

SECTION 5A - Subsection 1: Introduction and Existing Conditions

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1 Introduction and Existing Conditions

1.1 Introduction

Turkey hosts over 3.2 million registered Syrians under Temporary Protection, which mainly located in the Southeast Anatolia region bordering Syria (i.e. 45% of the 3,2 million Syrians under Temporary Protection are concentrated in 4 provinces in the South East). In these cities, the ratio of the Syrian population to that host communities is higher than 15%, including Kilis, Hatay, Gaziantep and Sanliurfa. Populations have either reached or exceeded 2023 population projections. The situation has resulted in, amongst others, an unprecedented demand for municipal services, including waste management services. The arrival of Syrians not only increased the operating expenditures for waste collection, but also resulted in waste management facilities (landfills) to reach their full capacities earlier than planned.

The main objective of this Project is to strengthen the resilience of Metropolitan Municipality of Gaziantep (Final Beneficiary) affected by the influx of the Syrians to be better able to cope with and recover from impact of large-scale displacement.

The project aims to establish and make operational a solid waste Mechanical Biological Treatment (MBT) facility in Gaziantep in order to respond to the urgent need for solid waste segregation and landfill diversion. The facility will be newly constructed for an overall increase of waste management capacities, which aims to reduce ratio of biodegradables and recyclables to be landfilled and decrease landfill need by total volume reduction in accordance with relevant legislations.

Together with expected environmental benefits, the proposed MBT facility will also create economic gains in terms of employment opportunities. Environmental benefits are directly tied to landfill diversification; hence less solid waste will need to be buried. Economic gains are based on creation of value from waste in the form of sale of recyclables and valorisation of organic fraction such as biogas and / or compost production. The organic fraction of municipal solid waste to be segregated by the facility will be processed by Anaerobic Digestion (AD) and converted into biogas. The biogas is planned to feed into existing or new electricity generator (e.g co-generation) to be provided by the beneficiary and converted into electricity.

Based on the above the Metropolitan Municipality of Gaziantep (Final Beneficiary) is willing to collaborate with the view to the construction of a Mechanical Biological Treatment (MBT) facility, in the existing site of the sanitary landfill.

In the project area, waste management is getting more important and more environmentally sensitive each year, because of the increasing population, as well as the refugees influx, which together with lifestyle changes give rise to an increased solid waste production and changes in the waste composition.

The establishment of the MBT Facility in accordance with the Turkish Legislation and the EU Acquis will reduce the environmental pollution in the region and will enabling Turkey to achieve a high level of environmental protection. The overall objective of this project is to contribute,

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- to an integrated and financially self-sustainable waste management system in Gaziantep Metropolitan Municipality,
- to the sustainable and continuous improvement of the quality of the natural environment of the project area and of the country, in order to fulfil the country's targets, especially in relation to public health and environmental protection.

1.2 Existing Conditions

1.2.1 Project Area

The project area is in Sahinbey District, Baglarbasi neighbourhood, block with no O38B03B2C-04A1D, plot with no 7827 and layout with no 1 and O38B03B2C, plot with no 7826 and layout no 1. The project area will be located on an indicated area of 82,802 m².

The exact coordinates of the site are 36°59'26.1"N 37°24'00.6"E.

The site is accessible from downtown Gaziantep via the Özdemir Cd and then Mavikent Mahallesi. The nearest settlements to the site are Mavikent (at 500m from the site) and Akbulut (1,150m from the site). The figure below presents the distance of the closest settlements from the project area.

The location of the facility is at a distance of more than 250 meters from the residential areas, in accordance with the requirements of the Official Gazette (No. 27533 of 26/03/2010) on the Regulation on the Landfill of Wastes (article 15) and of the Communiqué (No. 29498 of 10/10/2015) on the Mechanical Separation, Biochemical and Biomonitoring Facilities and Fermented Product Management (article 10.1).



Figure 1-1: Project location - Sahinbey District

With regards to the distance from sensitive receptors, the project site is located 9.68 km away from Burç Tabiat Parkı (Zodiac Nature Park) and 11.73 km away from C Tipi Mesire Alanı

(Recreation Area). The figure below presents the distance of the closest sensitive receptors from the area of the Project.

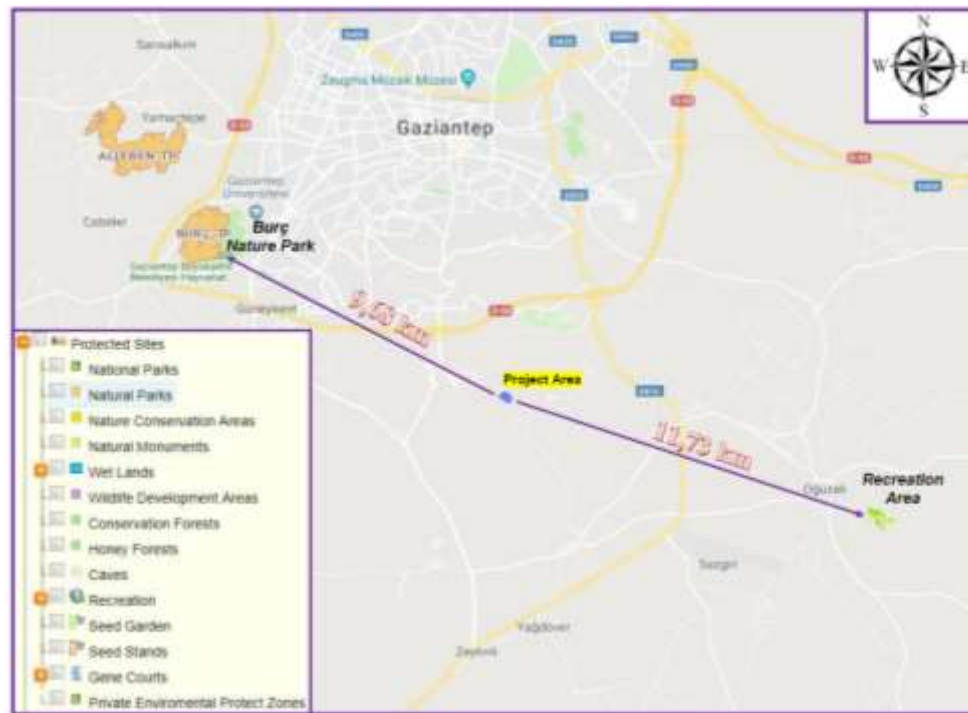


Figure 1-2: Distance of closest sensitive receptors from the area under study

1.2.2 Topography and Geology

The location of the proposed facility is within the frames of the Gaziantep Metropolitan Municipality. Based on the cadastral division of the Municipality, the area belongs to the cadastral of the Metropolitan Municipality of Gaziantep. The location is south of the centre district of Gaziantep, at an approximate distance of 11 km. Part of the location is arable land and the other part is within the fenced existing landfill site of the Gaziantep Metropolitan Municipality. The project area starts from the landfill of Metropolitan Gaziantep, and extends west in length of 2,000 meters.

The topographic slope of the investigation area varies between 0% and 5%. The site is within the frames of the local Gaziantep Metropolitan Municipality and based on the cadastral division of the Municipality, the scope belongs entirely to the cadastral Municipality of Gaziantep district. The location is south of the settlement centre district of Gaziantep, at approximate a distance of 11km. Part of the location is arable land and the other part is within the fenced existing landfill Gaziantep Metropolitan Municipality.

The Geodetic Report of the site is presented in Subsection 13 Drawings

The geology of the area consists of reddish-dark brown-dark gray and blackish colored basalt units belonging to the Upper Miocene Aged Yavuzeli Basalt. According to the performed geological observations, it consists of the vegetable soil between 0.00 and 0.50 meters and bas-

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alt between 0.50 and 10 meters. According to the performed drillings, the basalt consists of the faulted fissured blocks between clay belts subjected to the alteration.

Yavuzeli Basalt units are classified as the rock types in the investigation area, and the rocks are low resistant according to the uniaxial pressure resistance classification (Deere and Miller-1966). The basalt unit is of “very bad quality, to bad and medium quality”, its decomposition is W2 (least broken) and W3 (medium level broken) according to the RQD% deci.

Subsidence and swelling are not expected in the area depending on the general lithology.

The Ground Group and Local Ground Class of the basalt and residuals are determined as “B1” and “Z2”, respectively according to the provisions of Regulations for the Buildings to be Built in the Disaster Regions and provisions of Regulations for Buildings to be Built in the Earthquake Region.

The underground water has not been encountered throughout the progression in the ground drillings made in 10.00 meters in the investigation area.

There are not continuously flowing creek and seasonal flowing dry creek beds in the investigation area. The foundation and surrounding drainage to detract these waters from the foundation bed should be made by taking the natural structures and inclinations into consideration in order not to cause the subsidence and carrying capacity loss of the surface waters that will be able to leak to the foundation.

Landslide: the investigation area’s geology completely consisted of the basalt unit of Yavuzeli Basalt found in the rock characteristic and the decomposition zone found generally in the ground characteristic in the drillings made. The mass movements such as landslide, creep (slow soil fluction) etc., has not been observed around the investigation area. Moreover, the landslide has not been observed in the landslide inventory map of Mineral Research and Exploration Institute.

Rock Fall: the investigation area’s slope is generally found in the areas in which it varies between 0% and 5%, and the ground completely consists of the basalt unit in the rock characteristic. Rock fall has not been observed in the land works within the area

The working area and its surroundings are found in the 4th level earthquake region in “Turkey Earthquake Region Map” issued in 1996 and reorganized in 1998 by the General Directorate of Natural Disasters of the Ministry of Public Works and Settlement. The building should be built according to the provisions of the Regulations regarding the Buildings in the Disaster Region and Regulations regarding Buildings in the Earthquake Region.

There is not any active fault that will affect the investigation area and its immediate surroundings. The liquidation does not develop since the investigation area’s geology consisted of the rock units.

The buildings should be subsided on the monotype ground to prevent the different subsidence structures in the building foundations. Otherwise, the subsidence is required to project according to the ground conditions. Suitable foundation type should be selected in the foundation

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type selection within the investigation area, and the building should be projected according to them.

The data obtained in accordance with the performed 3 pieces of seismic applications and 3 pieces of micro-tremor works, in the geophysical investigations made, are given below.

Table 1-1: The parameters calculated by the P and S velocities¹

APPLICATION NAME	T.N	Vp (m/s)	Vs (m/s)	h (m)	Vp/Vs	p (gr/cm ³)	v	Gmax (kg/cm ²)	Ed (kg/cm ²)	K (kg/cm ²)	To (sn)	Zb	Vs 30 (m/s)	Frm.
Seismic-1	1	710	360	0.7	1.97	1.6	0.33	2073	5501	5300	0.3	1.4	652	Basalt
	2	1208	665		1.82	1.82	0.28	8048	20644	15827				
Seismic-2	1	723	381	0.6	1.9	1.61	0.31	2337	6112	5299	0.29	1.4	679	Basalt
	2	1231	691		1.78	1.83	0.27	8737	22191	16080				
Seismic-3	1	730	372	0.3	1.96	1.61	0.32	2227	5899	5609	0.3	1.4	674	Basalt
	2	1224	680		1.8	1.83	0.28	8461	21605	16134				

Table 1-2: The parameters obtained by the micro-tremor measurements¹

MT No	Record Length	Frequency (Hz)	To (ZHT)	H/V	Ta	Tb
M1	15 min.	11.24	0.08	1.35	0.04	0.12
M2	15 min.	8.07	0.12	1.51	0.08	0.18
M3	15 min.	5.70	0.17	1.41	0.11	0.25

The ground parameters are presented in the following tables.

Table 1-3: The local ground classification and ground class according to the Vs30 values 1

Eurocode 8		
Ground Class	Description	Features
A	Rock or other rock like formations	Vs1>800
B	Very dense sand, gravel or very hard clays	360<Vs1<=800
C	Dense or medium dense sand, gravel or hard clay	180<Vs1<=360
D	Noncohesive ground from loose to medium dense or cohesive ground from soft to hard	180>Vs1
Vs1: the average sliding wave velocity in 30 m width - Vs30 (m/s)		

Table 1-4: The Ground Classifications¹

¹ Geological-Geotechnical Land Survey Report, Land Survey Report for Map Section No. 038b03b2c-04a1d, Island No. 7827 and Plot No.1 in Bağlarbaşı Neighbourhood, Şahinbey County – Gaziantep City

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APPLICATION NAME	Vs 30 (m/s)	TS EN 1998-1	Frm.
Seismic-1	652	B	Basalt
Seismic-2	679	B	Basalt
Seismic-3	674	B	Basalt

Table 1-5: Ground Descriptions according to the Vs30 Velocity1

Drilling No	Sample Width (m)	Ground Safety Stress (kgf/cm ²)	Bed Coefficient (t/m ³)	Ground Group	Ground Class	Effective ground acceleration coefficient A ₀	Spectrum Characteristic Periods		Building Importance Coefficient (I)
							T _A	T _B	
SK-1	1.00	1.80	3600	B	Z2	0.10	0.15	0.40	1.0
SK-2	2.00	1.70	3400	B	Z2	0.10	0.15	0.40	1.0
SK-3	1.00	1.80	3600	B	Z2	0.10	0.15	0.40	1.0
SK-4	3.00	1.60	3200	B	Z2	0.10	0.15	0.40	1.0
SK-5	4.00	1.50	3000	B	Z2	0.10	0.15	0.40	1.0
SK-6	2.00	1.70	3400	B	Z2	0.10	0.15	0.40	1.0
SK-7	3.00	1.60	3200	B	Z2	0.10	0.15	0.40	1.0
SK-8	4.00	1.50	3000	B	Z2	0.10	0.15	0.40	1.0

1.3 Surveys

1.3.1 Topographical Survey

The topographical surveys performed in November 2018 is provided within the design drawings. The Contractor shall conduct new topographical survey for his design works. The Contractor shall familiarise himself with the site conditions before submitting his bid.

1.3.2 Geotechnical Investigations

Geotechnical investigation program has been carried out in November 2018. The survey is given only for information purpose. The Contractor shall conduct new soil investigations according to the locations, dimensions, foundation depths and weights of the structures in his detailed design.

1.4 Scope of Works

The present Section 5A of the ITB, which sets out the Schedule of Requirements and Technical Specifications/Statement of Works, covers the following scope of works:

- Complete engineering designs of phase 1 of MBT facility
- Conceptual engineering design of phase 2 of MBT facility
- Construction of the phase 1 of MBT Facility including;

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- Civil works,
 - Mechanical works,
 - Electrical works,
 - Landscape works,
 - Infrastructural works,
 - Supply and installation of electromechanical equipment and all auxiliary facilities for the operation of the plant
- Testing, start-up, 3 month trial operation and commissioning of the plant
- Preparation of as-built documentation and operation and maintenance manuals
- Training of operational staff
- 6 months supervision of operation after Substantial Completion of Works
- Execution of any outstanding work and all such works of repair, amendment, reconstruction, rectification, and making good defects, imperfections, shrinkages or other faults required by Engineer during the Defects Liability Period for 12 months period.
Under the scope of this contract;

The contractor shall undertake the design and construction of Phase 1 of MBT facility including the following;

→ MSW reception area and mechanical sorting facility for the separation of different materials (recyclables, sorted material for RDF production, organic fraction, rejects) from the incoming MSW. The structural buildings of MSW reception area and mechanical sorting facility shall meet the final closed area requirement for both phase 1 and phase 2 of MBT facility. The machinery and equipment for the phase 2 is not in the scope of this contract.

→ Biological treatment facility (dry anaerobic digestion – dry AD) with a capacity identified for the phase 1.

→ Refused Derived Fuel production facility with a capacity identified for the phase 1. (Construction of RDF Facility and Production of RDF are not included in phase 1)