REPORT

Bandırma-Bursa-Yenişehir-Osmaneli High Standard Railway Project

Non-Technical Summary

Submitted to:

Kalyon İnşaat Sanayi ve Ticaret A.Ş.

Kuzguncuk Paşalimanı Cad. NO:78 Üsküdar/İstanbul

Submitted by:

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1.0 INTRODUCTION

Kalyon İnşaat Sanayi ve Ticaret A.Ş. (“Contractor”, “Client”, “Kalyon”), retained Golder Associates Turkey Ltd. Şti. (“Golder”) to prepare the Environmental and Social Impact Assessment (“ESIA”) for the 201 km length Bandırma-Bursa-Yenişehir-Osmaneli (“BBYO”) High Standard Railway Project (“Project”) in compliance with the national and international requirements.

The 201 km long BBYO Project will start from Bandırma, pass through Kuşcenneti, Karacabey, Teknosab, Bursa, Gürsu, Yenişehir Airport and Yenişehir stations and connect to the Ankara-Eskişehir-Istanbul High Speed Train Line in the Osmaneli region. The Project is composed of three sections which are,

- Section 1: Yenişehir-Osmaneli, between 101+700 - 149+670 (47+970 km length)
- Section 2: Bursa-Yenişehir, between 46+000 - 101+700 (55+700 km length)
- Section 3: Bandırma-Bursa, between 0+000 - 97+000 (97+000 km length)

1.1 Project History

The Project was included in the Investment Programme of the government for the first time in 1978, with the initial name Bandırma-Bursa-Osmaneli-Ayazma-İnönü Railway Project. The Project was then subject to different investment programmes until 2021. The Project’s tender process during this period is chronologically explained below.

- The first tender for Bursa-Yenişehir section the Project which was the construction of infrastructure works of the alignment was held on 1st of August 2011 and then cancelled before beginning of the construction.
- On 2nd of December 2016 another tender was held for the tunnelling works at the Bursa-Yenişehir section of the Project. Çelikler Taahhüt İnşaat ve Sanayi A.Ş. (“Çelikler”) and YSE Yapı Sanayi ve Ticaret A.Ş. Joint Venture was awarded the tender. The construction works are still ongoing and approximately 70% of the works have been completed in Section 2 by Çelikler.
- On 10th of March 2017 a new tender was held for the infrastructure works (except tunnels) at the Bursa-Yenişehir section of the Project. Duygu Mühendislik (“Duygu”) which is a subsidiary of Cengiz Construction was awarded the tender. The construction works are still ongoing and approximately 80% of the works have been completed in Section 2 by Duygu.
- On 3rd of April 2018, the infrastructure works, except the works which area under construction, superstructure works and electromechanical works at the Bursa-Osmaneli section of the Project were tendered, and a while later was cancelled before beginning of the construction.
- Finally, on 20th of August 2020 the tender for the turn key, design, build and finance of Bandırma-Bursa-Yenişehir-Osmaneli High Standard Railway Project (except the works under construction by other Contractors explained above) was held and Kalyon İnşaat Sanayi ve Ticaret A.Ş. was awarded the contract on 17th of September 2020. The financing process is currently ongoing. Following the financial close, the construction will commence.

1.2 Project Owner

The BBYO Project owner is the Republic of Turkey Ministry of Transport and Infrastructure (MoTI), Directorate General of Infrastructure Investments (AYGM). The Construction Contract was signed between Kalyon and AYGM on 17th of September 2020. After the completion of the construction for BBYO Project, the Project will be commissioned with the transfer of the Project by AYGM to Turkish State Railways (TCDD) including all the structures and other elements included in the Construction Contract.

1.3 Contractor

Kalyon İnşaat Sanayi ve Ticaret A.Ş. which will be acting as the main Contractor of the BBYO Project, was established in 1974 as part of Kalyon Holding. According to the Construction Contract signed with AYGM on 17th of September 2020, the scope of works to be conducted by Kalyon include the following:

- Establishment of 2 new railway lines on the ~56 km railway route of Bursa-Yenişehir section (Infrastructure works in this section are carried out under another contract by TCDD, Kalyon will do the infrastructure completion[1], superstructure, electrification, signalisation and telecommunication works).
- Construction of 2 new railway lines on the ~50 km railway route of Yenişehir-Osmaneli section,
- Design and construction of 2 new railway lines on the ~95 km railway route of Bandırma-Bursa section,
- If the analysis of the railway route between Bursa-Gemlik and Bursa-Balıkesir is deemed appropriate, making reservations,[2]
- The construction of stations, tunnels and engineering structures in accordance with the Unit Price and Technical Specifications in the annex of the Contract for all these routes, and the production of superstructure, electrification, signalisation and telecommunication, testing and commissioning.

The other two main Contractors of TCDD who had started their construction activities in Bursa-Yenişehir Section (Section 2) before the ESIA Study are Çelikler and Duygu, i.e., the tunnel works were started by Çelikler in 2016 and infrastructure works were started by Duygu in 2017.

1.4 The Purpose of the Project

In parallel with the gradual liberalization of trade in the world, the increase in competition and the prolongation of transportation distances with the gaining of global and regional organizations have highlighted the element of speed. This situation has increased the importance of delivering raw materials and processed products to buyers at low cost and on time, and widespread the use of combined transportation systems supported by logistics services.

Since rail and sea transportation physical infrastructure is not developed enough in line with the transportation demand in Turkey, this has led to the installation of the road network mainly for freight and passenger transport. This situation has caused the formation of an unbalanced and inefficient transportation system among transport types. In addition to these, traffic safety, especially on highways, has not reached sufficient levels yet.

Many goals and targets have been determined for the development of railways in the 2019-2023 Strategic Plan of TCDD which include the development and expand of the national rail network; ensuring that infrastructure operations are maintained in a safe, uninterrupted and comfortable manner; providing safe traffic and station management with effective capacity in the national railway network and ensuring the integration of railway infrastructure with other transportation systems.

In this respect, the BBYO Project aims to:

- Increase the ratio of railways in the intercity transportation,
- Develop fast, safe and economical transportation opportunities,

[1] Construction of the infrastructure components in Bursa-Yenişehir Section is within the scope of different Contractors (Duygu-Çelikler). In case the infrastructure components' construction is not completed by Duygu-Çelikler due to extended expropriation, Kalyon will be responsible for the completion of incomplete infrastructure works.

[2] The analysis of the railway route between Bursa-Gemlik and Bursa-Balıkesir is currently out of scope of the BBYO Railway Project, therefore not assessed within the scope of this ESIA study.

- Increase in integration with other rail system lines.

With the realization of the BBYO Project:

- The ratio of railways in intercity transportation will increase,
- Fast, safe and economical transportation will be provided,
- Rail system network will expand across the country,
- Intercity logistics costs will decrease.
- Employment will be provided both during the construction and operation phases.

1.5 The Goal of this Document

An Environmental and Social Impact Assessment study has been conducted by Golder Associates for the realization of the BBYO Project. This document is a non-technical summary (NTS) of the Environmental and Social Impact Assessment conducted for the Project according to the local regulations and standards of international Lenders in a non-technical language, together with the mitigation measures proposed by Kalyon for the management of the Project environmental and social issues.

1.6 Standards to be Applied in the Project

Kalyon commits to adhere to the provisions of Turkish Legislation applicable to the Project during the life-time of the Project. These requirements include (but are not limited to) the Environment Law, Occupational Health and Safety Law, Labour Law and applicable Turkish legislation.

The Project will also comply with the IFC PSs ("International Finance Corporation Performance Standards"), Equator Principles and European Union legislation. These requirements are more stringent than national legislation, European Union environmental and social standards.

1.7 Project Categorisation

The requirements from IFC regarding the Environmental and Social Assessment process and outcomes differ depending on the category of the project.

Given the potential scale, complexity and type of the environmental and social impacts and risks presented by the Project, the categorisation, associated with the construction and operation of the project is proposed as "A" in reference to Equator Principles 4 and IFC for the Project categorization.

Table 1 Project Categorisation

Category (IFC and EP4)	Description of the Project
Category A	Projects with potential significant adverse environmental and social risks and/or impacts that are diverse, irreversible or unprecedented.
Category B	Projects with potential limited adverse environmental and social risks and/or impacts those are few in number, generally site-specific, largely reversible and readily addressed through mitigation measures.
Category C	Projects with minimal or no adverse environmental and social risks and/or impacts.

2.0 THE PROJECT

2.1.1 Project Overview

The Project is divided into three sections defined as:

- Section 1: Yenişehir-Osmaneli, between 101+700 - 149+670 (47+970 km length)
- Section 2: Bursa-Yenişehir, between 46+000 - 101+700 (55+700 km length)
- Section 3: Bandırma-Bursa, between 0+000 - 97+000 (97+000 km length)

The history of the Project dates back to the past, and the KM's in the Project were made in this way in the official correspondences previously. For this reason, the same numbering methodology is used in the project component descriptions of the BBYO Project.

The Project sections and the scope of work to be carried out by Kalyon and other Contractors are summarised in Table 2.

In the BBYO route selection, after the corridor determined by the General Directorate of TCDD was processed on 1 / 25,000 scaled maps (topographical, geological, etc.), alternatives are evaluated with the survey studies carried out. The alternate routes assessment includes but not limited to the following:

- Meeting the project criteria
- Cost
- Roads
- Pipelines
- Irrigation areas and channels
- Energy transmission lines
- Geological structures (landslide, earthquake, etc.)
- Land use and existing settlements which would be impacted by the Project
- Expropriation
- Facilities along the route which would be impacted by the Project (i.e., proximity to the dams and hydroelectric power plants)
- Proximity to the legally protected areas

Table 2 Project Sections and Scope of Work

Section	Project Scope of Kalyon	Project Scope of Other Contractors
Section 1: Yenişehir-Osmaneli (47+970 km) 	• Infrastructure and Superstructure constructions • Electrification, signalisation, telecommunication	-
Section 2: Bursa-Yenişehir (55+700 km) 	• Superstructure constructions • Electrification, signalisation, telecommunication	*Duygu Mühendislik:* • Infrastructure constructions *Çelikler Taahhüt İnşaat ve Sanayi A.Ş. and YSE Yapı Sanayi ve Ticaret A.Ş. Joint Venture:* • Tunnel works
Section 3: Bandırma-Bursa (97+000 km) 	• Design • Infrastructure and Superstructure constructions • Electrification, signalisation, telecommunication	-

2.2 Project Schedule

2.2.1 Construction Phase

Following the financial closure, Kalyon will first start the construction activities from Section 1 (Yenişehir-Osmaneli) where design work and EIA processes have been completed. The construction activities will commence in Section 3 following the finalization of the design and permitting studies. The construction phase of the Section 1 and Section 3 is planned to be completed in 3 years.

The construction period of the BBYO Railway Project for Section 1 and Section 3 is planned to be 3 years. The construction of the tunnel works and infrastructure works are currently ongoing by the TCDD Contractors Duygu-Çelikler in Section 2. In Section 2, the infrastructure construction activities are planned to be completed by December 2021 and the tunnel works are planned to be completed by December 2022.

2.2.2 Commissioning/Operation Phase

After the completion of the construction and electromechanical works at the BBYO Project, the Project will be commissioned with the transfer of the Project by AYGM to TCDD including all the structures and other elements included in the Construction Contract. During the operation phase, Kalyon will be responsible from the maintenance works on the BBYO Railway route.

2.2.3 Decommissioning/Closure Phase

There is not an expected lifetime of the BBYO Project and decommissioning is not warranted at an estimated time. In the BBYO High Standard Railway Project Feasibility Report of AYGM (March 2020), a 32-year investment and operation period covering the years 2020-2051 was taken into consideration. Although an exact project life span is not determined for the BBYO Project, minimum of 32 years is projected for the BBYO Project.

2.3 Project Components

The Project design information and the number of engineering structures along the BBYO Railway route are presented in Table 3 and Table 4, respectively. Kalyon will be responsible from the superstructure Electrification, signalisation and telecommunication works along the 201 km BBYO route.

Table 3 Project Information

Parameter	Project Specification
The length of the route	201 km
Operation type	Passenger + Freight
Railway route	Electric double line
Speed	250 km/h
Electrification	25 kV monophase 50 hz
Distance between line axes	4.5 m
Rail Type	UIC 60
Sleeper Type	B70 reinforced sleepers
Sleeper Length	2.6 m
Sleeper spacing	60 cm

Parameter	Project Specification
Ballast	Graded minimum 30 cm to 60 cm.
Minimum horizontal curve	3500 m
Maximum axle load	25 tons
Maximum vertical grade	%1.6

Table 4 Number of Engineering Structures on the BBYO Railway Sections

Structure	Section 1 Yenişehir-Osmaneli (Kalyon)	Section 2: Bursa-Yenişehir (Duygu-Çelikler)	Section 3: Bandırma-Bursa (Kalyon)	Total
Tunnel	10	11	8	**29**
Escape Tunnel	8	2	3	**13**
Railway Bridge	4	6	25	**35**
Viaduct	3	12	0	**15**
Underpass	37	33	29	**99**
Overpass	6	11	12	**29**
Cut and Cover Tunnel	5	1	0	**6**
Culvert	71	62	84	**217**
Station[3]	1	2	4	**7**
Total	145	140	165	**443**

Within the scope of the Project 4 switchyards will be constructed in the Project. Connection from switchyards to existing electricity transmission lines (ETL) will be provided, and no new ETL will be established within the scope of the BBYO Project. Four 25 MVA switchyards will be established and 154kV energy transmission line with an approximate length of 3 km long has been planned for the connection to the existing ETLs. Connection permits for the connection from switchyards to existing ETLs will be provided before commissioning.

The operation type of the BBYO Project consists both passenger and freight type railway transportation. According to the BBYO High Standard Railway Project Feasibility Report of AYGM, March 2020:

- In freight transportation, taking into account trains with 10 wagons with a capacity of 50 net tons, it has been predicted that a train can carry a total of 500 net tons.
- In the High Standard Railway train sets, the capacity of the passenger train is 332 tons and have the capacity of 411 passenger.

[3] Kalyon will be responsible from the construction of all stations at each section.

2.4 Associated Facilities

The number of temporary facilities to be used and/or constructed by Kalyon within the scope of the BBYO Project according to locations are summarized in Table 5. All temporary facilities established by the Contractor within the scope of the Project will be rehabilitated after the construction phase.

Table 5 Number of Temporary Facilities in the BBYO Project

Facility	Bilecik	Bursa	Balıkesir	Total
Borrow Site	-	5	-	5
Basalt Quarry	-	1	-	1
Rock Quarry	2	2	-	4
Store	1	5	-	6
Concrete Plant	2	2	-	4
Precast Plant	1	1	-	2
Camp Site	5	9	-	14

In Bursa-Yenişehir Section (Section 2) the tunnel works were started by TCDD Contractor Çelikler in 2016 and infrastructure works were started by TCDD Contractor Duygu in 2017. The temporary facilities required to realize the Section 2 works had been constructed and been operating before the Project ESIA studies commenced. Information about the temporary facilities established within the scope of the works conducted by Duygu-Çelikler are given below.

- In total 5 construction camps were established:
  - 130 personnel capacity Çelikler camp site at KM: 72+000,
  - 350 personnel capacity Çelikler tunnel camp site at KM: 87+000,
  - Çelikler Subcontractor Construction Site KM: 83 + 300 South of Axis
  - 120 personnel capacity Duygu camp site at KM: 71+500,
  - 250 personnel capacity Duygu construction camp site KM:71+400,
- Çelikler Concrete Plant at KM:71+400,
- Çelikler Concrete Plant KM: 87 + 300 South of Axis
- Duygu Precast Facility of at KM:71+200,
- Çelikler Aggregate Quarry KM: 70 + 700 South of Axis
- Duygu Aggregate Quarry KM: 70 + 700 North of Axis
- Duygu Borrow Site KM: 66 + 200 in the North of Axis
- Duygu Mobile Concrete Plant KM: 900 + 400 Axis

2.5 Environmental Permitting

Project's status according to Environmental Impact Assessment Regulation:

The Project was initially defined as out of scope of the Turkish Environmental Impact Assessment (EIA) Regulation (Official Gazette No. 26939, 17.7.2008) according to the provisional clause 3 *"(1) Projects that have been included in the investment program before 23/6/1997 and have passed the planning stage as of 5/4/2013 or have been tendered or have started production or operation, and the structures and facilities that are obligatory for their realization, the provisions of this Regulation are not applied, without prejudice to the permissions required in other regulations."*

Following the revision in the EIA Regulation on 03.10.2013 and lately on 25.11.2014, the provisional clause 3 was amended as *"Projects that are documented to start production and/or operation before 7/2/1993, which is the first publication date of the Environmental Impact Assessment Regulation, are out of the scope of Environmental Impact Assessment."*

Following the amendment in the EIA Regulation, the Project had to be evaluated within the scope of the EIA Regulation. The BBYO Project sections are included in the scope of the Annex-II of Environmental Impact Assessment Regulation Item 31-Infrastructure facilities, *"The railway lines that are not included in Annex-I railway lines (i.e., railway lines with the length of 100 km and more) shall prepare a Project Description File (PDF)."*

The Project has secured and comply with the "EIA Not Required Decision" for Section 2 (Bursa-Yenişehir) and Section 1 (Yenişehir-Osmaneli). The EIA Process will be initiated for Section 3 (Bandırma-Bursa) following the finalization of the railway route technical design.

Considering the temporary facilities, Kalyon is in the process of obtaining the licenses and initiating the EIA studies and permitting for the quarries and borrow sites, concrete plants, precast plants planned to be constructed and operated within the Project scope (Section 3.3.6).

The Project's environmental permitting information is provided in Table 6 below.

Table 6 Project's EIA Decisions

Project EIA Decisions	Issue Date
"EIA Exemption Decision" from MoEU for the Bandırma-Bursa-Osmaneli-Ayazma-İnönü Railway Project: "The railway project, which was determined to be included in the investment program in the years before 1993, is not subject to the provisions of the EIA Regulation in accordance with the temporary article 3 of the EIA Regulation."	August 3rd, 2009
"EIA Not Required" Decision from MoEU for the "Yenişehir-Osmaneli Section" of the Bandırma-Bursa-Ayazma-Osmaneli High Speed Railway Project.	February 20th, 2013
"EIA Not Required" Decision from MoEU for the "Bursa-Yenişehir Section" of the Bandırma-Bursa-Ayazma-Osmaneli High Speed Railway Project.	June 14th, 2013
"EIA Not Required" Decision from MoEU for the "Bursa-Yenişehir Section" of the Yenişehir-Osmaneli and Yenişehir-Bozüyük Railway Project.	April 20th, 2017
Official Letter from the MoEU confirming that "EIA Not Required" Decision is valid for the 20.730 km route change in the design of the "Bursa-Yenişehir Section" of the Yenişehir-Osmaneli and Yenişehir-Bozüyük Railway Project.	November 28th, 2017

The Project's status according to Regulation on Environmental Permits and Licenses:

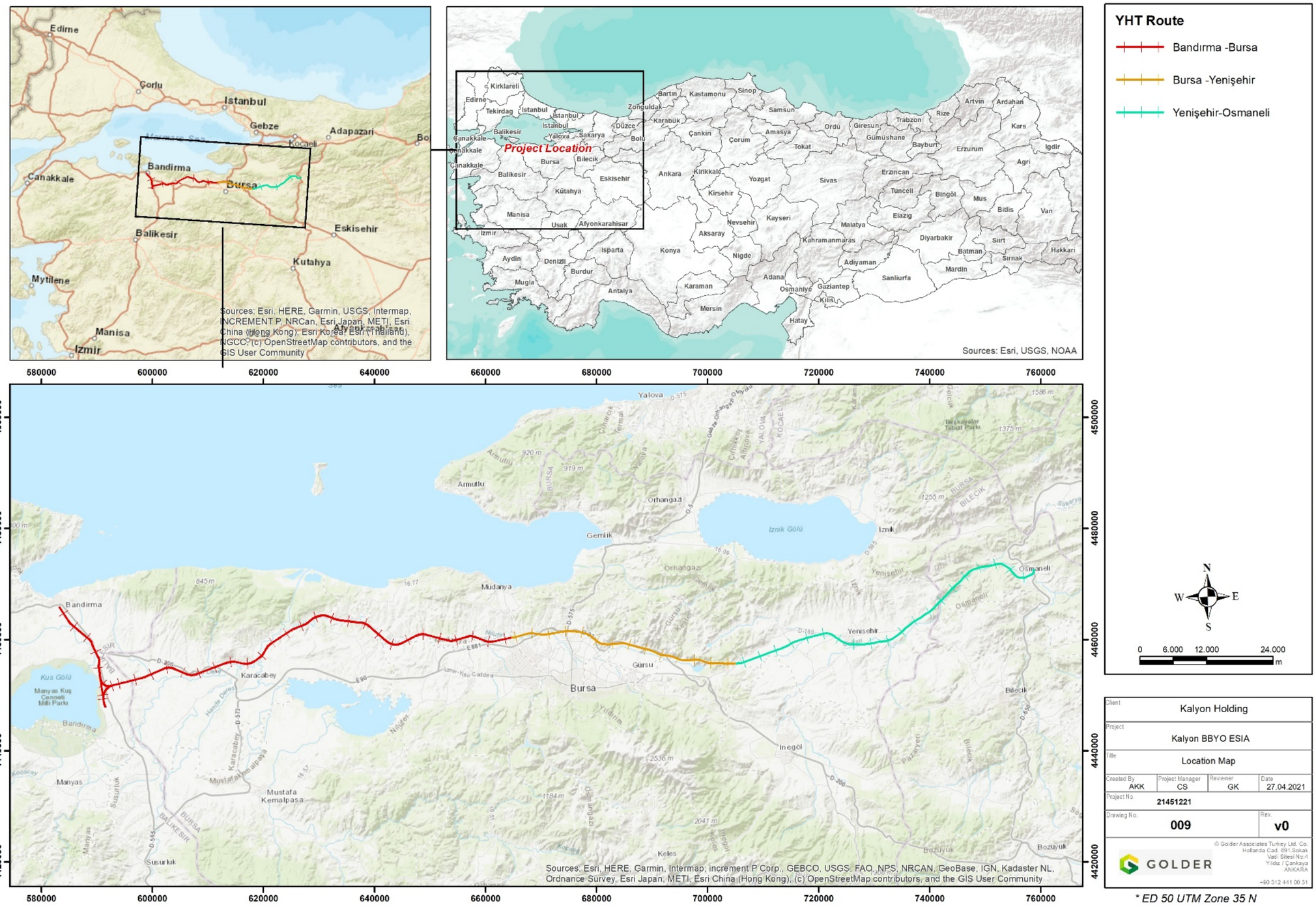
- During the construction phase of the BBYO Railway Project, the camps site which will be established for more than 1 year and will include a wastewater treatment plant operation will be subject to environment permit in accordance with the Regulation on Environmental Permits and Licenses and necessary discharge permits will be obtained.
- All temporary facilities which are planned to be established within the scope of the BBYO Railway Project will be assessed in accordance with the Regulation on Environmental Permits and Licenses and relevant environment permit will be issued for air emissions, environmental noise, wastewater discharge as required.
- The operation of the BBYO Railway Project is out of scope of the activities and facilities listed in Annex-I and Annex-II of the Regulation on Environmental Permits and Licenses. However, during the operation phase, if the domestic wastewater originating at the stations cannot be connected to the Municipality sewage systems, package wastewater treatment plants will be established for over 84 people. In this case, necessary discharge permits will be obtained.

2.6 Project Area

The Project railway route will pass through Balıkesir, Bursa and Bilecik Provinces. The location map of the BBYO Project is presented in Figure 1 and the Project layout for three sections are given in Figure 2, Figure 3 and Figure 4.

In the identification of the nearest settlements to the Project, all Project components were considered including the temporary facilities that will be established and operated/used throughout the construction phase of the BBYO Project. It is necessary to note that there are already established temporary facilities within the scope of the construction activities currently ongoing in Section 2.

In the nearest settlements to the Project components and their distances for each section of the BBYO Project are presented in Figure 5, Figure 6 and Figure 7.



* ED 50 UTM Zone 35 N

Figure 1 BBYO Project Location Map

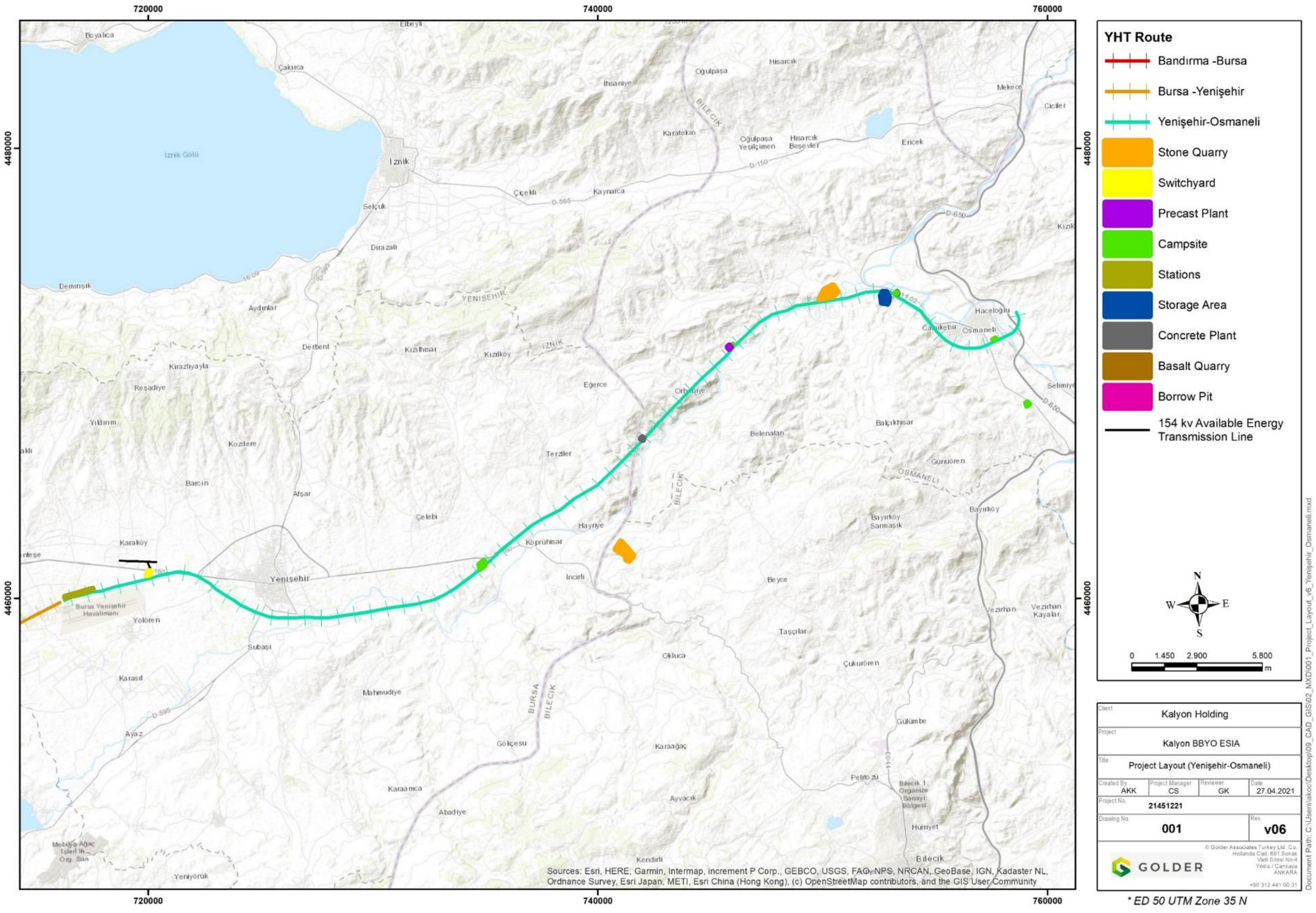


Figure 2 Yenişehir-Osmaneli (Section 1) Layout

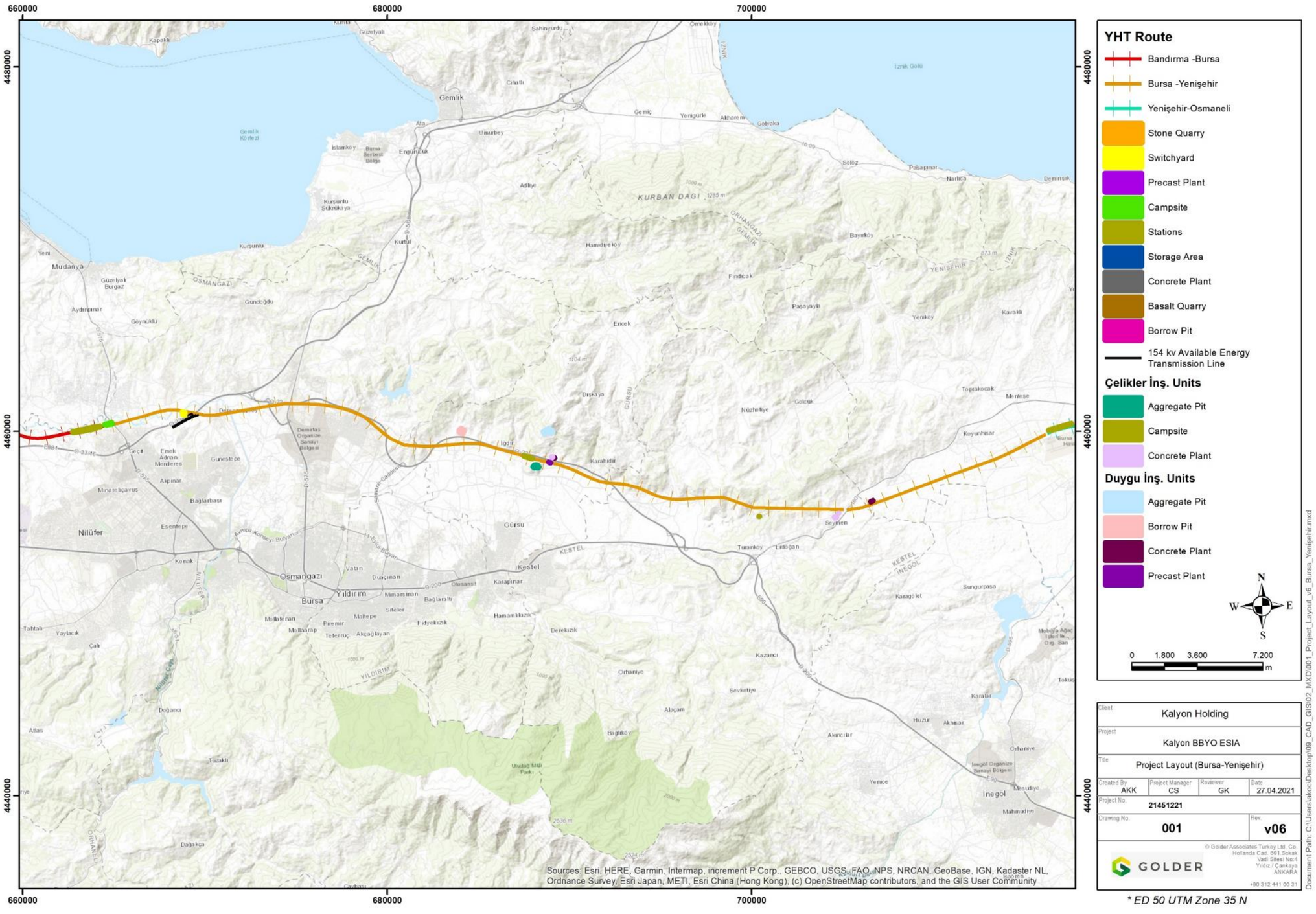


Figure 3 Bursa-Yenişehir (Section 2) Layout

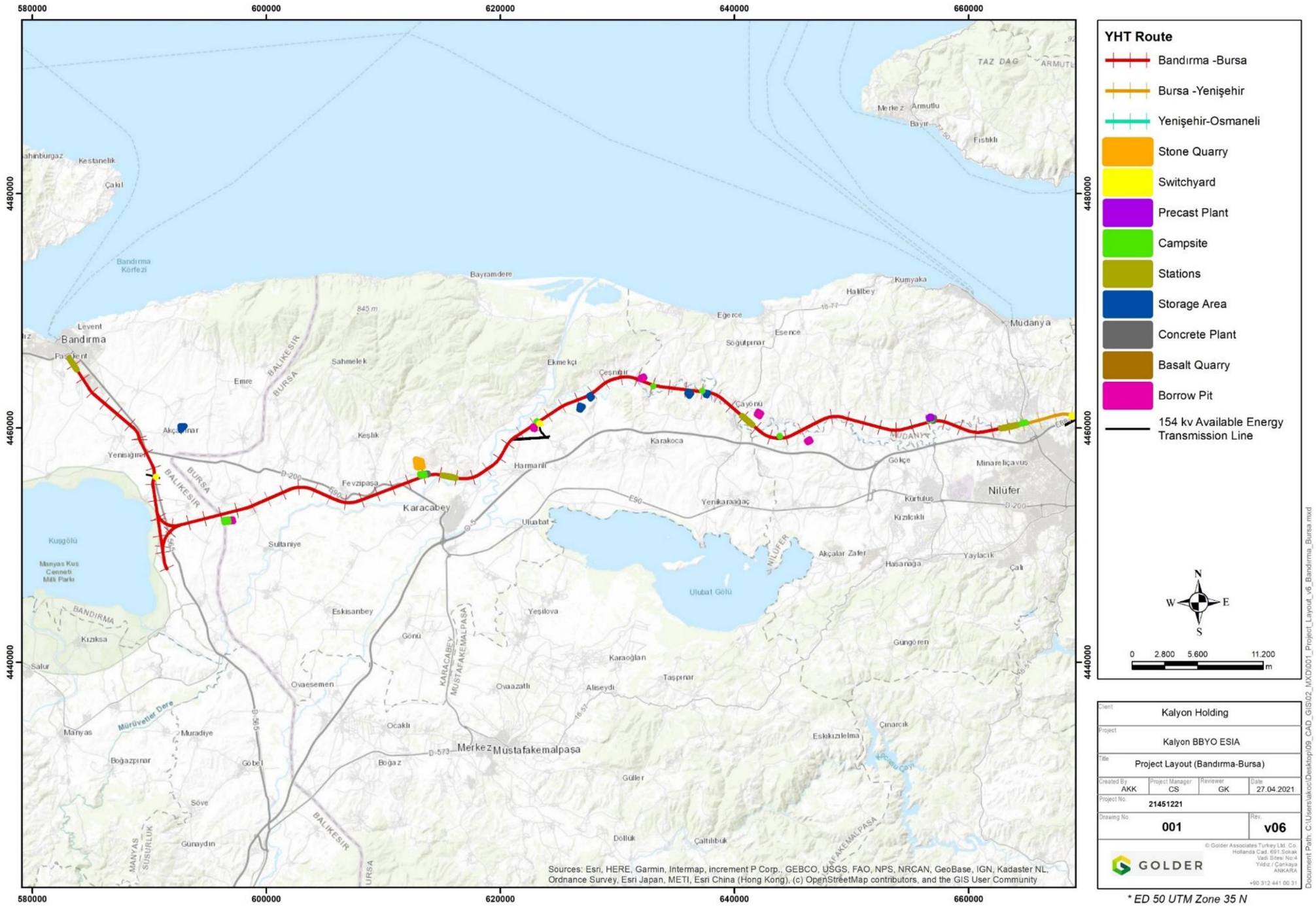
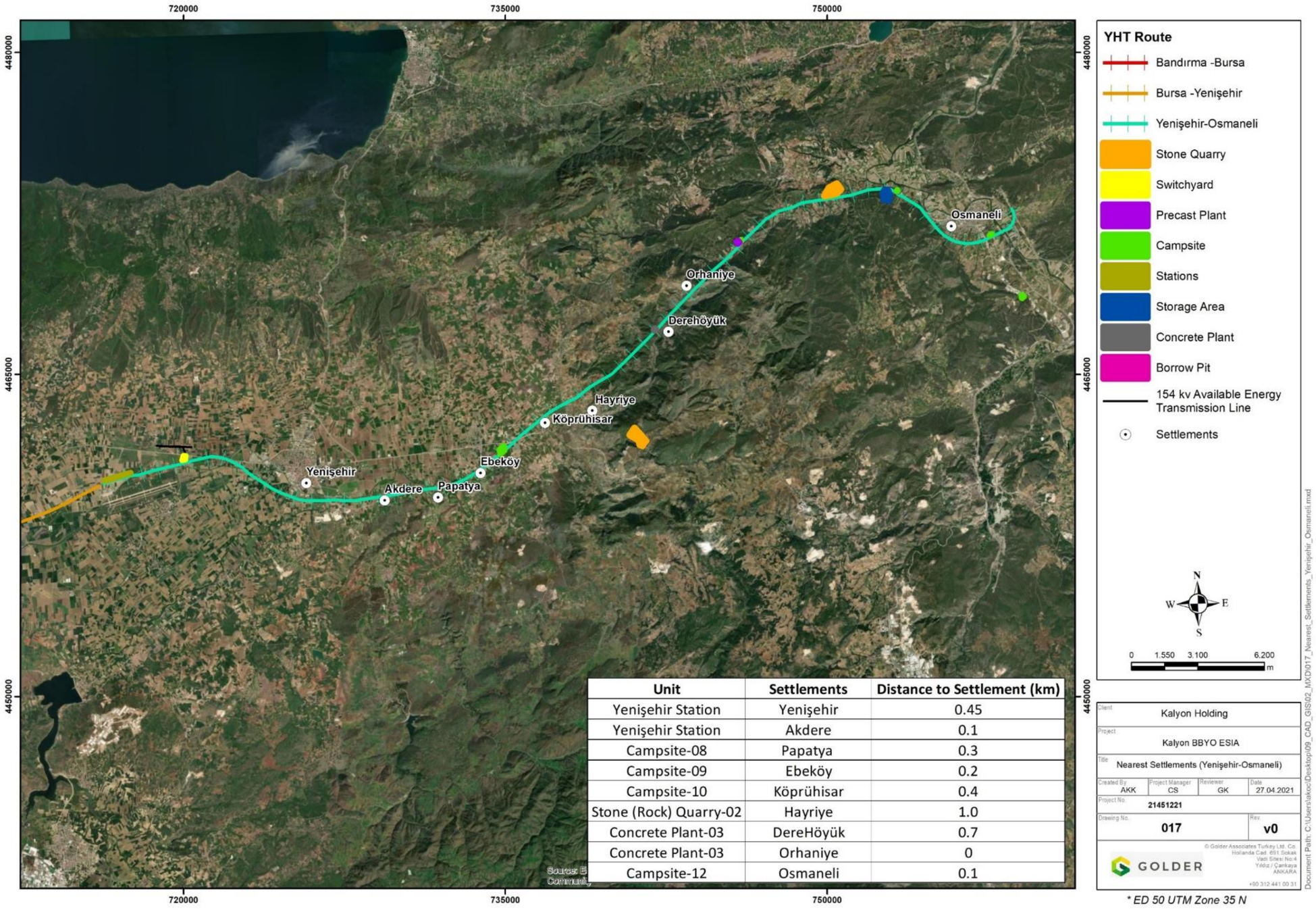
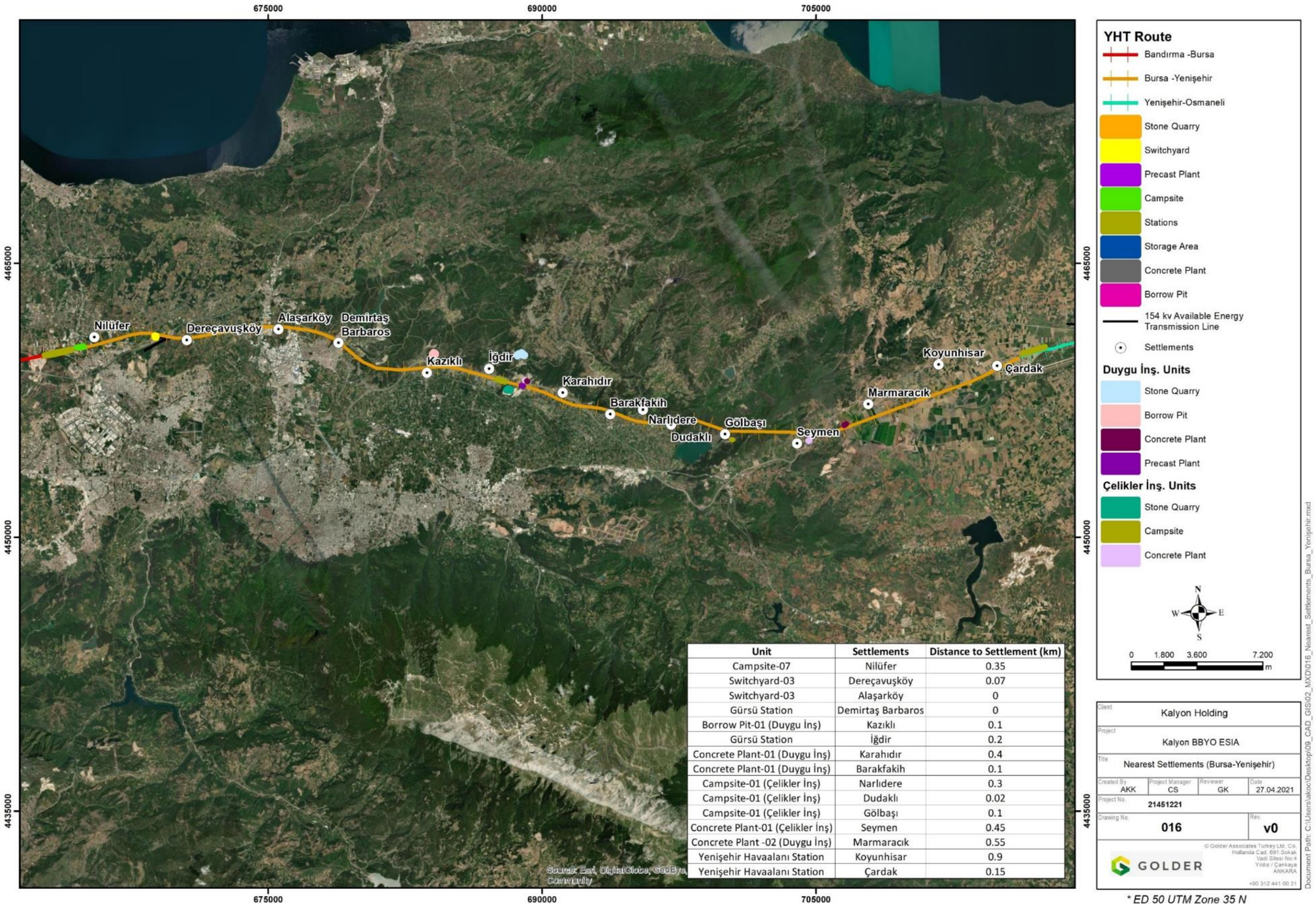


Figure 4 Bandırma-Bursa (Section 3) Layout



Unit	Settlements	Distance to Settlement (km)
Yenişehir Station	Yenişehir	0.45
Yenişehir Station	Akdere	0.1
Campsite-08	Papatya	0.3
Campsite-09	Ebeköy	0.2
Campsite-10	Köprühisar	0.4
Stone (Rock) Quarry-02	Hayriye	1.0
Concrete Plant-03	DereHöyük	0.7
Concrete Plant-03	Orhaniye	0
Campsite-12	Osmaneli	0.1

Figure 5 Yenişehir-Osmaneli (Section 1) Nearest Settlements Map



Unit	Settlements	Distance to Settlement (km)
Campsite-07	Nilüfer	0.35
Switchyard-03	Dereçavuşköy	0.07
Switchyard-03	Alaşarköy	0
Gürsü Station	Demirtaş Barbaros	0
Borrow Pit-01 (Duygu İnş)	Kazıklı	0.1
Gürsü Station	İğdir	0.2
Concrete Plant-01 (Duygu İnş)	Karahıdır	0.4
Concrete Plant-01 (Duygu İnş)	Barakfakih	0.1
Campsite-01 (Çelikler İnş)	Narlıdere	0.3
Campsite-01 (Çelikler İnş)	Dudaklı	0.02
Campsite-01 (Çelikler İnş)	Gölbaşı	0.1
Concrete Plant-01 (Çelikler İnş)	Seymen	0.45
Concrete Plant -02 (Duygu İnş)	Marmaracık	0.55
Yenişehir Havaalanı Station	Koyunhisar	0.9
Yenişehir Havaalanı Station	Çardak	0.15

Figure 6 Bursa-Yenişehir (Section 2) Nearest Settlements Map

Unit	Settlements	Distance to Settlement (km)
Kuşcenneti Station	Bandırma	0.25
Switchyard-01	Kuşcenneti	0.4
Campsite 01/Borrow Pit-01	Danişment	0.6
Campsite-01/Borrow Pit-01	Tophisar	0.1
Campsite-02/Concrete Plant-01	Şahinköy	0.12
Karacabey Station	Taşlık	0.25
Campsite-03	Hayırlar	0.35
Borrow Pit-03	Çamlıca	0.3
Campsite-04	Evciler	0.25
Teknosab Station	Çayönü	0.2
Teknosab Station	Hürriyet	0.45
Campsite-06	Badırga	0.55
Borrow Pit-05	Orhaniye	0.45
Conrete Plant-02, Precast Plant-01 Campsite-14	Balabancık	0.1

Client	Kalyon Holding
Project	Kalyon BBYO ESIA
Title	Nearest Settlements (Bandırma-Bursa)
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Rev.	v0

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*ED 50 UTM Zone 35 N

Figure 7 Bandırma-Bursa (Section 3) Nearest Settlements Map

2.7 Land Use

The Project includes approximately 201 km railway and in total 443 Project units including 29 tunnels, 13 escape tunnels, 35 bridges, 15 viaducts, 99 underpasses, 29 overpasses, 6 cut and cover tunnels,217 culverts, and 7 stations.

The existing land use of the Social Are of Influence ("AoI") will be affected by the construction of the Project and its components as well as by the associated facilities. There will be loss of governmental and private land as a result of the Project.

The Project execution will require permanent acquisition of land by using expropriation. The Project is expected to cause economic displacement and physical resettlement, however, at this stage, the magnitude of displacement is not completely known since the land acquisition files have not been prepared for Bandırma-Bursa and Yenişehir-Osmaneli sections.

The expropriation works have been completed on the Bursa-Yenişehir route (Section 2) of the Project, which is currently under construction. 83% of this area is private lands, 17% is forest lands, and 1% is pasture lands.

Part of the expropriation process of the lands on the Yenişehir-Osmaneli route (Section 1) has been completed, and additional lands are needed for the realization of the project. In this section, a total of 1,716,612 m^2 of land is required for the realization of the Project. 57% of these lands are private lands, 7% pasture lands and 36% forest lands.

The expropriation process has not started as of April 2021 between the route between Bandırma and Bursa (Section 3). According to the information obtained from Kalyon, a total area of 5,809,967 m^2 is needed in this section for the high-speed train construction. 91% of this area is private lands, 2% pasture lands and 7% forest lands.

Project land acquisition information is presented in Table 7.

Table 7 General Land Acquisition Information

	Route		Total required land (m^2)	Private parcels (m^2)	Pastura lands (m^2)	Forest land (m^2)	Forest easement right (m^2)	Status of land acquisition
1	**Bandırma**	**Bursa**	5,809,967	5,273,882	100,000	260,000	176,085	Not started
			100%	91%	2%	4%	3%	
2	**Bursa**	**Yenişehir**	3,222,806	2,666,567	20,000	67,000	469,239	Completed
			100%	83%	1%	2%	15%	
3	**Yenişehir**	**Osmaneli**	1,716,612	974,380	125,000	304,000	313,232	Partially completed
			100%	57%	7%	18%	18%	

3.0 MANAGEMENT OF ENVIRONMENTAL AND SOCIAL ISSUES

In order to assess the environmental and social impacts of the BBYO Project and Environmental and Social Impact Assessment Report has been prepared with the following objectives:

- Identification and assessment of social and environmental impacts, both adverse and beneficial, in the project's area of influence;
- Evaluation of the main environmental and social risks and potential impacts of the Project;
- Presentation of Environmental and Social Management Plan (ESMP), Environmental and Social Management System (ESMS), Stakeholder Engagement documentation, and grievance mechanism against the Applicable Standards;
- Description of the management, mitigation, monitoring and compensation measures, including the ESMS, the ESMP, and the thematic action or management plans (e.g. corrective action plan, resettlement action plan);
- Cumulative impact assessment (as required by the Applicable Standards);
- Assessment of associated facilities.
- Main components of the assessment include:
  - The potential environmental and social impacts of the Project throughout the full life cycle;
  - A public consultation to ensure that local communities and other key stakeholders are informed of the Project and have an opportunity to express their opinions concerning the Project;
  - Proposed mitigation activities to minimize adverse environmental and social impacts;
  - The nature and significance of residual impacts (those adverse impacts that occur after mitigation has been applied) and ongoing monitoring and management plans to address them;
  - The nature and significance of cumulative impacts

The ESIA Report aimed to assess the environmental and social impacts of all Project sections as a whole. However, it is necessary to note that the construction activities in Section 2 which are not within the scope of Kalyon had been initiated and currently ongoing. The ESIA methodology presented in this study aimed to collect baseline and technical data as much as possible for Section 2 to define the interferences, potential impacts and mitigation measures as a whole in the Project.

In order to assess the environmental and social impacts of all Project activities, an Area of Influence ("AoI") of the Project was defined considering:

- The area likely to be affected by: (i) the project and the client's activities and facilities that are directly owned, operated or managed (including by contractors) and that are a component of the project (ii) impacts from unplanned but predictable developments caused by the project that may occur later or at a different location; or (iii) indirect project impacts on biodiversity or on ecosystem services upon which Affected Communities' livelihoods are dependent.
- Associated facilities, which are facilities that are not funded as part of the project and that would not have been constructed or expanded if the project did not exist and without which the project would not be viable.
- Cumulative impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted.

The BBYO Project AoI is presented in **Figure *8***.

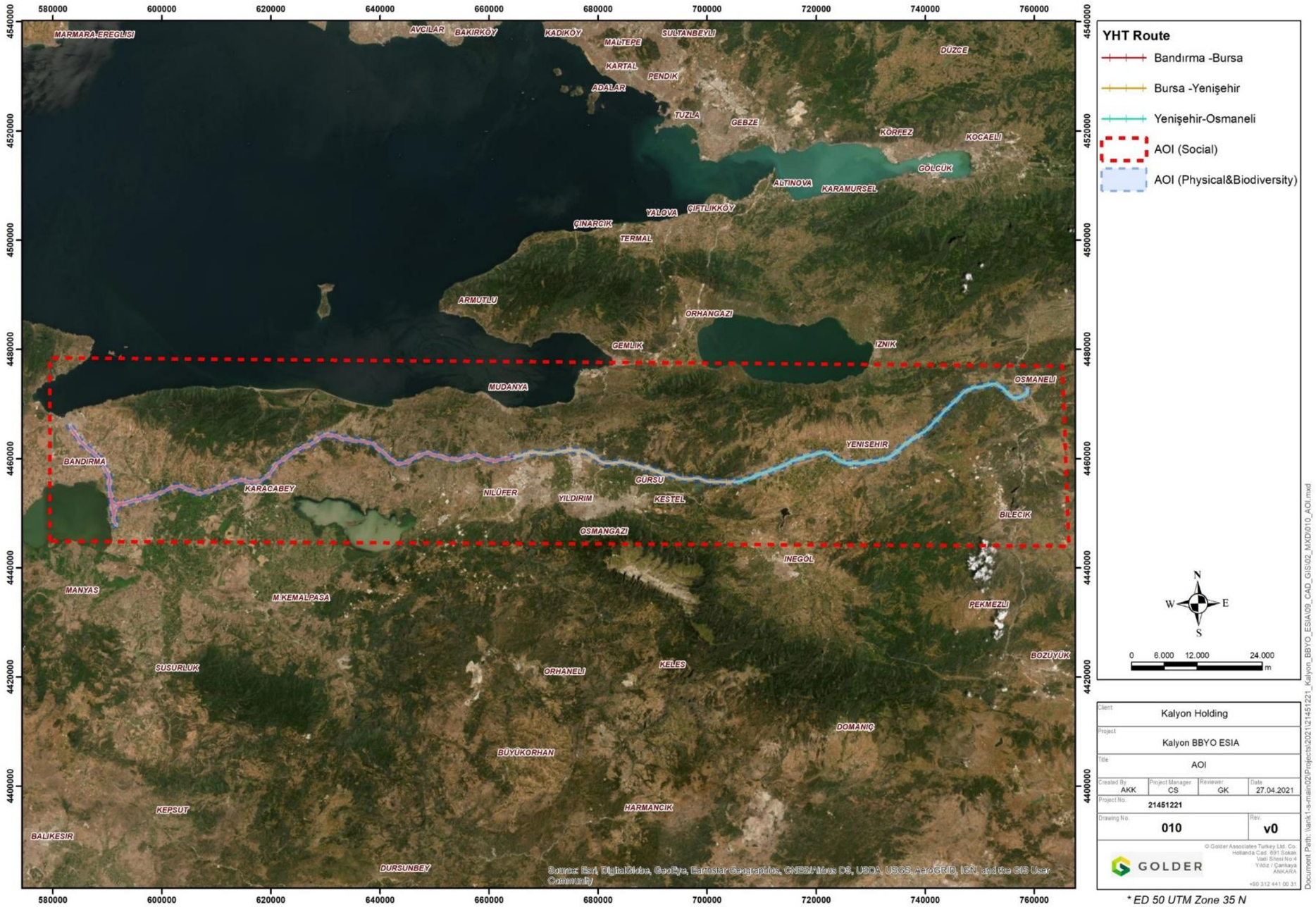

Figure 8 BBYO Project Area of Influence

As a key step in the ESIA process; various studies have been conducted to collect information on the existing environmental and social baseline conditions. Apart from the desktop and relevant literature review the following activities were performed (along the entire route) for the collection of information on social and environmental baseline conditions.

- **Soils and Land Use:** Information regarding soil pedology and land use has been collected through desktop studies. Soil quality measurement activities were conducted at 10 different selected points along the Project route to identify the baseline conditions.
- **Water Quality:** Desktop and field studies were conducted to asses the hydrological and hydrogeoolocgcal baseline conditions on the Project route. Surface water quality measurements were conducted at a total of twenty seven locations in the scope of baseline water quality assessments.at selected points along the Project route.
- **Geological and Geomorphological Assessment**: The geology and geomorphology was described through a desktop review of available information.
- **Earthquake and Natural Hazards:** The geology and geomorphology was described through a desktop review of available information.
- **Air Quality:** In order to assess the air quality baseline conditions of the AoI, 16 representative air quality measurement locations (mostly the closest sensitive receptor to the planned railway) have been determined and air quality measurements were conducted to identify the baseline conditions.
- **Noise:** In order to assess the air quality baseline conditions of the AoI, 16 representative noise measurement locations (mostly the closest sensitive receptor to the planned railway) have been determined and noise measurements were conducted to identify the baseline conditions.
- **Biodiversity Components:** A biodiversity Local Study Area (LSA) was identified for the Project to include all the project components, associated and temporary facilities (camp areas, storage areas, borrow pits, quarries, switchyard, concrete plants, precast plants), as well as the expected Area of Influence of the Project. Habitat and vegetation site visit were conducted during the spring season. Before the site visit, preliminary baseline studies were performed through desktop studies and focused on assessing the potential presence of flora, fauna and habitats within the Project study area.
- **Social Components:** Social baseline study and social interactions conducted so far between the Client and nearby settlements to support the planned social survey for pre-ESIA process. A fieldwork was carried out for the social baseline of the AoI and impact assessment studies. Within the scope of the social field study, the neighbourhoods and villages on the project route were visited and a community level survey and household questionnaire were applied.
- **Cultural Heritage and Archaeology:** Desktop studies and a detailed archaeological survey was realized between the Bilecik-Osmaneli and Balıkesir-Bandırma regions by experts for the identification of movable and immovable archaeological and cultural assets along the Project route during the surveys. Areas with low or impossible chances of access (rice fields, dense vegetation, high altitude over 2500 m) were surveyed through satellite imagery and 1/25,000 scaled maps. Additionally, those areas were studied through the use of ancient sources and field surveys/excavations that were previously conducted.

The impact assessment results are summarised in table below for the Project.

Impact Assessment Results

Main features of Current Situation	Potential impacts	Mitigation Measures
Geology and Seismology		
The project area is in 1st degree earthquake zone.	Changes in the local morphology	Compliance of design with the provisions of the "Regulation on the Buildings to be Constructed on Earthquake Zones" (06.03.2007 O.G. No: 26454).
Soils		
Geological and geotechnical investigations were carried out at the Project Area. 10 soil samples were taken from different sampling points along the BBYO route to identify the baseline conditions.	Topsoil and lower soil removal Pollutant emissions to the soil Occupation of land	Removed topsoil will be stored at designated storage areas, to be used for landscaping after the construction. Prevention of leaks and spills. Spill response arrangements.
Hydrogeology and Groundwater Quality		
Groundwater level was measured only in drillings along the Yenişehir-Osmaneli line, and these levels were between 0.5 and 27.50 m BGS.	Hydrogeological change Groundwater pollution	Prevention of leaks and spills.
Hydrology and Surface Water Quality		
Nilüfer Stream and its tributaries, Karaçay and its tributaries (mainly Ulu Creek), which are fed from the sub-basins in the north of the Susurluk basin, are the main surface water resources in the Bandırma-Bursa and Bursa-Yenişehir lines and its immediate surroundings. The Akçasu Stream, which is fed from the sub-basin to the north-west of the Sakarya basin, and then the Göksu Stream are the main surface water resources associated with the Yenişehir-Osmaneli line. These streams	Surface water pollution. Sediment pollution.	Engineering and design practices will be in place for the collection and disposal of wastewater from all sources during construction and operation of the project. Appropriate surface drainage will be ensured for the construction and operation phases. Regular maintenance of vehicles and machinery/equipment will be undertaken to ensure that leakages of oil/fuel Temporary waste storage areas will be constructed ensuring potential leakages are prevented.

Main features of Current Situation	Potential impacts	Mitigation Measures
are sub-drainage streams of the Sakarya River, which is the most important surface water resource in the basin. There are three natural lakes close to the Project route. These lakes are Kuşgölü, Ulubat Lake and İznir Lake. 27 surface water samples were taken along the BBYO Route to identify the baseline conditions		
Air Quality		
PM_{10}, and $PM_{2.5}$ measurement values are in compliance with Project standards.	Calculations on the estimated amount of air emissions during construction indicated no significant contribution to the ambient air quality.	Measures will be in place to minimise the air emissions during construction and operation.
Noise and vibration		
Ambient noise measurement results vary between 44.5 and 52.2 dBA for day and 38.8 and 43.9 dBA for night which are all under both IFC and Turkish Regulation limits. The locations of the vibration sources (i.e, where the blastings will be carried out), the distance of the nearest receptor to the vibration source, and the calculated vibration values on these receptors are presented in Table 138. Since the blasting operations for the railway route for the tunnels are completed for Section 2, vibration is not assessed in the locations where the blasting operations were completed in Section 2	Potential impacts from noise during the construction phase of the Project are mainly caused by the heavy equipment/machines that will be used in the infrastructure and superstructure construction. During the construction phase, impacts will be mainly associated to the following ***impact factors***: ■ Noise emissions The impact factor is evaluated considering duration, frequency, geographic extent and intensity for construction phase. Residual impact values for the impact factors are then calculated and classified considering all mitigations as described above and further	A monitoring programme of noise at the baseline locations and receptors exceeding the limit values during construction and the commissioning and operational phase will be in place. The monitoring campaign will be conducted by 48 hours continues measurements at the locations. Vibration impacts for the construction phase of the Project due to the blasting operations are evaluated in the matrix provided in Table 135. As can be seen in the matrix all impact factors considered for vibration originated from construction activities have negligible residual impacts on the Project personnel and nearby communities

Main features of Current Situation	Potential impacts	Mitigation Measures
During the operational phase, not any blasting operations will be carried out, thus not any vibration effects due to the Project activities is expected	elucidated in the blasting management plan.	
Traffic		
There are already access roads on the BBYO route. However, some extension works might be performed in case of need. The land traffic in the construction phase will be generated by the machinery, equipment, material and staff to be transported to the Project construction sites.	During construction phase impacts will be mainly associated with the increased road traffic. Railway traffic will increase with the commencement of the Project's operation.	Scheduling of traffic to avoid peak hours on local roads. Adopting traffic control and operations devices and emphasizing safety aspects among project drivers. Regular maintenance of vehicles should be undertaken to ensure that vehicles are safe and emissions and noise are minimized.
Biological Components		
Desktop studies and on-site observations were conducted at 17 terrestrial sampling points and at 11 freshwater sampling points along the BBYO Route. The sampling stations were selected to be representative of the study areas in terms of position, to ensure coverage of the entire local study area, and habitats investigated. The Project is not located within any protected areas. However, a small portion of the footprint, and consequently of the Project LSA, in the western part partially falls within the internationally recognized Manyas Lake (Kuş Lake) Key Biodiversity Area (KBA) and Important Bird Area (IBA), which substantially matches with the Kuş Lake Ramsar Site (Wetlands of International Importance). In addition, the Project LSA minimally overlaps the internationally recognized Kocaçay Delta Key Biodiversity Area (KBA) and Important Bird Area (IBA). Finally, the Marmara Islands KBA and IBA is located at 5 km from the LSA, while the Uluabat Lake KBA, IBA and Ramsar Site, the Armutlu Peninsula KBA and IPA (Important Plant Area), the Ulu (Uludag) Mountain KBA and IPA, and Kocaçay Delta KBA and IPA are located at 20 km from the Project LSA. Based on the findings, 3 flora species, 2 fish species and 1 bird species were identified as potentially triggering critical habitat. 3 flora species *(Aubrieta olympica, Centaurea sakariyaensis, Ornithogalum pascheanum)* 2 fish species (*Barbus niluferensis, Cobitis puncticulata)* 1 bird species *(Falco cherrug,)* A list of mitigation measures are defined for Project phases within the scope of ESIA including additional field studies to collect data and plan mitigation measures.		

Main features of Current Situation	Potential impacts	Mitigation Measures
Social Components		
Social studies were carried out in the provinces of Balıkesir, Bursa and Bilecik, and a total of nine districts of these provinces were visited to conduct community level and household surveys. The expropriation process has not started as of April 2021 between the route between Bandırma and Bursa. According to the information obtained from the project company, a total area of 5,809,967 m^2 is needed in this area for the high-speed train construction. 91% of this area is private lands, 2% pasture lands and 7% forest lands. Part of the expropriation process of the lands on the Yenişehir-Osmaneli route has been completed, and additional lands are needed for the realization of the project. In this section, a total of 1,716,612 m^2 of land is required for the realization of the project. 57% of these lands are private lands, 7% pasture lands and 36% forest lands. Around 20 archaeological findings from the total of 56 were recorded to overlap with the Project route. The remaining 36 archaeological findings are located out of the Project route. The necessary preventive measures that should be taken for these findings during the construction phase are listed	The need of workforce that can be considered a positive impact. Increased traffic and transportation requirements. Community health and safety concerns in relation to Project construction and operation. Workers' accommodation camps to be established. To archive all the data gathered from archaeological sites and to prepare identification and registration tags of archaeological assets for being reported to the Ministry of Culture and Tourism of the Republic of Turkey	A continuous stakeholder engagement process and grievance mechanism will be in place • to exchange information on the project with the local community and other stakeholder and • to record and respond any complaints and concerns raised by the local community members and other stakeholders Maximising of local employment and procurement in order to increase the positive socio-economic impact of the project on the local community. Coordination with the local community for the arrangements of accommodation and establishment of the construction camps. These newly discovered archaeological findings will be reported to the responsible Museum Directorates before the commencing of construction activities for their on-site inspections. Following the inspections of the Museum Directorates the findings will be evaluated by the directorates of the Regional Boards for Preservation of Cultural and Natural Assets in relation to the Law numbered 2863. The primary goal of the Project is to prevent any possible damage on the archaeological and cultural heritage assets. Thus, route changes are being considered by the Project Engineering Department on localities where the route had overlapped with archaeological findings

Main features of Current Situation	Potential impacts	Mitigation Measures
within ESIA and its appendix CHMP.		

Environmental and Social Management System

The Environmental and Social Management System (ESMS) will be implemented (for both construction and operation phases) to ensure that the Project:

- complies with all applicable Turkish legislation as well as relevant IFC guidelines provided in this report;
- implements Good International Industry Practices (GIIP) to minimize potential environmental and social impacts during the construction, operation and decommissioning phases;
- is executed in compliance with the commitments addressed in this report for the minimization of potential environmental and social impacts;
- works in accordance with high standards of safety;
- cares for the protection of own employees and public;
- promotes its policies through training, supervision, regular reviews and consultation;
- generates local socio-economic benefits by using local and regional labour forces;
- engages and communicates with the local community and other stakeholders through a stakeholder engagement programme.

The minimum requirements of an ESMS have been defined and will be established for the project in order to mitigate the risks associated with;

- Environmental aspects
- Labour and occupational health and safety Issues
- Community Health & Safety aspects
- Stakeholder management and social aspects (including grievances)
- Land acquisition and livelihood management
- Waste Management

4.0 STAKEHOLDER ENGAGEMENT

A Stakeholder Engagement Plan (SEP) is prepared for the BBYO Project by Golder within the scope of the Environmental and Social Impact Assessment as a public document. The aim of SEP is to organise, record and formalise all engagement and consultation processes with the various stakeholders and corporate their views and concerns and addressed in them in the entire Project life.

Stakeholder engagement Activities for EIA Phase: The Project has secured the “EIA Not Required Decision” for Section 2 (Bursa-Yenişehir) and Section 1 (Yenişehir-Osmaneli). The EIA Process will be initiated for Section 3 (Bandırma-Bursa) following the finalization of the railway route technical design. As a result, no stakeholder engagement activity was conducted according to the EIA Regulation as of May 2021.

Stakeholder Engagement Activities for Land Acquisition Phase: The expropriation procedures have been completed in the area where Duygu and Çelikler (Bursa-Yenişehir Section) continue the construction activities. In the interviews carried in this area, some participants highlighted the social issues regarding the construction process, including blasting, dust, inadequate waste management, and insufficient expropriation values. Although Kalyon is not responsible from the ongoing construction activities in Section 2, Kalyon is committed to continuous communication via appropriate communication methods to ensure that suitable and sufficient environmental and social mitigation measures are implemented in Section 2 which are currently led by TCDD.

Stakeholder Engagement Activities for ESIA Phase: A fieldwork was carried out between 24 March 2021 and 31 March 2021 for social baseline and impact assessment studies. Within the scope of the social field study, the neighbourhoods and villages on the project route were visited and a community level survey ("CLS") and household surveys ("HHS") were applied.

The demographic information of the neighbourhoods was collected through the community level questionnaire, and through the household questionnaire, both the demographic structure of the households and the Project impacts, including expropriation, were asked to the participants. Social studies were carried out in the provinces of Bilecik, Bursa and Balıkesir, which are located on the route, and a total of nine districts of these provinces were visited. The survey numbers of the conducted study and the villages and neighbourhoods visited within the scope of the project are presented in the table below.

Table 8: Performed Social Surveys

Province	District	CLSs	HHSs
Balıkesir	Bandırma	5	6
Bursa	Karacabey	11	29
Bursa	Mudanya	5	15
Bursa	Gürsu	3	17
Bursa	Kestel	5	16
Bursa	Nülüfer	4	7
Bursa	Osmangazi	7	31
Bursa	Yenişehir	6	15
Bilecik	Osmaneli	2	1
		48	137

Within the scope of the Project for the continuous stakeholder engagement and the information disclosure engagement, tools will be developed. Various tools including the digital platforms will be used such as Project website, online meeting, phone calls, social media, Project brochure, grievance mechanism, etc. considering the Covid-19 social distancing and to provide stakeholders safe participation. Effectiveness of the engagement tools will be monitored and when required, new engagement tools will be developed.

5.0 GRIEVANCE MECHANISM

The grievance mechanism is the key tool that allows stakeholders to provide feedback, concerns and complaints related to the project. The grievance mechanism aims at demonstrating responsiveness to stakeholder needs

and at facilitating a trustworthy and constructive relationship with the stakeholders, by developing appropriate mitigation strategies. The objectives of the grievance mechanism are to:

- provide affected people with culturally appropriate ways and means of stating their grievances during the course of the project (from site preparation to decommissioning phase);
- ensure that grievances are treated confidentially and are not shared outside the process;
- establish a transparent and mutually respectful relation with communities;
- ensure that corrective actions are identified and taken;
- verify that affected people are satisfied with the corrective actions taken; and
- avoid the need for judicial actions; the grievance mechanism however does not prevent stakeholders from accessing the judiciary system.

5.1 Internal Grievance Mechanism – for workers

The internal grievance mechanism of Kalyon will be adopted for the Project. This procedure will be followed by all direct and indirect Project workers. The procedure defines grievances as a statement of dissatisfaction over any condition that allegedly has an adverse effect on the employee. A grievance may relate to matters involving internal communication, responsibilities abuse, abuse in the authority line, race, color, ancestry, national origin, religion, age, sex, sexual orientation, gender identity, sexual harassment, or disability status.

In case requested, all grievance holders will have the right to remain anonymous and maintain their confidentiality. Kalyon will not disclose any grievance holder's credentials without ensuring their consent first. In case such consent is given, only the managers and personnel related to that specific grievance will be informed. Details of the internal grievance mechanism will be presented as part of the Labour Management Plan.

5.2 External Grievance Mechanism – for communities

An external grievance mechanism will be established as part of the management system and will be responsive to any concerns and complaints particularly from affected stakeholders and communities. Special care will be focused on the training of the designated staff involved in the management of the grievance mechanism. The overarching aim of this grievance mechanism is to provide all stakeholders with the opportunity to obtain information about the Kalyon's activities and facilities deliver their complaints and requests in a structured and formal manner and receive prompt, fair and effective responses.

Any comments or concerns will be brought to the attention of the company verbally or in writing (by post or e-mail) or by filling in a grievance form. The grievance form will be made available on the company website, at project site, at the Mukhtar's office, alongside a description of the grievance mechanism. Grievance forms can then be submitted to the points of contact whose details are provided in Chapter 11, Liabilities. All grievances will be:

- Acknowledged within 7 days after receipt; and
- Responded to no later than within 30 days after receipt.

Specifically, nominated, and trained members of staff will record grievance information in a grievance log. This will include: Stakeholder name and contact details as well as details of the grievance and how and when it was submitted, acknowledged, responded to and closed out. The process is elaborated in the figure below.

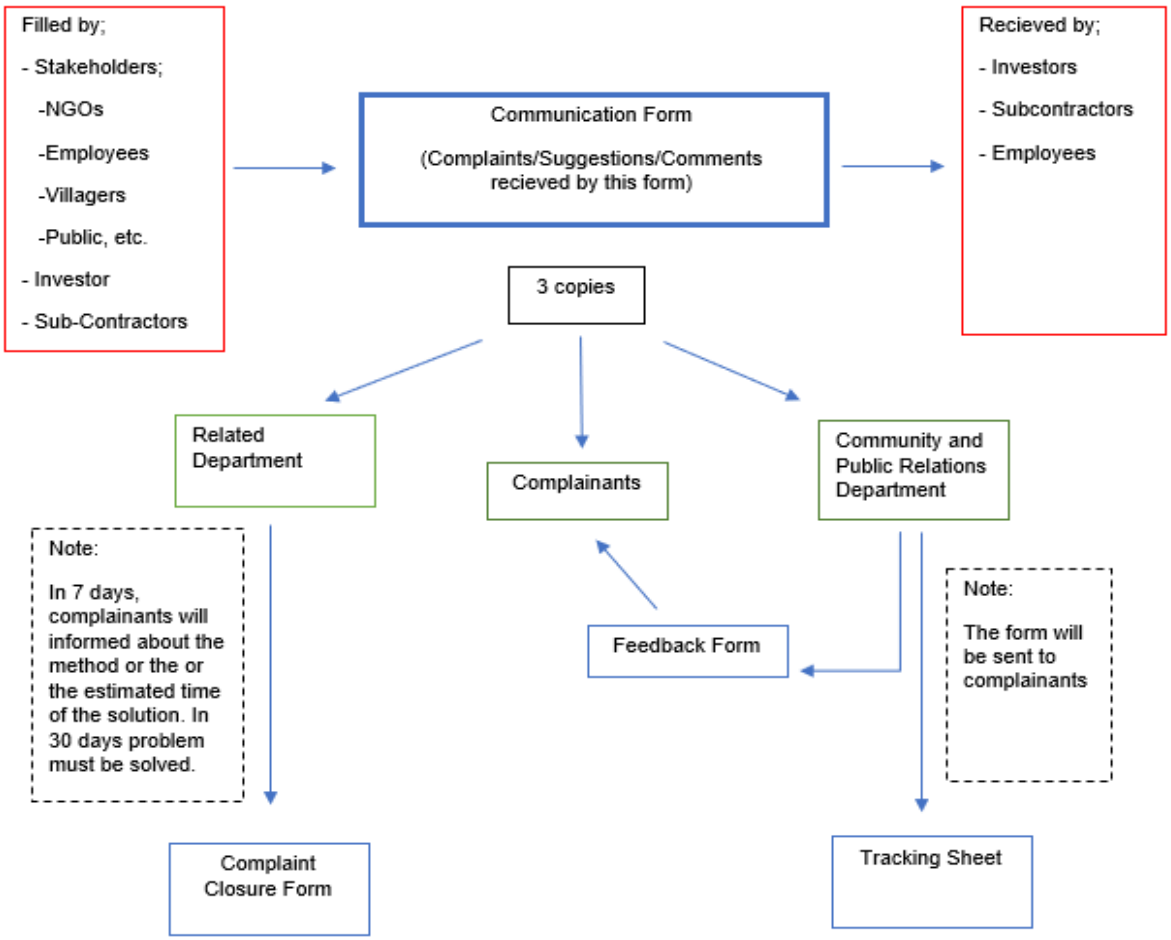

Figure 9 Grievance Management Procedure

During the construction and operation phases of the Project a team will be assigned to perform the stakeholder engagement activities that includes identification of stakeholders, update stakeholder list, disclose project related information, conduct consultation with the target stakeholder groups with the identified tools, manage the external grievances and report to top management periodically.

Since the construction of the Project under the responsibility of Kalyon has not been started yet as of May 2021, the names of the responsible persons have not been designated yet. During the update of this SEP report, the names and the communication details will be presented in detail.

Istanbul Office;	**Site Office;**
Name:	Name:
Title:	Title:
Telephone:	Telephone:
Address:	Address:

E-mail: Website:	E-mail: Website:

Table 9 External Grievance Form

Questions	Answers
Date of the grievance/opinion/suggestion/ request	
Full Name of the stakeholder (if provided)	*You can remain anonymous if you prefer or request not to disclose your identity to the third parties without your consent*. ☐ I request non-disclosure of my identity information ☐ I would like to submit ANONYMOUS claim
Please mark how you wish to be contacted (mail, telephone, e-mail).	☐ By Post: Please provide mailing address …….. ☐ By person:…… ☐ By telephone:…….. ☐ By e-mail:…… ☐ Other:……
Province/District/Settlement (village, neighbourhoods)	

Category of the Grievance	
1. On displacement (economic, physisicial)	
2. Compensation (delay, value, miscalculationg, lack of information)	
3. On infrastructure (roasd, water, elecectyrcity)	
4. On Livelihoods (impact on agriculture, animal musbandry, beekeeping)	
5. On environmental issues (vibration, dust, noise)	
6. Damage on the properties (on croplands, structure)	
7. Request for employment	
8. On traffic, transportation and other risks	
9. On health	
10. On quality of life (security issues, cultural conflicts)	
11. Other (Please specify):	

Questions	Answers
Description of the Grievance (WHAT, WHEN, WHERE, WHY, IMPACT) Please briefly explain the cause-root of the complaint	
Have you ever filed a complaint on the same issue before? (Please specify)	
Do you know if any other locals that are experiencing the same issue? (Please provide the names and the contact details)	
How cab your complaints resolved please provide your suggestions?	
Please do not fill this section of the form. **To be filled out by the CLO**	
How was the comment received? ☐ In person ☐ By phone ☐ By mail ☐ By grievance box number: (please include the box number) ☐ Other (please describe)	
Grievance Registration Date:	**Grievance Number:**
Response Required: ☐ Yes ☐ No	**Signature:**

Table 10 Internal Grievance Form

EMPLOYEE REQUEST AND COMPLAINT FORM	
NO:	DATE:
COMPLAINENT	RECEIVING STAFF
NAME OF THE COMPANY: NAME: LAST NAME: PHONE NUMBER: You can remain anonymous if you prefer or request not to disclose your identity to the third parties without your consent.	NAME: LAST NAME: DEPARTMENT:
RELATED DEPARMENT	
DESCRIPTION	
This section will be filed by the related department	
ASSESSMENT:	
CONCLUSION/DECISION ETC.:	
DEPARTMENT REPRESENTATIVE NAME: LAST NAME:	DATE: SIGNATURE:

Signature Page

Golder Associates (Turkey) Ltd. ŞTI

Ilgın Atalar/Elçin Kaya
EHS Expert/Social Expert

Caner Şahin
Project Manager

IA/CS

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