

Monitoring Parameter	Place of Monitoring	Method of Monitoring	Frequency of Monitoring	Monitoring Cost	Responsibility	Reporting Requirements
(waste oil, waste batteries and accumulators, contaminated containers, etc.)	the WWTP and along the sewerage lines during maintenance works	areas Periodic control of the waste transfer records		operational costs		Waste Management Plan Recordings of annual waste declaration forms filled through online system of MoEU Report to the EBRD
Hazardous Materials/ Chemicals	Storage areas and tanks for hazardous materials and chemicals	Visual inspection for a potential spill/leak	Daily	No cost	Operator	Report to the EBRD Recordings of environmental incident Declaration of environmental incident to MoEU
Community Health and Safety	During maintenance works along the sewerage lines.	Visual inspection	Continuous observation	Included in the operational costs	Operator	Report to the EBRD Grievance forms
Occupational Health and Safety	At the WWTP and during maintenance works along the sewerage lines.	Visual control of the personal protective equipments of the workers Regular health and safety inspections of the workers for proper handling of chemicals, availability of Material Safety Data Sheets (MSDS).	Daily	Included in the operational costs	Operator	Recordings of accidents and near-misses Declarations of the accidents to the authorities Report to the EBRD
Worker engagement (as worker feedback mechanism to enable workers to raise issues, grievances and make suggestions)	WWTP	Site Labour Audit	Quarterly	Fee for external consultant team	Operator	Labour Audit Report
Human Resource Policies and Procedures Accessible by the workforce (working hours, contracting terms, wages, leave, equality and diversity, retrenchment, collective bargaining, hiring and recruitment, etc.)	WWTP	Site Labour Audit	Quarterly	Fee for external consultant team	Operator	Labour Audit Report HR Policy of Contractor displayed at easily accessible locations on the Site. Annex of Workers' Contracts Training Agenda inclusive of HR Policies and Procedures List of workers that received training
Workers Grievance	WWTP	Site Labour Audit	Quarterly	Fee for external	Operator	Presence of Workforce

Monitoring Parameter	Place of Monitoring	Method of Monitoring	Frequency of Monitoring	Monitoring Cost	Responsibility	Reporting Requirements
Mechanism				consultant team		Grievance Procedures Number of grievances raised related to hours worked / overtime, etc.
Delivery of fair wages and benefits	WWTP	Site Labour Audit	Quarterly	Fee for external consultant team	Operator	Record of the review of daily workers rates Payslips Contracts that include wages and benefits
Worker Code of Conduct	WWTP	Site Labour Audit	Quarterly	Fee for external consultant team	Operator	Report of Consultation with nearby communities Record of incidences
Grievance mechanism accessible by local communities	Construction Site and MESKI	External Audit	Quarterly	Fee for external consultant team	Operator	Record of grievances and tracking forms
Project disclosure	Construction Site and MESKI	External Audit	Quarterly	Fee for external consultant team	Operator	Publicized disclosure materials
Stakeholder engagement	MESKI	Consultation	Quarterly	Fee for external consultant team	Operator	Records of meetings, gatherings, etc. Lists of participants

Appendix D Chance Find Procedure

1. PURPOSE

The Archaeological Chance Find Procedure is prepared to provide guidance to all parties and employees regarding the actions to be taken in case of discovery of an archeological entity.

2. SCOPE

It is likely to encounter archeological findings during the construction activities of the project. Any type of activity requiring stripping, drilling, excavation or any type of intervention on the landscape through earthworks has potential to lead to discovery or destroying of archeological entities.

3. PROCEDURE

Any physical remains of past human activity, including artifacts, plant and animal remains, structural remains and soil features are defined as archaeological entities. All actions to be carried out in case of discovery of an archaeological entity should comply with the Law on Cultural and Natural Assets Conservation Law Numbered 2863 (**Law Number:** 2863, **Date of Approval:** 21.7.1983, **Publication in the Official Gazette:** Date: 23/7/1983 No: 18113).

In the event of discovery of an archaeological entity, the following procedure shall be implemented:

- All construction and other relevant activities in the vicinity of the chance find will be ceased by the site engineer of Temel-Su.
- Boundaries of discovered archaeological site coordinates will be recorded and photograph of the location and the finding shall be taken and also video record should be made.
- Site engineer of Temel-Su will contact the Site Manager immediately for preliminary assessment and then contact the Temel-Su's Project Manager immediately.
- Site engineer of Temel-Su will properly secure chance find site via flagging, no-entry signs, etc. and prevent/limit the vehicle traffic within the immediate vicinity of chance find and also protect the site by not moving, removing or further disturbing the chance find.
- The site and its vicinity will be secured against damage or loss until a final decision is made about this site by Board.
- Site manager/ Project manager contacts the spread boss and museum directorate immediately if the discovered site is identified as potential archaeological site and is concluded that further action is required.
- Site engineer of Temel-Su will fill out Part A of Chance Find Form and send a copy to Site Manager/Project Manager within 24 hours keeping a copy for Temel-Su as a record,
- If any human remains such as contemporary grave or graveyard are noticed, security forces will be informed. Unless the remains are determined to be recent, the local administration (village head: mukhtar, or district governor) has the full authority.
- Further steps to be followed and proper procedures to be implemented for the management of the finding(s) (changes in the layout, conservation, preservation, restoration or salvage) will be decided and reported in writing by the Museum Directorate.
- In case the site is considered to be of no significance by the Museum Directorate, Project manager will inform the site engineers. Subsequent of filling out Part B of Chance Find Form by Project Manager/Site Manager of Temel-Su while retaining a copy of the Chance Find form as a record, the construction works will proceed since no further actions are required.
- In case the site is considered to be of significance by the Museum Directorate, Project Manager/Site Manager will be informed by the Museum Directorate about the decision on the further actions. Project Manager/Site Manager will inform the Site Engineers. Subsequent of filling out Part C of Chance Find Form by Project

Manager/Site Manager while retaining a copy of the Chance Find form as a record, the instructions of the Museum Directorate will be followed. After some field investigation, Museum Directorate will declare their decision on the significance of the site and the actions to be followed as per their decision are summarized in Table 1.

Table 1: Actions to be followed

Site to be of no Significance	Site to be of Minor Significance	Site to be of Major Significance
<ul style="list-style-type: none"> ✓ Site engineer will inform Project Manager/Site Manager, ✓ Site engineer will record the decision in Part A of Chance Find Form and sends a copy to Project Manager/Site Manager within 24 hour, ✓ Site engineer of Temel-Su will retain a copy of Chance Find form as a record, ✓ No further actions will be required, ✓ This step closes out the chance find procedure, ✓ <u>Construction activities may resume.</u> 	<ul style="list-style-type: none"> ✓ A salvage excavation is to be completed ✓ Museum Directorate will provide instructions, and/or supervision for salvage archaeological excavation to Project Manager/Site Manager, ✓ Project Manager/Site Manager will inform their site engineers, ✓ Under the guidance of Project Manager/Site Manager (following instructions from authorities), Temel-Su will provide a team of qualified archaeologist to conduct the salvage excavation, ✓ Once the excavation is completed, site engineers will provide a report to Project Manager/Site Manager, ✓ Project Manager/Site Manager will provide a report to the Museum Directorate, ✓ Regional Board Directorate of Protection of Cultural Heritage will officially confirm the completion of recovery and inform Project Manager/Site Manager, ✓ Project Manager/Site Manager will inform the site engineers that no further actions are required, ✓ Project Manager/Site Manager will record the decision in Part B of Chance Find Form and retain a copy of Chance Find form as a record, ✓ No further actions will be required, ✓ This step closes out the chance find procedure ✓ <u>Construction activities may resume.</u> 	<ul style="list-style-type: none"> ✓ An excavation is to be completed, ✓ Site will be treated according to "Law on the Conservation of Cultural and Natural Property (2863)", ✓ Museum Directorate will provide instructions, and/or supervision for salvage archaeological excavation to Project Manager/Site Manager, ✓ Project Manager/Site Manager will inform the site engineers, ✓ Under the guidance of Project Manager/Site Manager (following instructions from authorities), Temel-Su will provide a team of qualified archaeologist to conduct the salvage excavation, ✓ Once the excavation is completed, site engineers will provide a report to Project Manager/Site Manager, ✓ Project Manager/Site Manager will provide a report to the Museum Directorate, ✓ Regional Board Directorate of Protection of Cultural Heritage will officially confirm the completion of recovery and inform Project Manager/Site Manager, ✓ Site will be officially recorded and protected according to Turkish regulations, ✓ Project Manager/Site Manager will inform the site engineers that no further actions are required, or that a project change is required, ✓ Project Manager/Site Manager will record the decision in Part C of Chance Find Form and retain a copy of Chance Find form as a record, ✓ No further actions will be required, ✓ This step closes out the chance find procedure, ✓ <u>Construction activities may resume.</u>

4. RESPONSIBILITY

Temel-Su is responsible to comply with the above mentioned procedure with all its members during the whole construction period. All employees involved in construction works will be trained for the implementation of the procedure.

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