







ESIA for Nakkaş - Basaksehir Motorway Turkey

Nakkaş Otoyol Yatırım ve İşletme A.Ş

Non-Technical Summary

21 August 2023

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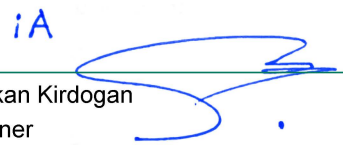
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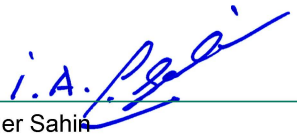
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Non-Technical Summary



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Acronyms and Abbreviations

Name	Description
AADT	Annual Average Daily Traffic
AoI	Area of Influence
AQS	Air Quality Standards
BAP	Biodiversity Action Plan
BOT	Build Operate Transfer
CR	Critically Endangered
CESMP	Construction Environmental and Social Management Plan
EBRD	European Bank for Reconstruction and Development
EPRP	Emergency Preparedness and Response Plan
ERM	Environmental Resources Management
ESAP	Environmental and Social Action Plan
ESIA	Environmental and Social Impact Assessment
ESMMP	Environmental and Social Management and Monitoring Plan
ESP	Environmental and Social Policy
GBVH	Gender Based Violence Harassment
GHG	Greenhouse Gases
GM	Grievance Mechanism
KBA	Key Biodiversity Area
HGV	Heavy Goods Vehicles
IBA	Important Bird Area
IPA	Important Plant Area
KGM	Turkish Ministry of Transport, General Directorate for Highways
LGV	Light Goods Vehicles
NMM	Northern Marmara Motorway
NTS	Non-Technical Summary
O&M	Operation and Maintenance
PR	Performance Requirements
RAP	Resettlement Action Plan
RoW	Right of Way
SEP	Stakeholder Engagement Plan
SMA	Stone Mastic Asphalt
SPV	Special Purpose Vehicle
TEM	Trans European Motorway

1. INTRODUCTION

İstanbul has historically been an intersection of international and national trade routes. Due to its socio-economic attractiveness, İstanbul has also faced intensive internal migration from across the country and its population has increased to nearly 15 million (nearly 18% of the total population of Turkey[1]). A growing population and intense logistic activities driven by economic growth have created enormous traffic pressure and challenges in İstanbul and the Marmara region.

For this reason, several motorways were constructed in the Marmara Region with the aim of decreasing traffic load, including the “Northern Marmara Motorway” (NMM). The NMM was originally comprised of seven sections in total connecting Asia and Europe with an uninterrupted traffic flow and is considered an alternative route to the European Road 80 (E 80 also known as Trans European Motorway (TEM). The first seven sections of the NMM have already been completed and are under operation (see Figure 1-1).

Based on the tender process held on 30 June 2020 and the agreement following on 13 April 2021, the 1st Regional Directorate of General Directorate of Motorways (KGM) involved an additional section within the scope of NMM which is called “Section 8 – Nakkaş-Başakşehir Motorway” (hereafter the “Project").

The Project is a new 4-lane dual toll road with a total length of 30.64 km including connection roads and the 1,619 m long Sazlıdere Cable Stayed Bridge. Nakkaş Otoyol Yatırım ve İşletme A.Ş. (Nakkaş Otoyol A.Ş), a Special Purpose Vehicle (SPV) under a Build, Operate and Transfer (BOT) contract signed with the Turkish Ministry of Transport’s General Directorate for Highways (KGM) in 2020, is responsible for the construction and operation of the Project.

The Project activities started with “Pre-Construction Phase” tasks in 2021 and involved the following:

- Environmental and social baseline surveys and initial stakeholder engagement and consultations and development of the Environmental and Social Impact Assessment (ESIA) and Resettlement Action Plan (RAP).
- Pre-construction engineering surveys and completion of the Basic Engineering design and approval followed by Detailed Design Works which has been completed and submitted to KGM for their final approval.
- The Construction Contract Award to REC International (hereafter called “EPC Contractor”) which is a subsidiary company of Rönesans Holding who is a part of Nakkaş Otoyol A.Ş Joint Venture.
- The Project route alignment has been divided into two sections (Section 1 and Section 2), and the land acquisition process has been initiated by KGM. 24% of land acquisition has been completed in Section 1 and 20% has been completed in Section 2 as of July 2023.
- Early Construction Phase works were initiated including earthworks and construction of the Sazlıdere Cable Stayed Bridge. However, construction activities were paused by Nakkaş Otoyol A.Ş in September 2022 to complete ongoing ESIA studies to be fully aligned with international standards.

The construction activities are planned to be re-commenced as of end 2023 and planned to be completed in three years as furtherly discussed in Chapter 4.7 “Project Timeline” of this Non-Technical Summary (NTS).

[1] Source: Turkish Statistical Institute (TUIK) – https://data.tuik.gov.tr/Bulten/Index?p=Adrese-Dayali-Nufus-Kayit-Sistemi-Sonuclari-2020-37210



Figure 1-1 Sections of Northern Marmara Motorway

The Project is exempt from the Turkish EIA Regulation due to the inclusion of the North Marmara Motorway Project in the public investment program in 1991 prior to the enactment of the first EIA Regulation in Turkey in 1993. The Project's EIA exemption also includes all material quarries, connecting roads, energy transmission lines, storage areas, ready mix concrete plants, asphalt plants and manufacturing facilities required for constructions. Although the Project was exempted from the EIA regulation, all other obligations for environmental permits and licences under current Turkish regulations are still applicable for the Project.

Nakkaş Otoyol A.Ş is planning to seek for financing of the investment costs of the Project by debt and equity under a Project Finance structure involving the European Bank for Reconstruction and Development (EBRD), the Asian Infrastructure Investment Bank (AIIB), Atradius, Standard Chartered Bank, SERV, DZ BANK and Bank of China, Deutsche Bank, Credit Suisse, the Islamic Corporation for the Development of the Private Sector (ICD) and Vakıfbank.

Despite the Project being exempt from Turkish EIA regulation, the Project is categorised "A" under the Lender's requirements, as it has the potential to have significant potential environmental and social (E&S) impacts associated with the construction and operation of the proposed Motorway. Therefore, a comprehensive Environmental and Social Impact Assessment (ESIA) and associated management plans including a Resettlement Action Plan (RAP) and a Stakeholder Engagement Plan (SEP) have been developed and will be disclosed to public for a minimum period of 60 days in line with Lender's requirements.

If in future, there are additional potential impacts identified due to design changes or other factors, these will be thoroughly evaluated by Nakkaş Otoyol A.Ş., and appropriate mitigation measures will be employed in line with Design Change Management Procedure. Corresponding documentation will be prepared to supplement the ESIA, and – depending on the type and location of impact – will be available for review by those affected.

2. WHAT IS THE PURPOSE OF THIS NON-TECHNICAL SUMMARY?

This Non-Technical Summary (NTS) is intended to be an easy-to-understand summary of the information that is provided in the full ESIA study prepared for the Project (available on the Project website http://www.nakkasotoyolu.com/tr).

The NTS is available both in Turkish and English and aims to facilitate the public and the Project stakeholders' understanding of:

- The Project need and background.
- The Project description and main components.
- The ESIA process, including stakeholder engagement and grievance mechanism.
- The potential adverse and positive environmental and social impacts and risks of the Project.
- The mitigation measures that will be implemented to avoid or reduce adverse impacts and enhance the benefits; and
- The Project feedback mechanism for any issues and concerns related to the Project.

3. PROJECT NEED AND BACKGROUND

The Project is in the western part of Istanbul and passes through four districts: Başakşehir, Arnavutköy, Avcılar and Çatalca. (see Figure 4-1). Several major facilities and pieces of infrastructure are located in the Project vicinity[2], at a distance ranging from 0.7 km to 4 km from the Project Right of Way (RoW) (see Figure 3-1), causing heavy traffic and transportation problems due to the daily movement of people. These facilities are:

- **İkitelli Organized Industrial Zone**: Employing around 200,000 – 250,000 people with daily passenger movement around 700,000 people[3];
- **Deliklikaya Industrial Zone:** Employing around 60,000 people[4];
- **Hadımköy Industrial Zone:** Employing around 35,000 people[5];
- **Başakşehir Çam and Sakura City Hospital:** A large complex with about 2700 beds[6]; and
- **Atatürk Olympic Stadium:** With a capacity around 76,000 people[7].



Figure 3-1 Major Facilities within the Project Vicinity

[2] Despite the proximity, none of these facilities are located within the Project route and are not envisaged to be subject to resettlement.

[3] Source: İkitelli Organized Industrial Zone - www.iosb.org.tr

[4] Source: İstanbul Chamber of Industry - www.iso.org.tr/haberler/etkinlikler/istanbullu-sanayiciler-deliklikaya-organize-sanayi-bolgesinde-bulustu/

[5] Source: İstanbul Chamber of Industry - www.iso.org.tr/haberler/etkinlikler/istanbullu-sanayiciler-deliklikaya-organize-sanayi-bolgesinde-bulustu/

[6] Source: Rönesans

[7] Source: http://ataturkolimpiyatstadi.gov.tr/2012/tr/detay.aspx

Considering the current heavy traffic and transportation problems in Istanbul as presented above, with the completion of this 8th section (which is the final section of the NMM) the following benefits are likely to be expected in the region:

- An increase in service quality and safety in transportation by separating regional traffic, which grows and develops around the main transportation arteries in the East-West direction in the Northern Marmara Region.
- A reduction in the traffic accidents caused by the inadequate standard of the current roads around the Project vicinity.
- The connection of the Marmara Region to the Aegean and Central Anatolia Region via a Motorway network, thus reducing travel time to 1.5 hours from Istanbul to Bursa, 3.5 hours from Istanbul to Izmir, 2.5 hours from Istanbul to Eskişehir and 3.5 hours from Istanbul to Ankara.
- Contributions to the developing industrial investments of the Marmara Region that will pave the way for new investments in this region with Istanbul Airport connections, Osmangazi Bridge Gulf connection and Karasu intersections.
- A reduction in the traffic load in the existing transportation networks, especially the Bosphorus crossings.
- A reduction in economic losses stemming from increased fuel consumption, vehicle maintenance and repair costs.
- A reduction in Greenhouse Gas Emissions (GHGs) caused by traffic density in other road networks around the Project vicinity.
- The relief of transportation problems occurring in three Industrial Zones located on the Project route.
- An ease in transportation congestion to Başakşehir Çam and Sakura City Hospital and Atatürk Olympic Stadium.
- The enabling of transit and heavy vehicles traffic to pass alternatively by the NMM and the Yavuz Sultan Selim Bridge, to alleviate intense traffic on the TEM-O3, the Fatih Sultan Mehmet Bridge and the D-100 motorway.
- A link between the intercity traffic and the NMM to provide a time-saving route for users.
- Help to navigate transit passenger and freight traffic coming from the West and East to the North side; and
- Alleviation of the transportation problems of the developing regions of Istanbul, Halkalı, Başakşehir, Kayaşehir, Bahçeşehir and Hadımköy.

Consequently, as illustrated in Figure 1-1, the transportation corridor between Nakkaş Junction-Başakşehir Junction has gained importance as this is the last missing section of the entire NMM network.

4. WHAT DOES THE PROJECT INVOLVE?

The Project is a new 4-lane dual toll road with a total length of 30.64 km including connection roads and the 1,619 m long Sazlıdere Cable Stayed Bridge, which is intended to be used solely by motor vehicles such as automobiles, buses, small and large trucks/lorries, and motorcycles. The Project route is presented in Figure 4-1.

Special vehicles (such as over-sized transporters), or lorries carrying certain hazardous cargos, will be subject to approval by KGM in accordance with the Turkish highway regulations applicable for all such motorways. Pedestrians, bicycles, grazing animals, slow-moving farm vehicles and other vehicles that are inappropriate for such a motorway will be prohibited. As a limited access roadway, there will be no traffic-light intersections; entry or exit will be via right-side ramps at newly built interchanges.

There will be no provisions for pedestrians, cyclists, or other vehicles to cross the Motorway at the road level. Signs and fences will be erected along the Motorway to prevent pedestrians from attempting to cross. Instead, the Motorway design provides underpasses, overpasses, and culverts to allow safe passage for pedestrians and vehicles, as well as for animal crossings.

The underpass locations are designed at or as close as possible to all existing roadways, farm roads and paths. Underpasses will be installed at appropriate locations to facilitate the existing transport routines/passage for communities and their livestock to avoid any motivation for attempting an illegal crossing of the Motorway itself. The Motorway will be monitored via centralized electronic camera system during the operation phase to prevent unauthorized access. Community safety awareness campaigns and training will be provided to the communities in the vicinity of the Motorway in line with Project Community Health, Safety and Security Plan.

The Project includes several civil engineering elements currently identified as listed below (Table 4-1).

Table 4-1 Project's Key Elements

Component	Details
Length of main road	24.17 km
Length of connecting roads	6.47 km
Cross Sections	2x4 lanes for main Motorway and 2x3 for connecting roads
Interchanges	10
Sazlıdere Cable Stayed Bridge	1,619 m (Length) x 46 m (Width) and Tower Height of 196 m
Overpasses	18
Underpasses	18
Viaducts	5
Culverts	55
Toll Booth	The number of toll booths has not been specified at the current stage. Free flow systems and tollgate toll collection systems will be incorporated in the Project, similar to the other segments of the NMM.
Lighting	Will be provided at cable stayed bridge, intersections, and toll booths.
Service Stations/Rest Areas	Currently, there are no service stations/rest areas planned as part of the existing road design.
O&M Facilities	There are two O&M facilities planned at KM 36+300 and at 49+200 specific for Sazlıdere Cable Stayed Bridge. These O&M facilities will also serve as Disaster Recovery centres.

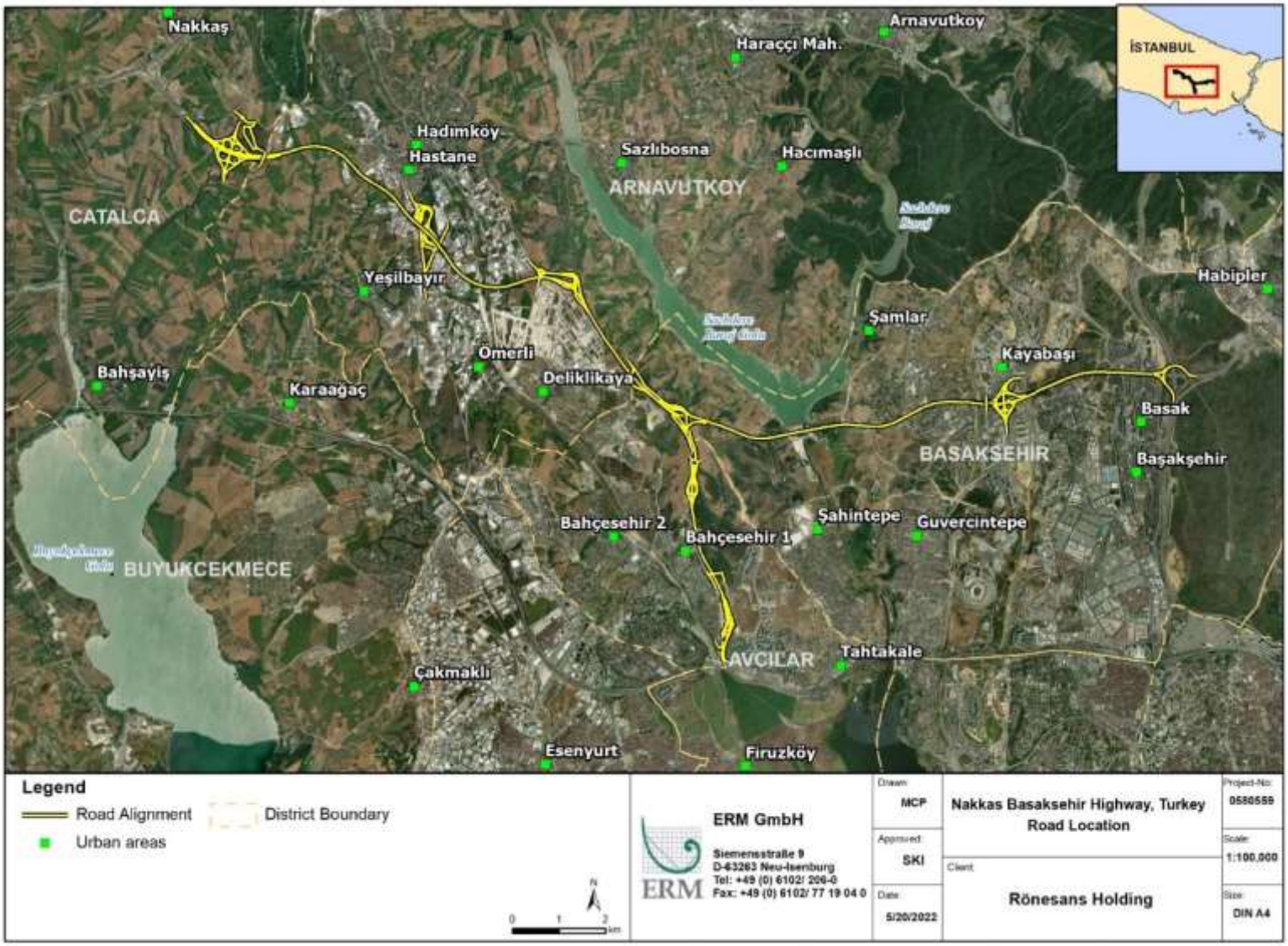


Figure 4-1 Project's Location

4.1 Motorway

The main Motorway will be a 4-lane dual carriageway with a maximum speed of 120 km per hour. The overall Motorway width is 43 m and the pavement surface of the Motorway will consist of Stone Mastic Asphalt (SMA) with noise-absorbing features. The overall average permanent land-take for the whole Project is a corridor of 80 m, including the 7 m safety zone at each side of the road subject to land acquisition as illustrated in Figure 4-2 Motorway Illustration.

The Motorway will be fenced, and the following restrictions will be applied within the safety zone (orange-coloured areas) during operations:

- No pedestrian access.
- No construction of houses or structures; and
- No crops and permanent plantations (except for the landscaping work within Project scope).

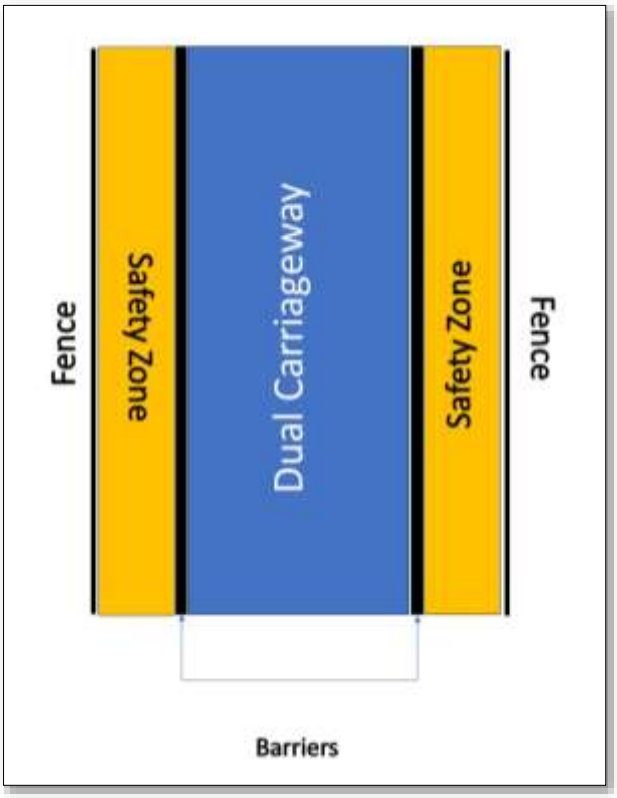


Figure 4-2 Motorway Illustration

4.2 Cable Stayed Bridge Design

The Sazlıdere Cable Bridge will be of 1,619 m length in total and the cross section over the Bridge will be 46 m long carriageway (see Figure 4-3) consisting of:

- 2 x 4 x 3.75 m lanes, plus 2 x 3.50 m outer shoulders.
- 2 x 1 m inner shoulder.
- Two towers of 196 meters each; and
- 3.50 m emergency and maintenance walkway on both sides.



Source: Nakkaş Otoyol Yatırım ve İşletme A.Ş.

Figure 4-3 Illustration of Sazlıdere Cable Stayed Bridge

4.3 Viaducts

Viaducts will be used in 5 locations where the road crosses larger elevation differences in rough terrain such as in steep valleys (see Figure 4-4).



Source: Nakkaş Otoyol Yatırım ve İşletme A.Ş.

Figure 4-4 Illustration of a Viaduct

4.4 Interchanges

There will be 10 interchanges and their carriageways will generally be 2 lanes. Design speeds will depend on the curve radius and vary from 40 to 80 km per hour (see Figure 4-5).



Source: Nakkaş Otoyol Yatırım ve İşletme A.Ş.

Figure 4-5 Illustration of interchanges and carriageways

4.5 Underpasses and Overpasses

Underpasses, overpasses, and culverts of different sizes are planned to ensure the free passage of farm roads, wildlife, and any kind of water course beneath the Motorway. The distance between underpasses, overpasses and culverts will depend on the local land use and requirements.

Further, Nakkaş Otoyol A.Ş. may provide additional underpasses, if necessary, based on the stakeholder feedback to avoid any significant impact to agricultural and other livelihood activities along the Motorway due to access restrictions.

Universal access principle will be considered during the design of the underpasses and overpasses to ensure that they are well lit, secure and provide accessibility to people with disabilities and other vulnerabilities.

The locations of the underpasses and overpasses along the RoW are shown in Figure 4-6.

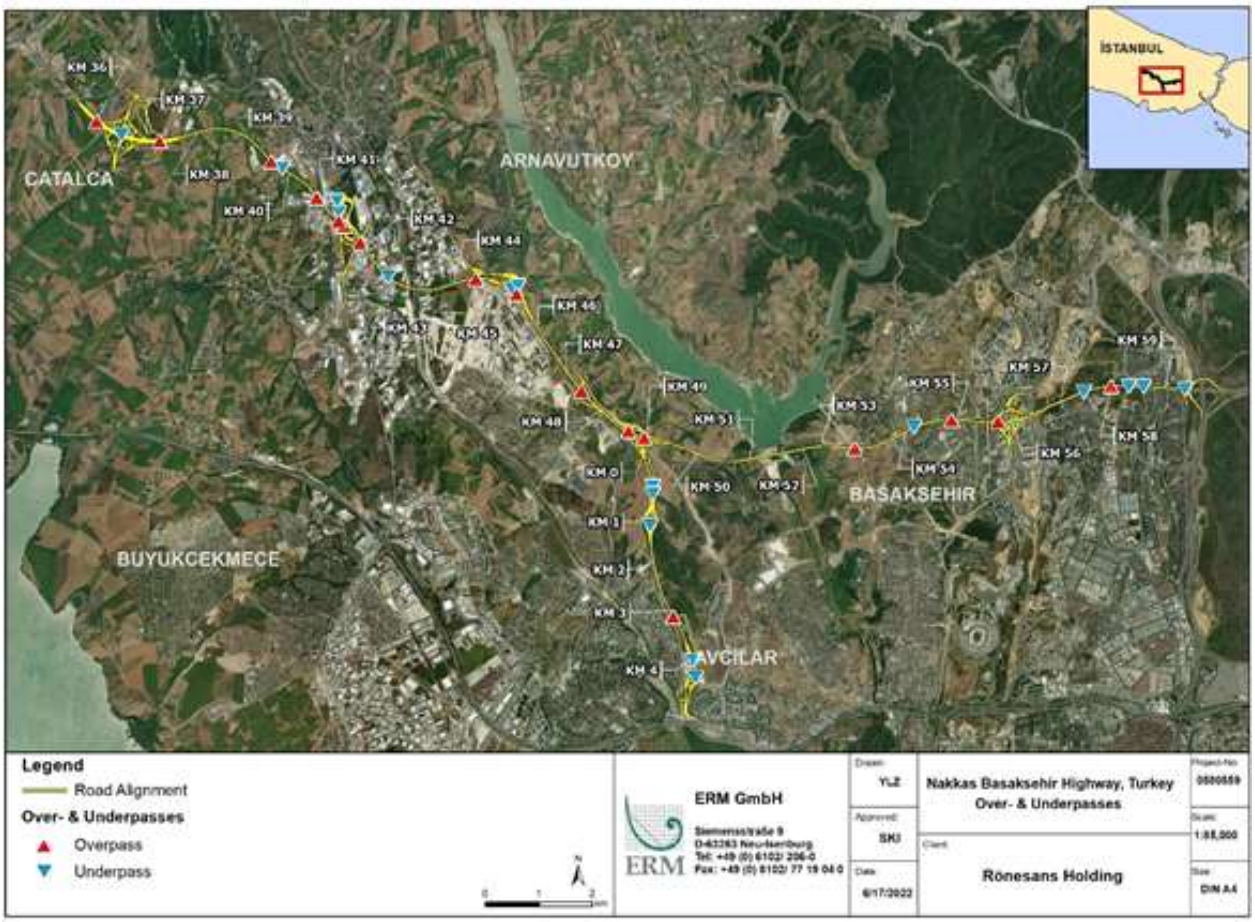


Figure 4-6 Project's Overpasses and Underpasses

4.6 Temporary Construction Components

Temporary construction components will only be needed during the construction and will be reinstated to its original condition upon completion of the construction activities (see Figure 4-7). Nakkaş Otoyol A.Ş. will have full control on the environmental and social performances of the EPC Contractor on these components. These components will include:

- Construction Camps.
- Concrete Plants.
- Asphalt Plants.
- Mechanical Plants.
- Beam Production Facilities; and
- Surplus Material Dumpsites.

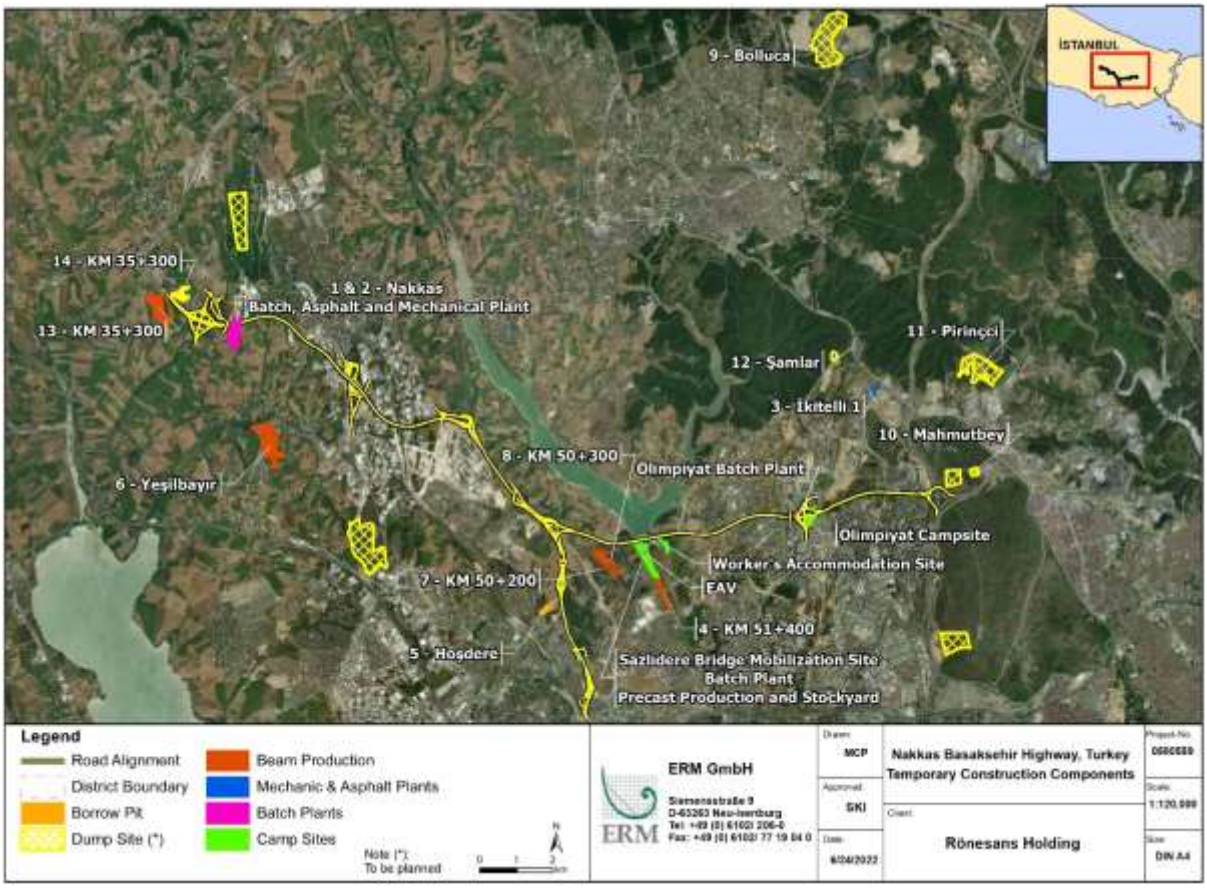


Figure 4-7 Map of the Temporary Construction Components

4.6.1 Construction Workforce and Campsites

It is estimated that an average of 1,900 personnel will be employed throughout the construction of the Project.

To avoid disturbances related to the influx of outside workers into the Project area, local workforce with relevant experience will be prioritised to the fullest extent possible. Ongoing dialogue will be maintained between the Project and local communities to assist in information sharing regarding employment practices and the use of non-local staff. Local communities will be provided information on the number of non-locals to be brought to the area, their housing arrangements, and the measures that the Project is putting in place. In addition, all work force will be subject to training during onboarding to ensure that all workers abide by local customary practices and are familiar with the Project requirements.

Nakkaş Otoyol A.Ş. and EPC Contractor will work with local authorities (such as İŞKUR) and employment organisations to ensure that all temporary positions are advertised in a manner that is equally accessible to the communities and potential workforce in the Area of Influence (AoI).

A Labour Management Plan has been developed and will be implemented throughout construction phase. The Nakkaş Otoyol A.Ş. and EPC Contractor will ensure that the recruitment process is fair and transparent, and open to all regardless of ethnicity, religion, or gender.

There are 2 campsites in place which are already in use by the Project Team. Currently, there are no female employees who use accommodation facilities at either campsite since there is rental assistance provided by EPC Contractor to the female employees. This approach will continue during main construction phase of the Project. However, if needed, separate accommodation will be organised for female employees based on the requirements of the Gender Action Plan (GAP) developed for the Project. Access to the camps is tightly controlled and restricted to the Project workforce and approved visitors to ensure safety and security of project workforce as well as the third parties.

Both camps' wastewater is connected to the existing municipality sewage network, and water is supplied via existing water network as well. Camps receive their electricity from the electrical grid, and they also utilize back-up generators in the event of any electrical supply failures.

- Sazlıdere Bridge Campsite is located at KM 51 adjacent to the RoW and the site is surrounded by agricultural areas including a greenhouse. Sazlıdere creek is located 20m to the east and Sazlıdere Dam is located 320m to the north of the campsite. The main purpose of the campsite is to serve for precast production and storage required for the construction of the Sazlıdere Bridge and the viaducts. The campsite is also used by EPC Contractor and subcontractors' workers for accommodation purposes with a maximum capacity of 750 persons.
- Olimpiyat Campsite is an existing campsite located at KM 56 that was used previously by Rönesans during the construction of the Başakşehir Çam and Sakura City Hospital project between 2016 and 2020. The campsite is surrounded by roads (adjacent); residential buildings are located 195 m to northwest; and Başakşehir Çam ve Sakura Hospital is located 195 m to southeast. The campsite was designed in such way that it can accommodate a workforce of approximately 1,100.

4.7 Project Timeline

The Project activities are split into following three main phases, and tasks & status of each phase are defined in Table 4-2:

- Pre-Construction Phase between “December 2020 – August 2023”.
- Early Construction Phase between “July 2021 – September 2022”; and
- Construction Phase between “December 2023 – Planned to be completed in 3 years”.

Table 4-2 Project Timeline

Phase	Tasks	Status
Pre-Construction Phase	Stakeholder engagement and consultations with Project Affected Persons (PAPs) and local authorities during ESIA, RAP studies and early land acquisition works	Ongoing
	ESIA Studies and ESIA Report	Completed
	Development of Resettlement Action Plan	Completed
	Implementation of Resettlement Action Plan	Ongoing
	Land Consent and Lease Process in Accordance with Turkish Expropriation Law and EBRD PR5	Ongoing
	Geo-hazard/seismic studies	Completed
	Soil Survey	Completed
	Permitting	Ongoing
	Project Design Works	Ongoing
	First Phase of the Third-Party Road Safety Audit[8]	Completed
	Drilling Works	Completed
	Surveying Works	Completed
	Mobilization	Completed
Early Construction Phase	Stayed Cable Bridge Works	Continued
	Engineering Structures	Paused
	Earthworks	Paused
	Overhead Transmission Lines Displacement	Completed
Construction Phase	Stayed Cable Bridge Works	Planned to be started at the end of 2023.
	Section 1 (Nakkas – Deliklikaya) Construction	Planned to be started at the end of 2023.
	Section 2 (Deliklikaya – Basaksehir Sular Valley) Construction	Planned to be started at the end of 2023.
	Test and Commissioning	Planned to be started at the end of 2025.

[8] The independent Road Safety Audits will continue during the construction and operations stages of the Project, and the findings of the audits will be reviewed and required actions will be implemented by Nakkaş Otoyol A.Ş.

4.8 Land Acquisition and Resettlement Timeline

A key aspect of the environmental and social management of the Project will be the management of acquisition of land required either temporarily or permanently for construction and operation of the motorway. In accordance with the relevant provisions of the Expropriation Law, expropriation works for the Project will be conducted by the KGM as the designated administrative authority.

Nakkaş Otoyol A.Ş. has the responsibility to comply with international standards and Lenders' requirements regarding the execution of land acquisition works. Nakkaş Otoyol A.Ş appointed an independent consultancy to develop Resettlement Action Plan (RAP) in line with the international Lender's standards.

As per the current Project schedule, RAP implementation has been initiated by KGM with the support of Nakkas Otoyol A.Ş in the first sections of the Motorway. Initial activities included but not limited to identification of owners/users of affected lands/assets, inventory surveys, land & asset valuation, consultations with the affected landowners/users as well as owners of affected houses and businesses, negotiation meetings, consent agreements signed with those landowners who agreed and initiation of expropriation process through court in cases where consent agreements cannot be reached etc.) in line with the Expropriation Law and Lenders requirements.

By July 2023, land acquisition process for the first sections of the Project (24% has been completed in Section 1 and 20% has been completed in Section 2) has been initiated by KGM.

The RAP implementation is still ongoing and will be completed in 3 years through close collaboration between KGM and the Nakkaş Otoyol A.Ş.

Following the post-implementation monitoring period of 2 years, a RAP Completion Audit will be conducted by an independent RAP consultant(s) which will be approved by the Lenders to ensure RAP implementation is completed successfully and livelihood restoration of affected people is completed.

5. HOW WAS THE PROJECT ROUTE SELECTED?

The main route of the Motorway has been identified by the KGM based various studies conducted and based on the technical, specifications presented below. Nakkaş Otoyol A.Ş. was commissioned for the Project through an open public tendering process as a Build Operate Transfer (BOT) Implementation Contractor for the route design pre-approved by KGM.

KGM considered the following range of factors, including environmental and social issues, during their selection of motorway routes in line with KGM`s Technical Specifications for Engineering Services for Motorway Projects:

- Geology, geotechnical conditions (including seismic conditions), geohazard risks.
- Road design safety and community safety risks.
- Meteorological conditions and climate risks including flooding.
- Economic viability of construction and operation.
- Residential areas, cultural heritage, historical artefacts and historical ruins, industrial and military areas, cemeteries, agricultural and forestry areas on/next the motorway route.
- Biodiversity, marine areas, lakes, streams, dams and water protection areas.
- Existent and planned motorways and seaways, airports, ports.
- Existing and planned infrastructure facilities such as electric energy transmission lines, water pipeline, natural gas and oil pipelines, telecommunication and similar infrastructure.
- Existing and potential transportation development considering the social, cultural, commercial, and industrial structure of the route and adjoining area; and
- Existing and planned development plans within the municipality boundaries.

In addition to the above, the following environmental and social aspects were also considered during selection of the final Project route by KGM:

- Avoidance of the flooding and drainage risks that might have been caused by Sazlıdere Dam Basin; and
- Avoidance and /or minimisation of potential socio-economic impacts on local people and their livelihoods through i) avoidance of agricultural areas as much as possible and ii) minimisation of physical resettlement to reduce negative impacts on businesses and households on the route.

In addition to the above listed criteria, the following engagement activities were conducted by KGM during the selection of the route to ensure key parties are also involved in route selection process:

- Various communication and consultations were held with the relevant state institutions and local authorities (including Istanbul Metropolitan Municipality), and their feedback was integrated into the latest route selected by the KGM.
- Follow up correspondences were made with the Metropolitan Municipality and other institutions in the sections where the route passes, and the objections made during the recording of the route in the zoning plans were also examined and the necessary correspondence and arrangements were made.
- Various engagements have been made with the Ministry of Transport and Infrastructure, Ministry of Environment, Urbanization and Climate Change, KGM and the relevant Municipalities during the stage of processing the Northern Marmara Motorway into the zoning plans; and
- Feedback from local communities and elected community leaders have also been taken into consideration during route selection.

5.1 Design Changes to Avoid, Minimise Negative Environmental and Social Impacts of the Project

Project team conducted various surveys and consultations with local and regional stakeholders to identify and avoid potential impacts to environment and people through careful planning and design changes made prior to construction based on international environmental and social standards. All these efforts made on the design modifications ended up with the following key positive E&S impacts as detailed in ESIA Report Section 3.3.14 and RAP Section 2.8 Avoidance and Minimisation".

The key positive impacts resulted via design changes include but not limited to the following:

- Decrease in land take.
- Decrease in land disturbance.
- Decrease in impact on public infrastructure.
- Decrease in environmental disturbance.
- Decrease in interaction of the workers with the community.
- Avoidance of Büyükçekmece Important Bird Area (IBA).
- Increased road safety.
- Decreased noise impacts; and
- Avoidance of impacts on house on Parcel no. 190/5 (Başaksehir/Kayabaşı) – avoided through wall design; and house on Parcel no. 1451/2 (Başaksehir/Şahintepe) – avoided through expropriation boundary revision.

In addition to the design changes made by the Project team, KGM decided to cancel the Yeşilbayır Connection Road in 2022, which was originally planned to connect the Nakkaş-Başakşehir Motorway to the existing E80 Motorway (Trans European Motorway – TEM) through the Nakkaş Interchange.

- This connection road was originally designed in consideration of a railway logistics centre planned by the Turkish State Railways Authority (TCDD). As this logistic centre is not in the current investment planning of TCDD (cancelled at the feasibility stage), KGM has decided that the Yeşilbayır Connection Road will not be an essential component of the Nakkas-Basaksehir Motorway, taking into particular consideration the existing roads and planned roads providing access between the operational sections of the Northern Marmara Motorway and TEM, which results in traffic projections below the guaranteed traffic volumes according to the Traffic Demand Estimation and Capacity Report prepared for Nakkaş-Başakşehir Motorway Project.

Also, the projections based on the 1/1,000 scale development plans indicate restricted population growth in this region in the next decades, mainly because of the agricultural character and the boundaries of the surrounding protected areas.

6. WHAT ARE THE APPLIED DESIGN STANDARDS?

The Project is subject to the following design standards:

- **KGM Technical Specifications** – these are the underlying obligatory technical standards for all motorways of such type in Turkey.
- **Other Turkish and international design standards and specifications** referred to by KGM in the BOT contract tender documents for the Project; and
- **EC Directive 2008/96/EC[9]– Road infrastructure safety management** requires the establishment and implementation of procedures relating to road safety impact assessments, road safety audits, the management of road network safety and safety inspections by the Member States. This directive applies to roads which are part of the Trans-European Road network, whether they are at the design stage, under construction or in operation.

Nakkaş Otoyol A.Ş. appointed a third-party consultant "J.B. Barry & Partner Consulting Engineers in partnership with BTY Engineering" to conduct a Road Safety Audit as required by the EC Directive. The Road Safety Audit is consisted of four stages and the first phase of the Road Safety Audit (preliminary design phase) was conducted between June – August 2022 and the summary of the audit findings have been defined in ESIA Chapter 3.3.15. The majority of the audit findings and recommendations have been taken into account by the Project design team and integrated into the design.

The independent Road Safety Audits will continue for the remaining three stages (during the detailed design, pre-opening and early operation of the Project, and the findings of the audits will be reviewed and required actions will be implemented by Nakkaş Otoyol A.Ş.

- **Requirements stemming from Turkish environmental and other permits and licenses** for particular Project elements (as discussed above the entire Project is exempted from the Turkish EIA requirements, but other permitting and licensing requirements are nevertheless applicable).
- **Requirements stemming from the international Lender Requirements; and**
- **Additional standards and specifications applied by the Project designers**.

[9] Directive (EU) 2019/1936 of the European Parliament and of the Council of 23 October 2019 amending Directive 2008/96/EC on road infrastructure safety management.

7. WHAT ARE LEGAL AND LENDERS REQUIREMENTS?

7.1 Legal Requirements

The Project is required to comply with relevant Turkish laws and regulations related to environmental and social aspects. The key laws include but not limited to the following:

- Environmental Law (No: 2872).
- Labour Law (No. 4857).
- Occupational Health and Safety Law (Law No. 6331) and associated regulations.
- Expropriation Law (Law No. 2942, amended in 2001 by Law No. 4650).
- Law on Right to Access to Information (No: 4982); and
- Law on the Use of the Right to Petition (No: 3071).

7.2 Lenders Requirements

The ESIA has been developed in accordance with recognised international financing requirements which will be compiled with entire Project life cycle:

- EBRD's Environmental and Social Policy and Performance Requirements (PRs) (2019).
- IFC Performance Standards (PSs) (January 2012).
- AIIB Environmental and Social Standards (ESSs) (amended in November 2022).
- World Bank Group EHS General Guidelines (April 2007).
- IFC Environmental, Health, and Safety (EHS) General Guidelines (April 2007).
- IFC Environmental, Health, and Safety Guidelines for Toll Roads (April 2007).
- IFC/EBRD Worker's Accommodation: Processes and Standards (August 2009).
- International Labour Organization (ILO) Conventions.
- OECD Revised Council Recommendation on Common Approaches on Environment and Officially Supported Credits (April 2016); and
- Equator Principles IV (2020).

7.3 European Union Directives

- EU environmental, social and occupational health and safety directives:
  - EU Directive 2014/52/EU – The EIA Directive.
  - EU Directive 2000/60/EC – The Water Framework Directive.
  - EU Directive 2008/98/EC – The Waste Framework Directive.
  - EU Directive 2006/118/EU – The Groundwater Directive.
  - EU Directive 2009/147/EC – The Birds Directive.
  - EU Directive 92/43/EEC – The Habitats Directive.
  - EU Directive 2008/50/EC – The Ambient Air Quality Directive.
  - EC Directive 2008/96/EC – Road Infrastructure Safety Management Directive; and
  - EU Directive 89/391/EEC – The Occupational Health and Safety Framework Directive.

8. WHAT STAKEHOLDER ENGAGEMENT HAS TAKEN PLACE?

Consultation process and the engagement activities undertaken for the Project to date are detailed in the Stakeholder Engagement Plan (SEP) prepared for the Project. The SEP will be disclosed as a part of the ESIA package which will be made publicly available for further questions, comments, suggestions from stakeholders. The SEP will be updated according to feedback received during the disclosure period and throughout the lifecycle of the Project as necessary. Details of the engagement activities carried out to date can be found in the SEP and other supplementary Project documents such as the Resettlement Action Plan.

A series of consultations were undertaken during the ESIA and RAP studies conducted between January 2021 and February 2023 :

- During the Environmental and Social Scoping phase.
- During the Environmental and Social Impact Assessment phase; and
- During preparation of the Resettlement Action Plan.

Several meetings and interviews were conducted in each phase to inform the key stakeholders about the Project and gather their feedback. Consultation activities included:

- Face-to-face meetings with landowners, land users, vulnerable persons, and other governmental stakeholders, as well as meetings and interviews with women.
- Interviews with commercial enterprises and businesses, affected factories, and local businesses; and
- Phone interviews.
- Correspondences with the civil society institutions

Please note that due to COVID-19 restrictions and lockdown in Turkey in April and June 2021, face-to-face engagements were limited however additional face to face consultations and socio-economic surveys were conducted prior to preparation of Resettlement Action Plan in 2022.

The concerns raised during the initial consultation activities were related to:

- Limited Project information disclosure to potentially affected persons.
- Limited consultations with potentially affected persons.
- Concerns around employment opportunities.
- Concerns around potential effects on local land and livelihoods.
- Concerns around the lack of access rights to agricultural land.
- Inability to access to infrastructure and utilities.
- Lack of employment and low income.
- Concerns related to potential decline in agricultural production or income obtained from the trade of agricultural products.
- Rise of prices related to housing and consumption-goods; and
- Rough roads and transportation difficulties to other villages.

These issues and concerns have been considered and mitigations described throughout the ESIA and in later sections of this NTS. Follow up meetings were conducted to brief affected communities to address their concerns during preparation of the RAP throughout 2022 and 2023.

9. WHICH PROJECT DOCUMENTS WILL BE PUBLICLY DISCLOSED?

The following E&S documents will be disclosed for a period of 60 days, at the locations listed in SEP and further sections of this NTS.

This will be done using the approach outlined in the **SEP**, which is in accordance with Lender's requirements:

- Environmental and Social Impact Assessment (ESIA) (including its Annexes)
- Non-Technical Summary (NTS)
- Stakeholder Engagement Plan (SEP)
- Environmental and Social Management and Monitoring Plan (ESMMP)
- Environmental and Social Action Plan (ESAP)
- Resettlement Action Plan (RAP)
- Guide to Land Acquisition and Compensation (GLAC)
- Community Brochure
- Specific Environmental and Social Management Plans as listed below.
    - Construction Environmental and Social Management Plan (CESMP)
    - Biodiversity Action Plan (BAP)
    - Air Quality and Emission Control Plan
    - Blasting Management Plan
    - Waste Management Plan
    - Wastewater Management Plan
    - Landscape Management Plan
    - Noise and Vibration Management Plan
    - Pollution Prevention Plan
    - Traffic Management Plan
    - Community Health,Safety and Security Plan
    - Emergency Preparedness and Response Plan
    - Cultural Heritage Management Plan
    - Supply Chain Management Plan
    - Gender Action Plan
    - Labor Management Plan
    - Health and Safety Plan

Documents are disclosed in English and in Turkish.

Full ESIA documentation will be made available for stakeholders' review and feedback at the following locations:

- **Municipalities of:**
  - Başakşehir Belediyesi: Kayabaşı Mahallesi, 15 Temmuz Sokak No: 2 Başakşehir Merkez Camii Yanı, Başakşehir / İstanbul
  - Arnavutköy Belediyesi: Taşoluk Mahallesi Kazım Karabekir Caddesi No:88 Arnavutköy / İstanbul
  - Çatalca Belediyesi: Kaleiçi Mahallesi Vezir Ferhatpaşa Caddesi No:50 Çatalca / İstanbul
  - Avcılar Belediyesi :Ambarlı Mah. Naim Süleymanoğlu Sok. No:10 Avcılar/İSTANBUL
- **Offices of Muhtars along the Motorway:**
  - Bahçeşehir 1: Bahçeşehir 1. Kısım, Kemal Sunal Cd., 34488 Başakşehir/İstanbul
  - Şamlar: Şamlar, Mahallesi 23 Nisan Cd. 14D, 34306 Başakşehir/İstanbul
  - Şahintepe: Şahintepe Mah. Kartal Sok. 2 Başakşehir, İstanbul
  - Kayabaşı: Kayabaşı Mah. Rabia Cad. No:5 Başakşehir İstanbul
  - Güvercintepe: Güvercintepe Mah. Gülay Sok. 69 Başakşehir/İstanbul
  - Başak: Başak Mah. Ertuğrul Gazi Cad. No:22/3 Başakşehir, İstanbul
  - Başakşehir: Başakşehir, Başakşehir Mah., Prof. Dr. Necmettin Erbakan Cad. No:25, İstanbul
  - Deliklikaya: Deliklikaya Mah. Kayabaşı Cad. No:13
  - Hadımköy: Hadımköy Mah. Ayasofya Cad. No: 2
  - Hastane: Hadımköy Mah. Ayasofya Cad. No: 2
  - Ömerli: Ömerli Mah. Hadımköy-Ömerli Cad. No: 60
  - Sazlıbosna: Sazlıbosna Mah. Kırım Cad. No:19D
  - Yeşilbayır: Yeşilbayır Mah. Camii Cad. No: 7
  - Nakkaş: Ali Rıza Efendi Cad., Nakkaş Mah., Çatalca, İstanbul
  - Tahtakale: Petrol sk. No: 21 Avcilar/İstanbul

Project Office:

- **Nakkaş Otoyol Yatırım ve İşletme A.Ş. Office:** çankaya Mahallesi Ataturk Bulvarı No: 144-146 Çankaya/ANKARA
- **Nakkaş Otoyol Yatırım ve İşletme A.Ş. website:** www.nakkasotoyolu.com

The NTS, GLAC, Community Brochure will be distributed during disclosure meetings and will be made available in the following local community information centers established for the Project:

Table 9-1 Community Information Centres

District	Location
Başakşehir	Mobile office at Sular Valley Fatih Terim Stadium Stat Park Mall (Address: Başak Mahallesi, Sular Vadisi entrance, Fatih Terim Stadium side, Başakşehir/İstanbul)
Başakşehir	Mobile office at Kayaşehir Fair and Exhibition Area (marketplace) (Address: Kayabaşı Mahallesi Rabia Caddesi, Eflatun Sokak No:1, 34494 Başakşehir/İstanbul)
Başakşehir	Mobile office at activity area behind Başakşehir Millet Coffehouse (Address: Kayabaşı mahallesi, Adnan Menderes Bulvarı Başakşehir/İstanbul)
Başakşehir	Mobile office at Bahçeşehir Center of Culture's entrance (Adres: Bahçeşehir 1. Kısım Mahallesi Seyhan Caddesi Aksu Deresi Sokak No: 3)
Arnavutköy	Hastane Mahallesi, Koruluk sok. No:37/A, Arnavutköy, İstanbul

Following completion of the disclosure period, feedback gathered over a 60-day period will inform the continued development of the Project. If applicable, the disclosure documentation listed above will be updated to capture the stakeholders' feedback gathered throughout the disclosure period. Further information on how to provide feedback is provided in Chapter 12 of this NTS.

A Public Disclosure and consultation report will be prepared at the end of the 60-day disclosure process. The report will describe all the disclosure activities conducted, the stakeholders consulted, the feedback received and how those are addressed in the final ESIA, RAP and in Management plans.

10. WHAT ARE THE BASELINE CONDITIONS, POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS OF THE PROJECT AND PROPOSED MITIGATION MEASURES?

10.1 Introduction

Nakkaş Otoyol A.Ş. appointed an international independent consultancy firm ERM GmbH (ERM) to conduct ESIA studies for the Project to assess the potential impacts of the Project construction and operation on environmental and social conditions, and explaining how the Project has been designed and how it will be implemented to avoid or minimize the adverse impacts and to maximize the benefits.

10.2 Baseline Conditions, Potential Impacts and Mitigation Measures

The majority of E&S risks and impacts are identified by design and route selection as defined in Chapter 5 of this NTS, and based on the existing planning, these impacts are expected during construction and operation.

Whilst the ESIA Report provides a detailed description of the environmental and social-economic baseline of the project route and the Project's potential impacts and mitigation measures identified by independent consultants.

This chapter presents the summary of the E&S baseline conditions of the Project location and the Tables (Table 10-1 to Table 10-16) provide a summary of the key potential E&S impacts and mitigation measures planned to avoid, prevent, minimize, remedy or offset environmental and social impacts during construction and operation stages of the Project.

The mitigation measures are then also separately elaborated in the Environmental and Social Management and Monitoring Plan (ESMMP) and in specific E&S Management Plans spelling out exactly which further actions will be taken by Nakkaş Otoyol A.Ş. (and the Contractors) for avoidance and mitigation of potential impacts of Project construction and operations. Nakkaş Otoyol A.Ş. and its Contractors are committed to undertake the planned measures, and independent consultants will monitor the implementation and the progress toward achieving the mitigation goals.

10.3 Air Quality

10.3.1 Baseline Conditions

Baseline monitoring for NO_2, PM_{10} and $PM_{2.5}$ was conducted as part of the ESIA assignment along the length of the Motorway at 12 locations. The results indicated that:

- The NO_2 Annual Mean baseline values can be considered **acceptable** for the entire route, as none of the sampling points exceed the Air Quality Standard [10] (AQS) of 40µg/m^3. Only at two measurement locations the values were very close to the standards: a) one site located very close to the existing E80 Motorway and b) nearby the built-up area of Ömerli;
- The PM_{10} baseline exceeds the AQS at several location. This is not unexpected, given that natural sources of emissions such as airborne dust from open land will have a considerable influence on the baseline; and
- The $PM_{2.5}$ standard is not exceeded as $PM_{2.5}$ is more associated with combustion sources.

[10] Turkish Air Quality Assessment and Management Regulation (HKDYY) numbered 26898.

10.3.2 Potential Impacts and Mitigation Measures

Table 10-1 Impacts on Air Quality and Mitigation Measures

Construction Phase		Operation Phase	
Potential Impacts	**Mitigation Measures**	**Potential Impacts**	**Mitigation Measures**
Impacts on air quality during the construction will likely be caused by construction vehicle traffic and dust from activities such as: ▪ operating on unpaved roads. ▪ demolitions. ▪ earthworks; and ▪ dusty material-handling.	▪ An Air Quality and Emission Control Plan has been developed and will be implemented. ▪ Regular dust suppression will be conducted using water trucks to prevent dust formation. ▪ All dust and air quality complaints will be recorded using grievance mechanism and root causes will be identified. Corrective action will be taken to reduce emissions in a timely manner. ▪ Daily on-site and off-site inspection will be carried out where receptors (including roads) are nearby, to monitor dust. ▪ Reduced speed limits will be implemented on unsurfaced haul roads and work areas will be imposed and signposted.	▪ No major increase in the air quality standards values is foreseen throughout the Project route for NO2 annual mean. Only on the eastern part of the road alignment (close to Ömerli and E80 motorway) there is a risk that at some sensitive receptors the air quality standards may be approached and exceeded. ▪ The PM10 baseline is anticipated to be degraded as the air quality standards is likely to be exceeded throughout the Project study area, exceeding the lower threshold of 10% at some locations. ▪ The impacts arise toward the eastern end of the Project for PM2.5, which coincides with two locations where the baseline was close to air quality standards. ▪ The PM10 baseline is anticipated to be degraded as the air quality standards is likely to be exceeded throughout the Project study area, exceeding the lower threshold of 10% at some locations.	▪ Continuous monitoring of emissions will be carried out particularly roadside sensitive receptors where impacts are predicted to be major. ▪ Vehicle fleet composition and associated emissions in Turkey will change substantially in the next two decades. Electric vehicles will become more prevalent, hydrogen technology may emerge, and climate change goals will also drive vehicle fleet composition change. However, if the monitoring emissions indicate negative impacts on public health, the impact on the residents will be evaluated and mitigation measures will be implemented in line with Project RAP requirements.

10.4 Climate

10.4.1 Baseline Conditions

The Project area is generally classified as Hot-summer Mediterranean Climate. Typical features of the climate type are:

- Dry summers with average monthly temperatures in excess of 22.0 °C during its warmest month with less than 30 mm of precipitation; and
- Wet winters with an average in the coldest month between 18 and −3 °C and at least three times as much precipitation in the wettest month of winter as in the driest month of summer.

In general, Turkey has been subject to several types of extreme weather events in recent years stemming from a combination of increasing average temperatures and more frequent drought conditions. For example, a heat wave in the Eastern Mediterranean during the summer of 2021 (including the hottest month of May in Turkey in past 50 years) supported the spread of several 100 wildfires across southern Turkey destroying some 1700 km² of forests[11].

Whilst the Project area in Istanbul did not suffer directly from the 2021 wildfires, the area is subject to wildfire risks and several other kinds of natural hazards.

Some sections of the Motorway are located in close proximity (less than 1km) of water courses. For instance, the RoW runs in certain sections along the Küçükçekmece and Sazlıdere dam lake. Nevertheless, in the Project region the risk of flash flooding is considered medium, whilst river flood and urban flood are considered low. And given the distance of several kilometres to the Marmara Sea, the risk of coastal flooding is very low/negligible. The Istanbul area has potentially rainfall patterns, terrain slope, geology, soil, land cover and earthquakes that make localized landslides (and resulting flash-flooding) an infrequent hazard phenomenon (considered as a medium hazard).

[11] https://en.wikipedia.org/wiki/2021_Turkey_wildfires

10.4.2 Potential Impacts and Mitigation Measures

Table 10-2 Climate Change Impacts and Mitigation Measures

Construction Phase		Operation Phase	
Potential Impacts	**Mitigation Measures**	**Potential Impacts**	**Mitigation Measures**
Climate change hazards identified in the Project region are potential wildfire, increased heat, landslide, and flash flooding as well as water scarcity. The potential impacts during construction are: ▪ Increased heat stress on workers (e.g., risk of heat-stroke), requiring more frequent breaks for cool-down and taking fluids etc. ▪ Disruption of construction and operation of the highway due to life threating risks of wildfires. ▪ Fire damage to construction equipment and later operational assets. ▪ Physical risk to construction sites, through flash flooding and landslides.	▪ Emergency Preparedness and Response Plan (EPRP) is in place with a set of specific pre-established procedures for coordination, alert, mobilisation and response to the occurrence or imminence of a particular event, such as natural hazards as for earthquakes, wildfires, flooding and storm surge, landslides. ▪ Work changes will be considered to lower the risk of heat stress as per Health and Safety Plan. ▪ Construction of all drainage structures (i.e., culverts, sediment basins, and catch drains) will be carried out as early as possible. ▪ Identified existing drainage and irrigation channels will be protected using appropriate measures such as sediment barriers, grassed areas, swale drains, and buffer strips, for erosion and sediment control. ▪ Weekly monitoring and maintenance will be carried out at drainage channels.	▪ Potential physical-structural impacts to sensitive materials, e.g., cracking, buckling, or melting of road surface asphalt. ▪ Some sections of the proposed Motorway are in close proximity of water courses. Flash flooding may cause physical risk to buildings and other operational road infrastructure, through flash flooding and landslides.	▪ River bridges/viaducts, culverts, derivation channels and proper drainage system are designed according to Hydraulic Hydrological Calculation Report and meteorological data of The Directorate General of Meteorology. ▪ Road drainage and stormwater design are prepared according to KGM (General Directorate of Highways) drainage criteria code considering 10,100- and 500-years precipitation recurrence intensity and critical precipitation duration map prepared by State Hydraulic Works (DSI). ▪ Enhancement of road segment resistance will be considered, e.g., on embankments, creating deeper road foundations on slopes, enhancing drainage structures. ▪ Consideration of the adaptation measures listed in Climate Resilience study prepared by BTY Engineering during design.

10.5 Geology, Geohazards and Soil

10.5.1 Baseline Conditions

The geological setting of the Project consists of sedimentary rocks with young units which are typically located on the west side of Istanbul and are called "Cover Rocks" by some researchers. Although no landslide section can be considered to be present as the critical section on the route, there are potential and active highland regions in parts of it, thus any high-fill productions will be avoided in these sections. Finally, soil samples were collected at ten different locations along the route and tested for their quality. Analysis results showed that pollution levels were not exceeded in any location.

The Project area is located between Nakkaş-Sazlıdere-Başakşehir-Bahçeşehir regions on the European side of the İstanbul area. This area is one of the most seismically active areas of the region, where the North Anatolian Fault (NAF) passes around 20 km south of İstanbul. The whole Motorway will be built to the most recent seismic standards, ensuring that the bridge and viaducts will continue to function normally during an earthquake and that regular traffic flow will resume as soon as possible. Additionally, its distance from dense city centres ensures safety conditions, with no debris or damages that may disrupt traffic flows[12].

The Motorway and the cable stayed bridge have been designed to meet current Turkish and international earthquake codes and regulations as well as the American Society of State Highway and Transportation Officials (AASHTO) Load and Resistance Factor Design (LRFD). Independent Technical Consultants also carried out design safety reviews as a part of Project design process.

According to Steer (2023) the Sazlıdere Bridge is designed for a damage control performance level based on an earthquake level with a 2% probability of occurrence in the 50-year design life as specified for the bridge (return period of 2475 years).

[12] Steer, 2023: How the new Nakkaş – Başakşehir highway is enhancing the Istanbul Road network resilience

10.5.2 Potential Impacts and Mitigation Measures

Table 10-3 Impacts on Geology, Geohazards and Soils

Construction Phase		Operation Phase	
Potential Impacts	**Mitigation Measures**	**Potential Impacts**	**Mitigation Measures**
The impacts assessment study indicated that the potential consequences of the Project are: ▪ Seismic Risks ▪ Stability Risks and Soil Erosion ▪ Contaminated Land ▪ Contaminated Spills and Runoff	▪ Earthquake risks during construction is considered both at construction stage calculations (including campsites) and scaffolding and formwork stability calculations to minimize the health and safety risks. ▪ Measures to prevent erosion from excavated areas and soil storage heaps will be implemented. ▪ The area of soil exposure and disturbance will be limited to the construction site as much as possible. ▪ The topsoil and subsoil will not be mixed during the earthworks. Stripped topsoil will be stored and preserved to the maximum extent possible to be re-used during re-vegetation of excavated areas, cut and embankment areas. ▪ Sediments will be prevented from flowing into surface waters and drainage channels by localized control measures (e.g., sediment fences, check dams, or fabric barriers, sediment basins), contouring to optimize slope angle and steepness will be appropriated.	▪ Although no landslide section can be considered to be present as the critical section on the route, there are potential and active highland regions in the part of the route between km: 45 +000 - 50 +000 in the Deliklikaya location. ▪ Earthquakes of large magnitude are expected in İstanbul province due to the presence of an active fault system in the Marmara Sea.	▪ All structures will be designed according to Turkish and international design and engineering standards requiring specific structural characteristics. ▪ The whole Motorway is built to the most recent seismic standards, ensuring that the bridge and viaducts will continue to function normally during an earthquake and that regular traffic flow will resume as soon as possible. ▪ Sazlıdere Bridge is designed for a damage control performance level based on an earthquake level with probability of occurrence in the 50-year design life as specified for the bridge (return period of 2475 years). ▪ Several structures will be developed as part of the Motorway (road base, viaducts, embankment supports, bridge, etc.) and these will all be designed according to Turkish and international design standards requiring specific structural characteristics related to slopes of cuts and fills, footing sizes of viaducts and many other considerations. ▪ Retaining walls and Mechanically Stabilized Earth (MSE) walls will be built in sections of the motorway to ensure soil and slope stability and the prevention of rock fall.

10.6 Aggregate Resources and Waste

10.6.1 Baseline Conditions

For the construction of the Motorway and all related infrastructure, significant quantities of various typical construction materials will be needed; these will include concrete, prefabricated segments (e.g., retaining walls), steel, aggregates, and asphalt. In addition, large volumes of soil/topsoil will need to be excavated for the motorway, which will be partly re-used as fill material. Wherever possible, these materials will be sourced locally.

Material aggregate (manufactured sand, gravel, and crushed stone) for concrete and asphalt, sub-base and fill will be supplied from third party suppliers in the region based on the availability of material, quality of materials, technical feasibility, environmental and social considerations, and commercial viability. Suitable quarries operated by third parties have been identified. Nakkaş Otoyol A.Ş will ensure that the EPC Contractor procures the aggregate from licensed and authorized sites or sources.

Where new quarries need to be opened only for Project needs, Nakkaş Otoyol A.Ş will ensure that the EPC Contractor will obtain the necessary permits and licenses and conduct any necessary ESIAs in line with Turkish requirements and Lenders' standards prior to the operation of the quarries.

10.6.2 Potential Impacts and Mitigation Measures

Table 10-4 Aggregate Resources and Waste Related Impacts and Mitigation Measures

Construction Phase		Operation Phase	
Potential Impacts	**Mitigation Measures**	**Potential Impacts**	**Mitigation Measures**
Potential impacts associated with material supply and waste management during construction will include: ▪ Potential impacts related to storage of surplus excavated material depending on the area to be designated for storage. ▪ Risk of destruction of habitats and vegetation during earthworks and resource extraction. ▪ Additional load to the existing waste management infrastructure (e.g., sanitary landfills, licensed waste recycling facilities) for the management of hazardous and non-hazardous wastes to be generated during construction. ▪ Potential to cause soil, surface water and groundwater contamination if wastes (including wastewater) are not handled and disposed of in an appropriate manner.	▪ A Waste Management Plan has been developed and will be implemented. ▪ Excavated soils will be re-used in the Project area as far as possible and seeking alternative uses for surplus spoil where practicable (e.g., landscaping and earthworks for other projects) to minimize the requirements for off-site disposal. ▪ Construction staff will be trained to ensure safe management of all types of waste preventing harm to themselves, the environment, and the public. ▪ A waste hierarchy will be applied to avoid, segregate, re-use, recycle wastes as much as possible and as of last option safely dispose of wastes. ▪ Wastes will be managed (storage, transportation, and disposal) according to international best practices (e.g., IFC EHS General Guidelines). ▪ Wastes will be transported and disposed at licensed waste management facilities as listed in ESIA. A due diligence will be undertaken to understand if the sites are materially compliant with Project requirements. ▪ Whenever possible, general preference will be given to using existing (fully licensed) quarries over opening new quarries. A due diligence will be conducted for existing quarries to ensure permits are valid and operations are in compliance with national regulations and international guidelines. Relevant suggestions will be made to improve current standards of the quarry.	Potential impacts associated with management during construction will include: ▪ Additional load to the existing waste management infrastructure (e.g., sanitary landfills, licensed waste recycling facilities) for the management of hazardous and non-hazardous wastes to be generated during operation. ▪ Potential to cause soil, surface water and groundwater contamination if wastes (including wastewater) are not handled and disposed of in an appropriate manner. ▪ Community Health and Safety impacts during transportation of the wastes.	▪ A waste hierarchy will be applied to avoid, segregate, re-use, recycle wastes as much as possible and as of last option safely dispose of wastes. ▪ Wastes will be managed (storage, transportation, and disposal) according to international best practices (e.g., IFC EHS General Guidelines). ▪ Waste management will be monitored in line with Operational Waste Management Plan. ▪ When designing the waste transport routes, the O&M Contractor will consider community health and safety issues to minimize the impacts from passing through populated areas. ▪ To ensure community safety, all truck drivers will receive internal driver safety training which includes safe driving through small villages.

10.7 Surface and Groundwaters

10.7.1 Baseline Conditions

The Project passes just immediately to the south of Sazlıdere Dam via a bridge over Sazlıdere Creek. The alignment passes approximately 6 km away from the Küçükçekmece Lake.

A flood risk assessment was prepared as a part of the ESIA studies. The goal of the flood risk assessment was to identify the risks regarding the flood storage capacity causing an increased risk of flooding elsewhere, and the hydraulic structures such as bridges, culverts, and diversion channels.

The Sazlıdere river downstream of the dam is protected and designed with a 60 meters width. Therefore, the river flows freely without restriction by the viaduct and its piers.

Sazlıdere Dam has a length of 20 km in an east-west direction and a width of 9 km in a north-south direction. The total drainage area of the Sazlıdere Basin is 165 km^2 and includes agricultural lands and pastures, residential and industrial areas, forested areas, and dam areas. The average flow rate of Sazlıdere stream is 1.55 m^3/s downstream of the lake. The dam provides 50 hm^3 of drinking water annually. Domestic and agricultural sources of pollution are the dominant sources of pollution affecting the water quality of the lake. As a result of population growth and structuring, the water quality of the Sazlıdere Basin has deteriorated.

10.7.2 Potential Impacts and Mitigation Measures

Table 10-5 Impacts on Surface and Groundwater

Construction Phase		Operation Phase	
Potential Impacts	**Mitigation Measures**	**Potential Impacts**	**Mitigation Measures**
Potential impacts on surface and groundwater include: ▪ Changes to the hydrology-hydrogeology or quality of the water environment from physical intervention and intentional and accidental discharges during construction. ▪ The Project may increase local flood risk by altering the local topography and hydrological regime. Project structures can result in the removal of flood storage capacity causing an increased risk of flooding elsewhere. ▪ If a construction site or a refuelling and storage depot is located near a surface water body, the surface water is endangered by the spill of hazardous substances. ▪ Other sources of contamination during the construction phase arise from the use of bitumen compounds in the wearing course of the road and materials used for waterproofing of concrete surfaces. ▪ Waste from construction activities and wastewater generation from construction accommodations may impact the surface water quality.	▪ A Wastewater Management Plan and a Pollution Prevention Plan have been developed and will be implemented. ▪ Construction of all drainage structures (i.e., culverts, sediment basins, and catch drains) will be carried out as early as possible. ▪ Identified existing drainage and irrigation channels will be protected using appropriate measures such as sediment barriers, grassed areas, swale drains, and buffer strips, for erosion and sediment control. ▪ SPV will ensure that all wastewater discharges must comply with relevant Turkish legal requirements (Water Pollution Control Regulation 2004, No. 25687) and Project Standards before disposal, and relevant permits will be in place. ▪ Drainage from excavations will be collected and settled to remove suspended materials before discharge by required permits. ▪ Water quality will be monitored at upstream and downstream of the river before and after the construction activities are completed. ▪ No fuelling of vehicles or equipment will take place within excavated areas and/or within 50 meters of water resources, if practically feasible.	▪ Impacts on the water environment due to drainage during operation of the Motorway including at bridges, underpasses, viaducts, and culverts. ▪ Development of the Motorway will lead to an increase in the impermeable surface area and the rate of surface water runoff. High stormwater flow rates can lead to erosion, habitat deterioration, and flooding. ▪ The Project may increase local flood risk by altering the local topography and hydrological regime. Project structures can result in the removal of flood storage capacity causing an increased risk of flooding elsewhere.	▪ River bridges/viaducts, culverts, derivation channels and proper drainage system are designed according to Hydraulic Hydrological Calculation Report and meteorological data of The Directorate General of Meteorology. ▪ Road drainage and stormwater design are prepared according to KGM (General Directorate of Highways) drainage criteria code considering 10,100- and 500-years precipitation recurrence intensity and critical precipitation duration map prepared by State Hydraulic Works (DSI). ▪ A spillage risk assessment will be undertaken as part of the development of the Emergency Preparedness and Response Plan (EPRP) for operations phase. EPR team will be trained about roles and responsibilities and regular drills will be conducted. ▪ For fertilizing the landscaping in the Right of Way, only natural fertilizer will be used as required in KGM's Technical Specification for landscaping of Motorways, published in 2008. If pest infections are detected the competent authority needs to approve the respective pesticide/biocide for pest control.

10.8 Noise

10.8.1 Baseline Conditions

Baseline noise levels were measured in 15 different locations along the Project route between the 17th and 23rd of March 2021. Particular importance was given to noise levels nearby sensitive receptors such as residential areas, schools, hospitals, and parks. Measurements were taken for a continuous period of 48 hours at each location, to obtain day, evening and nighttime noise levels. When compared with legal threshold limits, noise levels were identified to be generally within limits. However, the following 4 locations characterized by high density residential developments, noise levels were found to be above the allowed limits:

- Km 55+600: Kayaşehir Millet Bahçesi
- Km 57+000: City Hospital
- Km 57+400: İkitelli 2 Neighbourhood
- Km 58+600: Close to Başaksehir Intersection

10.8.2 Potential Impacts and Mitigation Measures

Table 10-6 Noise Impacts and Mitigation Measures

Construction Phase		Operation Phase	
Potential Impacts	**Mitigation Measures**	**Potential Impacts**	**Mitigation Measures**
Construction activities will have impacts on the sensitive receptors such as residents, schools, mosques, schools located close to the Motorway corridor. The noise impacts will be generated by the following: ▪ Noise impacts can be caused by noise emissions from construction equipment, construction vehicles carrying materials and spoil to and from the locations where work is taking place along the motorway. ▪ Construction of the motorway will progress along the route and will result in a noise impact on a short-term basis as the construction approaches and moves past each settlement. ▪ Impacts from the main and satellite sites for construction material preparation, structures, and quarries, would affect receptors over a relatively small area, but for a longer period during the temporary construction phase.	▪ A Noise and Vibration Management Plan has been developed and will be implemented. ▪ Frequent noise monitoring will be conducted close to the sensitive receptors to ensure that noise levels are not exceeded. ▪ Noise levels from longer term construction activities (longer than 10 days) will be restricted to 55 dB LAeq during the evening, and 50 dB LAeq at night as far as is practicable, or to other standards that have been agreed with the local authority. ▪ Restricting the noise at nearby buildings from construction to 70 dB Leq during the evening and 65 dB Leq at night as far as practicable for short term activities lasting not more than 10 days. ▪ Where practicable noisy equipment will be sited as far away as possible from receptors. Throttle settings will be reduced, and equipment and plant turned off, when not being used. ▪ Slow driving rules in (e.g., 30km/h), particularly near sensitive use areas which will be identified (at least one month) prior to start of construction related activities. ▪ Limiting hours of operation for specific equipment or operations (e.g., trucks or machines operating in or passing through community areas). ▪ Noise related grievances will be closely monitored, assessed and adaptive mitigations will be implemented.	Noise impacts caused by the operation of the Motorway were assessed by using forecasted traffic flow data for the year 2040. The assessment considered absolute levels and the change in baseline noise, to establish the sections of the road where mitigation measures are necessary. Despite these mitigation measures, in various sections of the road noise modelling results indicated that noise levels would be higher than the allowed limits. This especially applies to two households next to Sazlıdere bridge.	▪ Frequent noise monitoring will be conducted in locations where noise modelling resulted in major impacts. ▪ Based on the monitoring results, type and height of the noise barriers will be discussed with noise barrier supplier and noise barriers will be installed. ▪ Noise related grievances will be closely monitored, assessed and adaptive mitigations will be implemented. ▪ Despite these mitigation measures, in various sections of the road noise modelling results indicated that noise levels would be higher than the allowed limits. This applies to two households next to Sazlıdere bridge. The complaints during operations will be managed through the Project's Grievance Mechanism. These households will be assisted for temporary or if needed resettlement as per RAP requirements.

Table 10-7 Blasting and Vibration Impacts and Mitigation Measures

Construction Phase		Operation Phase	
Potential Impacts	**Mitigation Measures**	**Potential Impacts**	**Mitigation Measures**
Typically, the main source of vibration impacts from the Motorway will solely be during the construction stage, making it the focus for the assessment in this chapter. ▪ Vibration impacts during construction arise from piling, operation of vibratory equipment (e.g., compaction) and blasting. ▪ Vibration has the potential to result in environmental and social impacts in the form of disturbance to the occupiers of dwellings and other noise sensitive buildings that are very close to the alignment, and in extreme situations risk of damage to the structure of adjacent properties. ▪ If driven piling is necessary for structures (e.g., bridges), these activities are likely to result in effects over longer periods of time.	▪ A Blasting Management Plan and Noise and Vibration Management Plan have been developed and will be implemented. ▪ The bored piling method will be preferred instead of driven piling method which would create disturbance and vibration on the ground. The produced piles will work as friction piles, and only drilling will be done on weak, loose ground without entering the solid rock which will avoid vibration. ▪ Blasting will be conducted according to a consistent timetable agreed with the stakeholders who may be affected. If changes to the blasting timetable occur, nearby communities will be immediately informed of those changes. ▪ Residents of the local communities will receive a written notification at least 30 days in advance of a nearby blasting as well as two (2) more written reminders. ▪ Blasting schedules will be distributed to the users of the grazing areas, residents and local governments including the name, address and telephone number of the operator; an identification of the specific areas in which blasting will take place; the dates and time periods when explosives are to be detonated; the methods to be used to control access to the blasting areas; and the type of patterns of audible warning and all-clear signals to be used before and after blasting. ▪ Specific warning devices (e.g., horn signals and flashing lights) and procedures will be implemented before each blasting activity to alert all workers and third parties in the surrounding areas (e.g., local communities). ▪ Structural building assessments will be carried out by competent independent experts at the locations where the buildings are within 50 m of significant sources of vibration and blasting prior to the activities at these areas. A documentation will be prepared for each of the identified buildings, which will include photographs of buildings sensitive to vibration and results of the sensitivity evaluation. ▪ In case of a third-party claim on damage to buildings, Nakkaş Otoyol will hire a third- party expert (i.e. Technical department of a reputable university) to assess the causes of the damage and develop mitigation measures to be agreed with the complainant (i.e., restoration or compensation etc if the damage is confirmed); and ▪ If there is disagreement between building owners and the Nakkaş Otoyol with regards to the cause for the damage and or on the mitigation measure suggested and implemented by the project, the third -party expert will assess such claims and suggested mitigation measures to provide an expert opinion. In case of failure to reach to a consensus with the complainant (s)	Blasting and vibration related impacts are applicable for construction phase, therefore relevant impacts are not applicable for operation phase.	

Construction Phase		Operation Phase	
Potential Impacts	**Mitigation Measures**	**Potential Impacts**	**Mitigation Measures**
	based on the third-party expert report, then complainant(s) have full legal rights to apply to non-judicial or judicial mechanisms available in the country for the resolution of their complaint in line with the Grievance Mechanism. ▪ Nakkaş Otoyol and EPC will prepare a plan for cases where houses are or can be damaged due to blasting/vibration, i.e. a building evacuation procedure; and these people will be assisted for temporary or permanent resettlement as per RAP principles. The damage to houses and effectiveness of restoration shall be investigated and confirmed by third party experts. ▪ Community awareness and emergency preparedness and response planning will be undertaken, including control of third-party access to blasting areas (including animal grazing activities). ▪ Vibration on commencement of relevant construction activities will be monitored to ensure that the Turkish requirements are met. If the standards are exceeded additional measures will be taken to reduce vibration and if necessary, altering the methods of working to use equipment that creates lower levels of vibration.		

10.9 Landscape and Visuals

10.9.1 Baseline Conditions

The Project route and overhead transmission lines (OHTL) that are affected by the Project passes through the western part of Istanbul via Başakşehir, Arnavutköy, Avcılar and Çatalca districts. The alignment includes several landscape characters, as summarized below:

- Industrial areas.
- Vacant land and agricultural areas; and
- Mass housing with public parks.

10.9.2 Potential Impacts and Mitigation Measures

Table 10-8 Impacts on Landscape and Visuals and Mitigation Measures

Construction Phase		Operation Phase	
Potential Impacts	**Mitigation Measures**	**Potential Impacts**	**Mitigation Measures**
The Motorway and bridge crossing are expected to cause temporary, short term significant impacts on the local landscape and on visual amenity.	▪ A Landscape Management Plan has been developed and will be implemented. ▪ Sensitive vegetation to be retained will be fenced or sign-posted before work commences on site, and as much vegetation as possible will be retained to maintain the integrity of the landscape and the visual screening already present. ▪ Temporary Working areas will be as small as practicable, and areas chosen for the storage of materials will avoid areas of high visual impact to nearby residents/viewers. The areas outside of the Project's expropriated construction borders will not be occupied. ▪ The construction site will only be floodlit when health and safety require and during night works, so the impacts of temporary lighting upon the nighttime landscape and upon views are kept to a minimum. ▪ Site compounds and other large areas required for construction will be sited in locations where effects on the local landscape and on viewers can be minimised to the extent possible. ▪ Temporary hoardings (site fences) will be introduced to visually screen areas of intense construction activity in close vicinity of visually sensitive areas where moving plant, machinery and vehicles may be a source of visual impact.	The Motorway and bridge crossing are expected to cause permanent, and long-term impacts especially between the following locations: ▪ KM 36+000 – KM 40+000 due to the presence of the vacant agricultural lands ▪ KM 45+000 – KM 54+000 due to the presence of Sazlıdere Dam Reservoir and the vacant agricultural lands ▪ KM 56+000 – KM 58+000 – Residential areas including Kayaşehir Millet Bahçesi (public park) ▪ KM 58+000 – KM 59+000 – Residential areas including Sular Valley (Sular Vadisi – public park) Displacement of Overhead Transmission Lines have visual impacts between the following locations: ▪ Km 54+000 – Km 59+00	▪ Planting mixes will be selected using native species and planting will be set out to establish new and enhance existing native habitats. ▪ Planting will be introduced to restore or compensate for lost habitats. ▪ Landscape design treatment will seek to restore regional identity where possible by enhancing landscape character. ▪ Opportunities to provide views out from the Motorway to the surrounding landscape will be taken into account in the landscape design. Breaks in Motorway planting will provide for views out whilst mitigating nearby residents of settlements from adverse visual impacts. ▪ Engagement with PAPs (who have already been engaged during expropriation process) will continue in line with the SEP. Any compensation-related or other grievances from PAPs with regard to landscape and visual impacts will be managed through Project's Grievance Mechanism.

10.10 Biodiversity

10.10.1 Baseline Conditions

The proposed route runs through two internationally recognised areas (shown in Figure 10-1 Internationally Recognised Areas in the Study Area).

These areas are not designated by national legislation but are considered to contain sensitive habitats, which are ecologically important:

- Küçükçekmece Basin – Important Bird Area (IBA)[13] and Key Biodiversity Area (KBA) [14] – 11,715 ha. The site is a natural brackish lagoon and qualifies as an IBA for holding in excess of 20,000 water birds in winter, the winter great cormorant (*Phalacrocorax carbo*) and the passage pygmy cormorant (*Microcarbo pygmaeus*); and
- West Istanbul Grasslands – Important Plant Area (IPA)[15] – 14,900 ha. The IPA comprises the remaining fragments of limestone grassland, rock outcrops and dry acid heath grassland, situated on the low hills north-west of İstanbul. The site hosts 19 threatened flora species, seven of which are endemic to the area.

The Internationally Recognized Areas are heavily degraded, and it is probable that they no longer support biodiversity which qualifies as Critical Habitat (CH). The study area partly overlaps with the eastern end of the West Istanbul Grasslands IPA. This part of the IPA is already heavily impacted by urban development through buildings and infrastructure. The citation for this IPA notes many species for which it was designated are no longer present in this Internationally Recognized Area. It is therefore not considered to be able to support populations of its characterizing plant species[16] anymore. However, conservatively the IPA is considered to be CH at this time based purely on its designation as such. A similar finding has been determined for the Küçükçekmece Basin IBA/KBA.

The baseline identified the following number of significant (of Medium or High value) ecological receptors:

- The three habitats water-fringing reedbeds and tall helophytes other than canes (C3.2), Moeso-Thracian mesophile hay meadows (E2.252), and Mediterranean riparian woodland (G1.3) are not considered to be in suitable condition or representative, natural examples which would designate them as Resolution 4 habitats of the Bern Convention. However, as regionally endemic and CR flora are recorded on site, the overall habitat sensitivity was categorized as High as per the matric.
- Three endemic plant species (High value) and one rare species (Medium value), Including Critically Endangered and Vulnerable species.
- Birds - 33 species of Medium value recorded within the AoI are listed on the Revised Annex I of Resolution 6 of the BERN Convention. This includes the Eurasian Turtle Dove (Global IUCN VU) and the Lapwing (Global IUCN NT).
- Amphibians – six species of High value, all of which are categorised as Least Concern but are included on the Revised Annex I of Resolution 6 of the Bern Convention and Annex II and/or IV of the Habitats Directive.
- Reptiles - 19 species (18 High value and one Medium value), including the European pond turtle (Global IUCN NT) and the Mediterranean Spur-thighed Tortoise (Global IUCN VU);

[13] Bird Life International (2021). *Important Bird Areas factsheet: Küçükçekmece Lake.* Downloaded from http://www.birdlife.org on 25/05/2021.

[14] Key Biodiversity Areas Partnership (2020) *Key Biodiversity Areas factsheet: Küçükçekmece Basin*. Downloaded from http://www.keybiodiveristyareas.org/ on 25/05/2021

[15] Plant Life International (2021) *Important Plant Area – West Istanbul Grasslands*. Last accessed 27/05/2021 Plant Life Important Plant Areas (plantlifeipa.org)

[16] 122turkiyeninonemlibitki_alanlar.pdf (panda.org). Last viewed on 24.06.2022.

- Mammals - 36 species (34 High value and two Medium value), including 30 bat species (nine of which were directly observed), the European souslik (Global IUCN EN), the Eurasian otter (Global IUCN NT) and the marbled polecat (Global IUCN VU); and
- Fish - two species of Medium value, including the common carp, considered to be Vulnerable by the IUCN Global Red List.

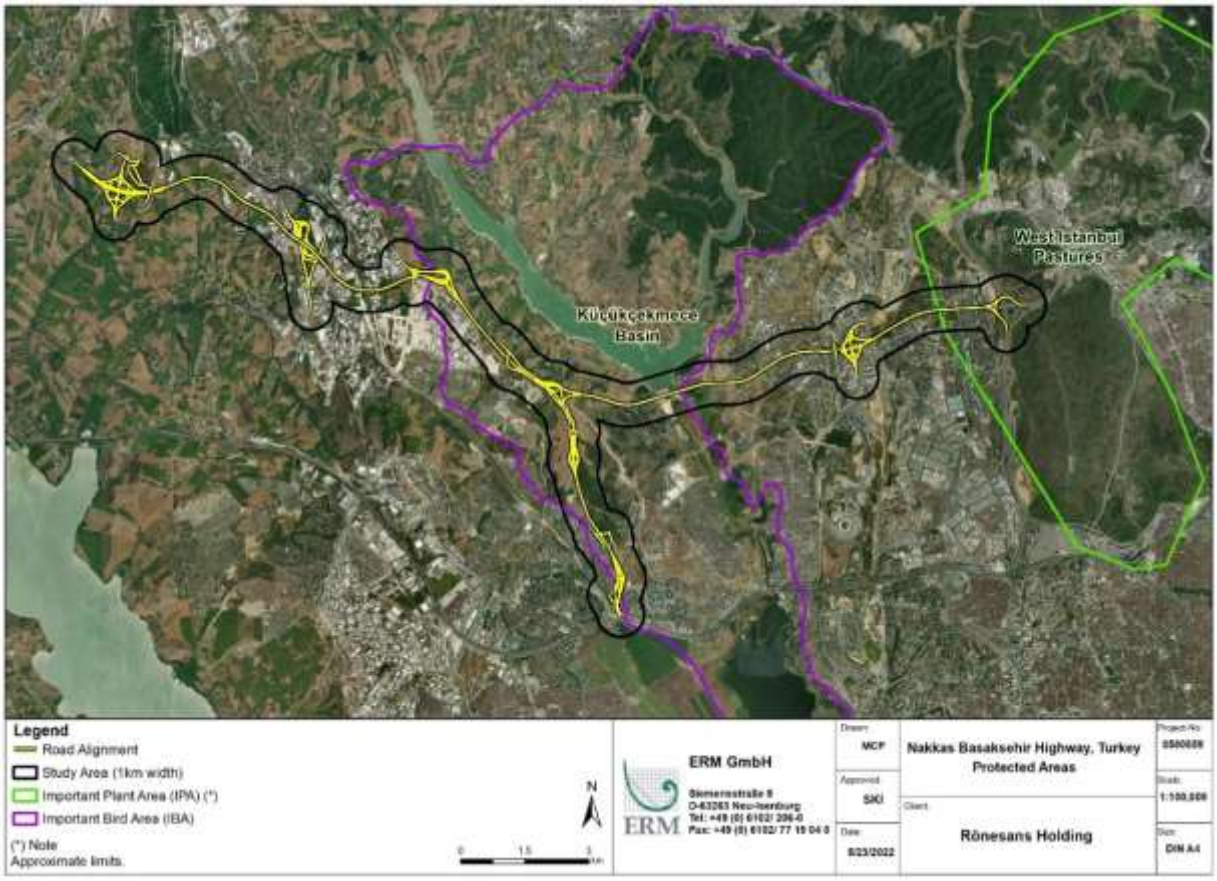


Figure 10-1 Internationally Recognised Areas in the Study Area

10.10.2 Potential Impacts and Mitigation Measures

Table 10-9 Biodiversity Impacts and Mitigation Measures

Construction Phase		Operation Phase	
Potential Impacts	**Mitigation Measures**	**Potential Impacts**	**Mitigation Measures**
Potential Impacts of construction on biodiversity will comprise the following: ▪ Habitat loss, degradation, and fragmentation within the Project Area. ▪ Species loss – flora mortality from vegetation clearance. ▪ Species loss – fauna mortality due to direct loss or injury. ▪ Disturbance and displacement of fauna. ▪ Alteration of hydrological regime and pollution; and ▪ Invasive species.	▪ Pre-construction surveys will be undertaken before clearing areas and relocate animals where possible. ▪ Sensitive areas that can be avoided will be identified for the temporary construction facilities to minimise habitat loss and disturbance. ▪ Phased development and restoration will be followed at the construction areas. After the activity is completed, areas of previously natural habitat shall be restored and planted with plants suitable for the region's habitat. ▪ Habitat will be restored and recreated where possible to mitigate habitat loss and degradation, including the replacement of pond/ditch habitats for amphibians. Rehabilitated habitats must be designed to support a self-sustaining, diverse vegetation community; and ▪ A Biodiversity Action Plan (BAP) was developed to define further actions and mitigation measures.	Operational effects on biodiversity will comprise the following: ▪ Collision mortality. ▪ Disturbance and displacement of fauna species. ▪ Air pollution (including dust). ▪ Water pollution. ▪ Severance and barrier effects.	The following mitigation measures are to be implemented taking into account the risk of collision of birds with the bridge. ▪ Bridge cables and support structures should be flood-lit to increase their visibility at night. ▪ No power lines should be suspended above the bridge deck. ▪ Standard highway lighting will increase visibility of the top of the deck to birds that fly over the bridge at night. ▪ Undersurface of the bridge should be lit to increase visibility of the piers and deck undersurface to birds that fly beneath the bridge at night. ▪ Bridge management and maintenance personnel should be required to collect and report all cases of bird mortality on the bridge, shall it these events happen. A Biodiversity Action Plan (BAP) has been developed which addresses residual impacts through the following key actions: ▪ Translocation and/or replacement of plant species of conservation importance from the RoW. ▪ Restoration / Recreation of habitats supporting Cirsium polycephalum (Maquis, Black Sea Garrigues). ▪ Restoration / Recreation of PBF qualifying habitats.

10.11 Economy and Employment

10.11.1 Baseline Conditions

Relevant socio-economic, health and human rights baseline conditions were collected based on a combination of desktop and primary information collected during the field surveys carried out from April to August 2021. Primary baseline information was mostly derived from Key Informant Interviews (KIIs) and meetings with government officials, traditional authorities, and representatives of community groups (*Muhtars*) in August 2021.

The Project passes through four districts of Istanbul, namely Başakşehir, Arnavutköy, Avcılar and Çatalca. A major part of the motorway is in the Başakşehir and Arnavutköy districts, leading to greater land acquisition being required from these districts.

In general, these are densely populated areas with diverse economic and livelihood activities. They also host large residential apartment buildings, public service institutions and sports facilities. The area in Başakşehir and Avcılar has newly constructed residential apartments to accommodate a population of largely younger, skilled workers. The rural parts of Başakşehir and Arnavutköy are less densely populated and have a more elderly population. Some key information identified during baseline assessment is as follows:

- The construction sector in the area faces the risk of labour rights issues and presence of informal workers;
- The development of industrial and residential zones in the area has caused rapid increase of population in the Project's settlements.
- Presence of Syrians and other foreigners was reported by the Muhtars;
- The main employment sectors include industry, trade, and manufacturing. The public sector and construction are also key sectors in the Project area; and
- The biggest issues in the Project area that enhance vulnerability are the rising of prices, decline in agricultural production or income obtained from the trade of agricultural products, lack of transportation and lack of access to infrastructures and facilities.

10.11.2 Potential Impacts and Mitigation Measures

Table 10-10 Impacts on Economy and Employment and Mitigation Measures

Construction Phase		Operation Phase	
Potential Impacts	**Mitigation Measures**	**Potential Impacts**	**Mitigation Measures**
The Project will have both potential positive and negative impacts on economy and employment including the following: ▪ Temporary direct and indirect employment opportunities (primarily unskilled), including for vulnerable groups. ▪ Temporary positive economic impacts from taxes and fees, procurement, and worker spending; and ▪ Long-term benefits from capacity enhancement of local labour through on-the-job and formal training opportunities. ▪ Through the construction phase, some accesses will be compromised whilst the works are taking place. This can be an issue for local businesses (e.g., shops and hotels), for which customers find difficult access and therefore decrease their income. ▪ The difficulty of access might not be the only issue reducing the revenue of the local businesses; indeed, the effects of noise and dust during the construction phase could also hinder them and have a negative impact.	▪ Nakkaş Otoyol A.Ş. and EPC Contractor will work with local authorities (such as İŞKUR) and employment organisations to ensure that all temporary positions are advertised in a manner that is accessible to the communities in the Area of Influence. ▪ A Labour Management Plan has been developed and will be implemented throughout construction phase. ▪ Nakkaş Otoyol A.Ş. and EPC Contractor will ensure that the recruitment process is fair and transparent, public and open to all regardless of ethnicity, religion or gender. ▪ Nakkaş Otoyol A.Ş. and EPC Contractor is committed to employ people from vulnerable groups (applicable for temporary employment) such as low-income households, refugees, young people, ethnic minorities. Nakkaş Otoyol A.Ş. and EPC Contractor have also committed to employ women during construction period in line with Labour Management Plan. ▪ In order to ensure all economic losses caused by the Project are duly compensated, the Project has developed Livelihood Restoration, Improvement and Assistance Measures as part of the RAP and these measures will be implemented as part of the RAP Implementation. ▪ Nakkas Otoyol A.S will develop and implement a Community Development Plan to support livelihoods of the affected people which is beyond mitigating the impacts caused by the motorway construction. ▪ Stakeholders will also be able to report directly to the Project via Grievance Management Procedure about their expectations and concerns related to the local economy and employment. ▪ To maximise capacity enhancement and transfer of knowledge to local contractors and their employees, Nakkaş Otoyol A.Ş will develop formal training programs and formalise on-the-job trainings to the extent possible, including learning targets and performance monitoring.		▪ Nakkaş Otoyol A.Ş. will update its Local Recruitment Plan prior to operations specifying the exact needs for operations. ▪ Project standards and mitigation measures defined for the construction phase will also be applicable for the operation phase as well.

10.12 Land and Livelihoods

10.12.1 Baseline Conditions

The type of land ownership varies in the different districts and neighbourhoods. *Muhtars* stated that for almost all villages, agricultural land is rented out for farming purposes. Some people also rent treasury land through payment (*ecrimisil*). Some of the rural and remote areas in the northwest and southwest parts also accommodate informal users without any formal contracts hosting activities such as small-scale barns and small-scale greenhouses.

Almost all *Muhtars* stated that the few meadows/grazing areas present in the Project area are not used anymore and cattle are mostly kept in barns and fed with fodder.

The Project will result in both physical and economic displacement, main impact groups are certain PAPs and businesses, and certain vulnerable. The Projects' land needs and key potential impacts due to land take is described below:

The total area of land affected by the Project is estimated at 550ha, which will be acquired on a permanent basis for the construction and operation of the road and associated infrastructure. The Project will affect 1,523 land parcels; approx. 81% of these parcels are privately-owned (1,239 parcels owned by 3850 people), the rest are state-owned (156 parcels such treasury, non-registered) and owned by legal entities (128 parcels such as municipalities, public corporations, etc.). 515 parcels are registered as agricultural plots (33.8 of the affected lands) although not all are actively used for agricultural production. The rest is registered as constructible plots (801), pasture (7), forest (1) and others (199).

The key figures related to displacement impacts of the Project as per the current expropriation data are summarised in below Figure 10-2 Displacement Impacts.

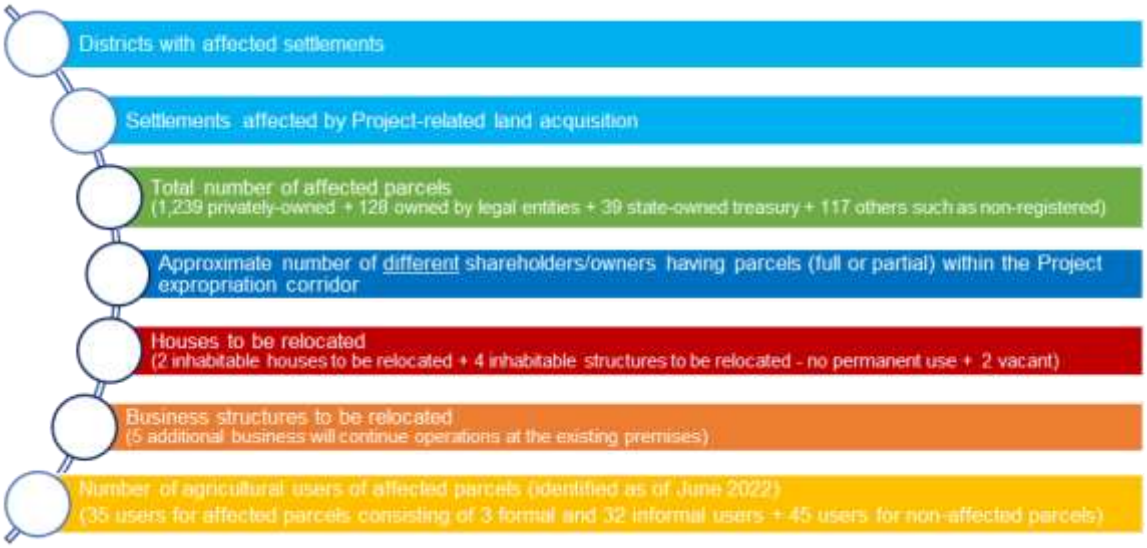


Figure 10-2 Displacement Impacts

The RAP has been developed based on the socio-economic surveys and feedback received from stakeholders living along the Project route. Both KGM and Nakkaş Otoyol A.Ş. conducted meetings with affected people to discuss the key RAP measures prior to negotiation meetings conducted with landowners/users.

The RAP and the Guide to land Acquisition and Compensation (GLAC) will be disclosed to wider public as part of the ESIA disclosure process for 60 days. The key objectives of the RAP are:

- To avoid forced eviction; the Project will not cause any forced eviction in line with the national legislation and international lender requirements.
- The Project will prioritise consent agreements and only apply expropriation procedures through court if landowners cannot be accessible and in case of failure during negotiation meetings.
- Land and asset values will be calculated based on the market prices and full replacement cost of affected assets will be paid in line with the RAP.
- Landowners/users will be consulted about their rights prior to negotiation meetings.
- Land entry will not take place if land permit is not obtained, and landowner/user is not compensated.
- Land entry and exit protocols will be signed to ensure consent of the landowners/users are obtained both during land entry and exit process.
- The Project will provide resettlement assistance and livelihood restoration and improvement measures for formal and informal land users, business employees and employers, as necessary through the utilisation of the RAP Fund that has been allocated (in addition to the cash compensation provided by KGM as per the expropriation law) and managed by the SPV in collaboration and coordination with KGM.
- Performance of implementation of resettlement, compensation and livelihood restoration measures and actions will be periodically monitored, internally by KGM and SPV, and externally by independent third-party specialists, until the RAP Completion Audit which will be conducted by independent resettlement professionals confirms that livelihoods of affected people have been restored and RAP measures have been satisfactorily completed.
- The Project will continue ongoing engagement with PAPs throughout the RAP implementation in line with the engagement plan presented within the RAP.
- The Project-level grievance mechanism will cover the monitoring of land acquisition and resettlement related grievance and remain effective to all people affected by land acquisition throughout the RAP implementation until RAP Completion Audit.
- RAP principles will be implemented by the SPV in collaboration with the KGM for any unplanned Project land acquisition needs in future.

In addition to the compensation that will be paid by KGM for affected lands/assets, the Nakkaş Otoyol A.Ş has allocated additional resources and a RAP fund budget to provide technical and financial assistance to affected people in order to mitigate impacts of land take and physical resettlement in line with the international standards. The additional resettlement assistance programmes are described in detail in the RAP and in the Guide to Land Acquisition (GLAC). These are available on the Project website (http://www.nakkasotoyolu.com/tr).

10.12.2 Potential Impacts and Mitigation Measures

Table 10-11 Impacts on Land and Livelihoods and Mitigation Measures

Pre-Construction, Construction and Operation Phases	
Potential Impacts	**Mitigation Measures**
The Project's impacts on land and livelihoods will comprise the following: ▪ Impact on physical resources and related livelihoods (resettlement and economic displacement). ▪ Impact on natural resources and related livelihoods (resettlement and economic displacement). ▪ Permanent and temporary loss of livelihoods and household income due to permanent land restrictions (safety zones) and resettlement. ▪ Changes in land values post construction in peri-urban and rural areas due to building restrictions.	▪ **Pre-Construction Phase:** - Project Resettlement Action Plan including a Guide to Land Acquisition and Compensation (GLAC) has been prepared and will be implemented by RAP Implementation Team. The RAP Implementation Team will establish the database of all PAPs, including affected vulnerable persons/households with vulnerable members, for the provision of entitlements. - Additional compensation (on top of mandatory cash compensation to be provided KGM in line with the contractual responsibilities of Nakkaş Otoyol A.Ş and KGM as defined in the BOT Contract), livelihood restoration and assistance measures will be provided to owners and users of the affected houses, affected businesses, and affected lands. - Compensation to PAPs will be provided at full replacement cost. To this end, a RAP Fund has been established to provide the difference between the mandatory cash compensation provided by KGM and the full replacement cost as defined and required by international standards. The Project will provide through the RAP Fund specific allowances (e.g., moving allowance, business relocation allowance, financial support package to employers and employees for the temporary business interruption during relocation) to support PAPs in the resettlement process and in livelihood restoration or improvement. - The RAP will be publicly disclosed in manners suitable to the local context and a non-technical summary of entitlements and processes will be provided to all PAPs and other relevant stakeholders in the form of a "Guide to Land Acquisition and Compensation". - Vulnerable groups will be entitled to the livelihood restoration and improvement measures described in RAP. In addition to other applicable entitlements and measures defined previously, for households with vulnerable members, case-specific in-kind assistance and measures, which will be designed through direct engagement with the affected households in consideration of their special needs, will be provided. Specific attention will be given to include the gender aspect of the Project and to ensure and encourage participation and involvement of women. - In line with RAP, the Project shall provide additional compensation (on top of mandatory cash compensation to be provided KGM in line with the contractual responsibilities of Nakkaş Otoyol A.Ş and KGM as defined in the BOT Contract), livelihood restoration and assistance measures to owners and users of the affected houses, affected businesses and affected lands A specific Grievance Mechanism Channel will be developed specifically to manage concerns regarding the RAP processes. This Grievance Mechanism Channel will be managed by the teams in charge of the RAP processes. A separate database will be maintained by the Project to monitor these grievances.

Pre-Construction, Construction and Operation Phases	
Potential Impacts	**Mitigation Measures**
	▪ **Construction and Operation Phases:** - Engagement with PAPs (who have already been engaged during expropriation process) will continue with a combination of community and face-to-face meetings. Any compensation-related or other grievances from PAPs will be managed through Project's Grievance Mechanism. - The same principles will apply to any acquisition/expropriation work required in the Project in future (including any potential associated facilities). Potential operation phase impacts on sensitive receptors located outside the expropriation boundary (such as noise) will be monitored internally by Nakkaş Otoyol A.Ş and externally by the Lenders through their independent consultants. PAPs will be granted the right to request acquisition within three (3) years upon commissioning of the Motorway should any significant environmental and/or social impacts be identified through E&S monitoring that cannot be mitigated.

10.13 Labour and Working Conditions

Table 10-12 Impacts on Labour and Working Conditions and Mitigation Measures

Construction and Operation Phases	
Potential Impacts	**Mitigation Measures**
Potential Impacts of the Project on labour and working conditions will comprise the following: ▪ Workers' rights including occupational health and safety need to be considered to avoid accidents and injuries, loss of man-hours, labour abuses (including gender-based violence and harassment) and to ensure non-discrimination, remuneration and working or living conditions. ▪ These issues should be considered not only for those who are directly employed by Nakkaş Otoyol A.Ş. but also its Contractors (including sub-contractors) and within the supply chain (especially impacts related with child labour and forced labour in the supply chain).	▪ Nakkaş Otoyol A.Ş. will ensure its EPC and sub-contractors comply with the labour conditions in accordance with the national law and lenders standards in line with the core ILO conventions. A Labour Management Plan has been developed explaining how they will achieve the compliance on labour and working conditions which will be disclosed to public as part of the ESIA disclosure package. ▪ Regular (quarterly) labour audits will be conducted by independent labour experts during construction. ▪ Regular communication and engagement will be maintained with the workers and worker representatives. ▪ Access to clear and understandable information regarding worker's labour and working conditions will be provided. ▪ Reasonable working conditions and terms of employment will be provided. ▪ Information regarding employment, compensation/remuneration and working conditions will be provided to all workers, including working hours, based on equal opportunity and fair treatment, avoiding discrimination on any aspects. A Gender Action Plan (GAP) has been developed and will be implemented throughout the Project. A Grievance Mechanism will be implemented for the Project's workers including subcontractor workforce (accessible to all workers, whether permanent or temporary, directly, or indirectly employed including contractor workers). The grievance mechanism will include specific provisions to manage potential gender-based violence and harassment (GBVH) grievances. ▪ Respect to workers right to freedom of association and collective bargaining in conformance with Turkish laws and ILO requirements will be adopted as a key policy both by Nakkaş Otoyol A.S and its contractors. All workers (including

Construction and Operation Phases

Potential Impacts	Mitigation Measures
▪ The Project could potentially lead to workforce-related social and health issues throughout the life cycle of the Project if worker management and rights do not meet Turkish law as well as international best practice. ▪ Influx of construction workers may cause tension between the local population and non-local workers due to the belief that non-locals are taking the economic opportunities of the resident population. ▪ Interactions between male-workers and women living in the local communities may create frictions within the community. At the same time, influx of male workers may pose a threat to women workers and community in terms of safety and GBVH. This may also translate to heightened tension leading to violence. ▪ It is often the case with large construction projects that individuals move to the area looking to benefit either from direct work or from indirect economic opportunities. Such influx of opportunity seekers would be unmanaged and, should it be significant, is likely to pressurize the limited services and infrastructure in the local communities. A high degree of influx could result in other effects such as inflation, socioeconomic tensions, and changes to behavioural norms.	those of contractors and subcontractors) will be able to join unions of their choice and have the right to collective bargaining. ▪ No employee or job applicant will be discriminated against on the basis of his or her gender, marital status, nationality, age, religion, political view or sexual orientation. ▪ All workers will as part of their induction, receive training on worker rights in line with Turkish legislation to ensure that positive benefits around understanding labour rights are enhanced. ▪ All workers (including those of contractors and subcontractors) will have contracts which clearly state the terms and conditions of their employment and their legal rights. ▪ Contracts will be verbally explained to all workers where this is necessary to ensure that workers understand their rights. ▪ Contractor contracts will establish the right for Nakkaş Otoyol A.Ş. monitoring and auditing of all contractors and subcontractors and the consequences for the contractor if they are found to be breaching national legal requirements, international standards, Nakkaş Otoyol A.Ş.'s policies or clauses in the contract. Contractor contracts will specify that the same standards will be met by their sub-contractors and suppliers. ▪ A program of social compliance monitoring will be implemented to inform internal auditing and monitoring process. Develop KPIs around worker rights, discrimination and management, workforce grievance mechanism and monitoring of outcomes. ▪ The outcomes of community engagement, media coverage and its workforce and Community Grievance mechanism will be reviewed and monitored for additional indications of labour-related issues that may arise. ▪ All employees and contractors are required to acknowledge and adopt the environmental and social work practices and comply with all HSE procedures as well as the Code of Conduct and Zero Tolerance Policy, reporting safety hazards, unsafe work practices, unacceptable conditions, and environmental and social issues. ▪ All contractor contracts will include explicit reference to the need to abide by Turkish law and applicable standards and policies in relation to health and safety. Furthermore, contracts will include a clause committing contractors to adhere to Nakkaş Otoyol A.Ş.' GBVH policies and procedures, which could include specific GBVH risks and agreed measures to address them, explicitly mentioning the Nakkaş Otoyol A.Ş.' zero tolerance towards GBVH.

10.14 Community Health, Safety and Security

Table 10-13 Impacts on Community Health, Safety and Security and Mitigation Measures

Construction Phase		Operation Phase	
Potential Impacts	**Mitigation Measures**	**Potential Impacts**	**Mitigation Measures**
Potential impacts of the Project on community health, safety and security will comprise the following: ▪ Increase in noise and vibration causing nuisance. ▪ Increase in dust. ▪ Nuisance on community (dust, vibration, noise, fear) and grazing animals due to vibration and blasting activities. ▪ Increase in road safety risks due to construction traffic. ▪ Increase in safety risks in areas close to the residential areas due to uncontrolled access to construction site. ▪ Increase in transmission of communicable diseases. ▪ Increase in risk of Gender Based Violence and Harassment (GBVH). ▪ Increased pressure on healthcare; Conflict with security personnel.	▪ Drivers of Project vehicles will be trained/briefed about safe driving with respect to other drivers, pedestrians, and livestock. ▪ Advance warning will be given of any proposed road diversions and closures. ▪ The grievance mechanism will be implemented prior to commencement of the construction phase. ▪ Road Safety Audits will be conducted in line with “EC Directive 2008/96/EC – Road infrastructure safety management” on the Project design documentation as required by the Directive. ▪ The Road Safety Audit is consisted of four stages and the first phase of the Road Safety Audit was conducted between June – August 2022. The independent Road Safety Audits will continue for the remaining three stages during the detailed design, pre-opening and early operation stages of the Project, and the findings of the audits will be reviewed and required actions will be implemented by Nakkaş Otoyol A.Ş. ▪ A community meeting will also be given in every settlement along the route. Records of the meeting and attendees will be kept. This will include a presentation in every primary and secondary school in communities in the AoI. ▪ EPC Contractor will ensure that signs are put up around work fronts and construction sites advising people of the risks associated with trespassing. ▪ Construction sites and excavation areas close to sensitive receptors will be fenced to prevent access by the third parties. The fences will be checked on a daily basis and damages will be repaired urgently. ▪ In order to reduce the likelihood of people trespassing to seek job opportunities in the Project, the site safety signage	▪ Increase in noise at specific locations. ▪ Increase in air pollution at specific locations. ▪ Road safety and site trespassing.	▪ Road Safety Audits will be conducted in line with “EC Directive 2008/96/EC – Road infrastructure safety management” on the Project design documentation as required by the Directive. The independent Road Safety Audits will be conducted prior to opening of the road and early operation stages of the Project, and the findings of the audits will be reviewed and required actions will be implemented by Nakkaş Otoyol A.Ş. ▪ Noise related grievances will be closely monitored, assessed and adaptive mitigations will be implemented. ▪ Despite these mitigation measures, in various sections of the road noise modelling results indicated that noise levels would be higher than the allowed limits. This applies to two households next to Sazlıdere bridge. The complaints during operations will be managed through the Project’s Grievance

Construction Phase		Operation Phase	
Potential Impacts	**Mitigation Measures**	**Potential Impacts**	**Mitigation Measures**
	will include a warning stating that recruitment at the construction site will not be permitted. Furthermore, all job advertisements will clearly state no recruitment will be done on the construction site. ▪ A Workforce Code of Conduct will be applied detailing specific values, living and working conditions, which will contribute to reduce the risks of disease transmission into the community as well as a Worker Grievance Mechanism. The Code of Conduct will expressly prohibit sexual interactions of any kind with underage persons. ▪ Training and orientation will be delivered on respecting local communities and vulnerable populations, with a special focus on gender, Human Rights and GBVH risks awareness. The training will also include clear guidelines to create a secure environment for women and children in the area, for example: actions such as catcalling people from the community or other workers will not be permitted. ▪ Monitoring systems will be put in place for regular reporting on GBVH, including a grievance mechanism with special provisions for GBVH grievances that include confidential and anonymous grievance reporting, referral, and a support system for workers. Workers in charge of dealing with grievances will have adequate specialised training on how to conduct GBVH-related investigations and provide a suitable response. ▪ Zero tolerance against reprisal risks will be announced and implemented throughout the Project construction. ▪ A Security Management training will be provided to security personnel. Security Arrangements will be based on the Voluntary Principles for Security and Human Rights[17] which are international best practice. Security arrangement will be made transparent to the local communities. Consultation with them about the impact of arrangements will take place regularly.		Mechanism. These households will be assisted for temporary or if needed resettlement as per RAP requirements. ▪ Where air quality impacts are major on public health, purchase of the properties (which are sensitive receptor properties particularly close to roadside) will be an option in line with Project RAP requirements.

[17] https://www.voluntaryprinciples.org/

10.15 Access to Infrastructure and Services

Table 10-14 Impacts on Infrastructure and Services and Mitigation Measures

Construction Phase		Operation Phase	
Potential Impacts	**Mitigation Measures**	**Potential Impacts**	**Mitigation Measures**
Construction activities will induce impacts on utilities and infrastructure, mainly due to site clearance works, excavation and movement of soil, embankment construction, and construction of the various elements of the motorway. This is likely to generate pressure on existing local utility supplies (which already have temporary disruption), disturbance to traffic and transportation due to road crossings, and short-term planned and unplanned disruption to electricity, telecommunication, sewage, storm water lines, natural gas and water supply for irrigation, domestic, drinking and industrial purposes.	▪ Infrastructure relocated by the Project (electricity, telecommunication, sewage, natural gas distribution, storm water lines and water supply, etc.) will be developed in a way that allows neighbouring communities to benefit from them after construction is over. ▪ Nearby properties to the blasting areas will be inspected prior and after the blasting to assess the potential impacts. ▪ Where roads are closed, EPC Contractor will find local solutions (including diversions if necessary) to be put in place. ▪ EPC Contractor will liaise and engage with local authorities and utilities companies to ensure continuity of supply to communities. Only short term “planned” disruption to drinking water or electricity services will be allowed (and these disruptions will be communicated in a timely manner to the affected people). ▪ EPC Contractor will work with local utilities companies to ensure coordinated and rapid response to unplanned events such as damage to electric lines and water pipes. ▪ The Project’s Community Liaison Officer (CLO) will engage with local stakeholders prior to commencement of construction activities, providing updates and answering queries.	The Project is expected to solve the transportation problems of the developing regions of İstanbul, Halkalı, Başakşehir, Kayaşehir, Bahçeşehir and Hadımköy, meeting the transportation demand and alleviating intense traffic, enabling a more comfortable, safer, faster traffic flow. Transportation to healthcare infrastructures such as the Başakşehir Çam and Sakura City Hospital and education facilities will be eased. Furthermore, the Project will facilitate mobility for women, granting them more access to specialised health care such as midwives, informal workplaces, and subsistence agricultural and facilitating the journeys by reducing the time of commute and enabling a more comfortable and safer drive.	▪ The Grievance Mechanism will be in place throughout the operation phase to respond grievances in a timely manner to avoid any disruption to the community and their livelihoods. ▪ The Project’s Community Liaison Officer (CLO) will engage with local stakeholders prior to commencement of operational maintenance activities, providing updates and answering queries.

10.16 Community Cohesion

Table 10-15 Community Cohesion Impacts and Mitigation Measures

Construction Phase		Operation Phase	
Potential Impacts	**Mitigation Measures**	**Potential Impacts**	**Mitigation Measures**
Impacts to community cohesion are of particular importance to infrastructure projects which can often raise tensions within communities (intra-community tension) and between communities (inter-community tension). ▪ Disturbance from the presence of workforce. ▪ Community severance. ▪ Unmet expectations of benefits.	▪ Rönesans Holding has Human Rights Policy[18] including zero tolerance to retaliation /reprisal which is followed by Nakkaş Otoyol A.Ş. The Human Rights Policy obliges Rönesans and parties acting on behalf of Rönesans and third parties to act in compliance with the Policy. ▪ All workers will be provided with the Worker Code of Conduct in a language understandable to them. The Project Company will ensure that the EPC Contractor prioritises the recruitment of local workforce for both skilled and unskilled positions. ▪ All foreign Workers (include those who come from other parts of Turkey) will be provided with mandatory cultural sensitization training programmes regarding engagement with local communities. ▪ The EPC Contractor will cooperate with the local law enforcement in order to prevent the spread of crime or misconduct within the workforce. ▪ EPC Contractor will undertake campaigns and awareness training on sexually transmitted diseases to workers and local communities, including access to testing facilities, prevention etc (in a culturally appropriate manner). ▪ Nakkas Otoyol A.S and the EPC Contractor will adopt a zero-tolerance policy towards unacceptable workforce behavior, and/or any form of retaliation against workers, women, other community members and /or civil society organisations. ▪ The Project's Community Liaison Officers (CLOs) will proactively and regularly engage with local stakeholders prior to commencement of construction activities, providing updates and answering their queries. The CLOs will be present on the ground during the whole construction process and available to the affected communities. The aim of this is to ensure that all working practices are transparent and any issues between local residents and non-local workers are communicated and dealt with early on. ▪ Ongoing dialogue will be maintained between the Project and local communities and their representative organisations to assist in information sharing regarding employment practices and the use of non-local staff. Local communities will be provided information on the number of non-locals to be brought to the area, their housing arrangements, and the measures that the Project is putting in place to ensure that all workers abide by local customary practices.	Community cohesion related impacts are applicable for construction phase, therefore relevant impacts are not applicable for operation phase.	

[18] https://ronesans.com/content/files/05-tr-i-ns-020863528c5bc475f0.61836371.pdf

10.17 Cultural Heritage

10.17.1 Baseline Conditions

Cultural heritage studies were conducted by ERM's subcontractor REGIO[19], a highly reputable and experienced Turkish archaeology consultant working on many major infrastructure projects in Turkey in line with national and international standards.

Based on the field studies, in total there are 12 sites that are located on the Project RoW as listed below:

- 2 Historical Areas – Kayabaşı Archaeological Area are located within the RoW; and
- 10 Historical Military Bunkers are located within the RoW.

During construction works a Chance Find was encountered on 11.07.2021 in the area between 49+800 and 49+900 Km of the road in Şamlar district. Project Chance Find procedure was applied, work was stopped, and legal authorities were informed immediately.

In line with the decision of the Cultural Heritage Preservation Regional Board No. I, it was decided that an archaeological excavation in the mentioned area should be carried out. Şamlar Rescue excavations started on 08.12.2021, as a result of the controls made by the field experts of the Istanbul Archaeology Museums and the survey engineer with the inclusion of EPC Contractor's archaeological consultant.

During the excavations, 180 (5x5m) plan square trenches were excavated (4,750 m²). As a result of these excavations, 30 rooms of different sizes, stone floors within the space, 4 pithos (storage vessels), 1 kiln structure and the remains of a hand mill workshop, and 4 stone tombs were unearthed. In addition, based on the surface of the bronze coin found in the excavation, it was concluded that the settlement continued to be populated until the 9th century AC. It is thought that the settlement dates to the Late Roman-Early Byzantine period.

19 REGIO Kültürel Miras Yönetim Danışmanlığı Eğitim A.Ş

10.17.2 Potential Impacts and Mitigation Measures

Table 10-16 Impacts on Cultural Heritage and Mitigation Measures

Construction Phase		Operation Phase	
Potential Impacts	**Mitigation Measures**	**Potential Impacts**	**Mitigation Measures**
The ESIA studies identified 12 archaeological sites (2 Historical Areas – Kayabaşı Archaeological Area and 10 Historical Military Bunkers) located on the Project Right of Way. The Project's impacts on archaeological sites include: ▪ Complete or partial removal of cultural heritage assets on the Right of Way. ▪ Complete or partial removal of cultural heritage assets outside of the Right of Way. ▪ Damage to the cultural heritage due to blasting actvities.	▪ A Cultural Heritage Management Plan has been developed and will be implemented to address potential risks to tangible and intangible cultural heritage along the right of way. ▪ There will be a liaison with the Istanbul Regional Council No:1 for the Conservation of Cultural Property to agree a strategy for archaeological mitigation. ▪ No physical Project activity at the cultural heritage sites site will be started before the studies of the related museum directorate are finalised and the official views of the authorities on relevant sites are obtained. ▪ Qualified archaeologist will be appointed during ground disturbing activities and on all construction fronts particularly at-risk areas. ▪ The archaeological sites will be processed/indicated as "historical sensitive area" in all Project documentation, drawings, etc. and notify EPC Contractor and subcontractors about the presence of these sites. ▪ All site personnel will be trained in the recognition and proper handling and custody of archaeological finds which are the property of the Turkish government. ▪ Expedited procedures for evaluation and treatment of significant chance finds will be implemented (via Project's Chance Finds Procedure) in order to limit impacts to important resources while limiting construction delays. ▪ Ongoing consultation with key stakeholders to ensure the intangible cultural heritage impacts are managed in line with the Cultural Heritage Management Plan.	Negative impacts are not envisaged during operation of the Motorway since the actions required by the relevant authorities are assumed to be implemented during construction phase.	The Operation and Maintenance (O&M) Contractor will be informed about the archaeological background of the Project, and cultural heritage assessment studies (including stakeholder engagements) will be conducted by Nakkaş Otoyol A.Ş. in case operational maintenance activities require new access road constructions, service roads, additional drainages, etc. along the Motorway.

10.18 Cumulative impacts

This chapter presents the cumulative impact assessment (CIA) of the Project, comprising a description of the potential following cumulative impacts generated during construction and operation of all current and planned projects in the Project Area of Influence as listed in following chapters.

10.18.1 Current Projects in the Area of Influence:

- Halkalı-İstanbul Metro Line
- Başakşehir-Kayaşehir Metro Line Project
- Northern Marmara Motorway Project

10.18.2 Planned Projects in the Area of Influence

- TOKI Başakşehir – North Ayazma Slum Prevention Project
- Mavera Residence Housing and Commercial Development Project
- TOKI Başakşehir – Kayabaşı – 868/5 Project
- TOKI Başakşehir – Kayabaşı – 919/6 Project
- TOKI Başakşehir – Kayabaşı – 869/43 Project
- TOKI Başakşehir – Kayabaşı – 968/5-7 Project
- TOKI Başakşehir – Kayabaşı 9704-6-8 Project
- Hayat Park Prestij Konakları Project
- VMALL Shopping Mall
- Oyak Residences and Commercial Units
- Canal İstanbul Project

10.18.3 Potential Impacts

Current and planned projects may have the following potential cumulative impacts in the Area of Influence:

- Vegetation removal of sensitive habitats due to clearance of the construction strip and disturbance on biodiversity.
- Noise, dust, nuisance of construction equipment on local communities.
- Nuisance to local communities caused by disruption of local traffic and transport paths.
- Impacts on community safety related with road safety risks; and
- Land use restrictions, potential income reduction for local communities and local livelihoods.

10.18.4 Mitigation Measures

- Nakkaş Otoyol A.Ş. will meet with the representatives of the other project owners to confirm details of the construction timeline to minimise any potential construction activity and logistical interference and minimise common areas of land disturbance. This will also help to harmonise in respect of reinstatement/revegetation measures.
- Nakkaş Otoyol A.Ş. Community Liaison Officer (CLO) will pay special attention to landowners/residents in this area where the projects overlap and will contact representatives of the other project owners to ensure a mutual understanding of the commonly affected PAPs.

- Collaboration of the timing of vehicle movements (avoiding school hours) and road safety measures could be considered as mitigation measure which is included in the Traffic Management Plan.
- Nakkaş Otoyol A.Ş. will monitor livelihoods of directly affected people whose income is land based and who will be disproportionately affected by various projects in the region due to land take by each project and implement additional measures to support their livelihoods under the RAP.
- In addition to livelihood restoration measures, Nakkaş Otoyol A.Ş. will design and implement community development projects in a participatory manner which are beyond impact mitigation with an aim to support local capacity building, agricultural /income generation projects in affected neighbourhoods along the Motorway route.

10.18.5 Conclusion

It was concluded that the overall impact of the Nakkaş Başakşehir Motorway Project will be less than the impacts of other major ongoing and planned projects in İstanbul. Therefore, it concluded that if the mitigation measures are implemented for the Project as laid out in the ESIA and RAP chapters, as well as additional communication and liaison mitigation actions indicated within the cumulative impact assessment, the expected significance of the cumulative impacts is the same as for the Project alone (**Minor**).

A number of mitigation measures are recommended regarding the contacting of responsible persons for the relevant projects to coordinate construction logistics, mitigation measures and other topics, and to include such parties in the Project SEP to enhance ongoing communication.

No **Major** cumulative impacts are expected that would warrant additional specific technical mitigation.

11. HOW WILL THE PROJECT MANAGE AND MONITOR PROJECT-RELATED EFFECTS?

An Environmental and Social Management and Monitoring Plan (ESMMP) is developed to outline the mitigation measures that will be undertaken by Nakkaş Otoyol A.S and its contractors during construction and operation of the Motorway. The ESMMP serves as an overarching guideline that identifies potential environmental and social impacts and associated mitigation and additional management plans and actions that need to be in place to avoid, mitigate and monitor these impacts. The ESMMP also briefly summarises and defines the scope of the Project's issue specific environmental and social management and monitoring plans. The ESMMP is part of the full ESIA report which is disclosed to the public review.

The ESMMP is essential for successfully monitor and track the Project's environmental and social performance throughout the lifetime of the Project. Having this Plan in place helps to ensure a systematic approach to bringing environmental and social considerations into decision-making and day-to-day operations. It establishes a framework for tracking, evaluating, and communicating environmental and social performance and helps ensure that environmental risks and liabilities are identified, minimized and managed.

The requirements of the ESIA will be reflected in the contract documents with the EPC Contractor, sub-contractors & suppliers. Nakkaş Otoyol A.Ş. will amend those contracts that are already in place to ensure that all relevant standards and all ESIA and ESMMP requirements are monitored and met by each respective party.

In addition, the EPC Contractor prepared a Construction and Environmental and Social Management Plan (CESMP) specifically as a management tool to be used by the EPC Contractor and its sub-contractors & suppliers to implement the environmental and social (E&S) mitigation measures identified in the ESIA report and ESMMP during the construction phase.

The primary objective of the CESMP is to guide the construction phase of the Project and meet the requirements for managing construction-phase risks and impacts identified for the relevant environmental and social aspects, including compliance with National and International legislative requirements as applicable. The CESMP will ensure consistency in terms of environmental and social considerations, for the duration of the construction phase.

Separate E&S management plans will be prepared prior to the operations by the O&M Contractor in line with Project ESIA and ESMMP requirements.

11.1 E&S Inspection and Monitoring

EPC Contractor will be responsible for the implementation of an appropriate inspection and monitoring programme to the satisfaction of Nakkaş Otoyol A.Ş. during construction phase. This will enable both parties to ensure the works are being carried out in accordance with the requirements of the ESMMP and ESIA and to identify and implement any possible improvements.

National law and applicable international standards will be followed and monitored against regularly and these are all committed in relevant project documents.

11.1.1 Auditing

Both Nakkaş Otoyol A.Ş. and EPC Contractor will be required to demonstrate how the requirements of the ESMMP and ESIA are being complied with. This will include a programme of inspections and audits by both Nakkaş Otoyol A.Ş. and EPC Contractor. Site inspections and more formal audits by the Nakkaş Otoyol A.Ş.'s Inspectors will be undertaken using pre-prepared audit protocols that reflect the requirements of the ESMMP and the ESIA.

Where issues of non-compliance are identified by either Nakkaş Otoyol A.Ş. or EPC Contractor's representative, they will be immediately reported to Nakkaş Otoyol A.Ş., and corrective action will be identified by the Nakkaş Otoyol A.Ş. and representative in conjunction with the EPC Contractor.

In the case of continued or severe non-compliance, Nakkaş Otoyol A.Ş. has right to stop all works until necessary corrective actions are taken by the EPC Contractor.

11.1.1.1 Audits during Construction Phase

- **Internal Monthly Audit**: The Contractor´s ESHS manager will carry out an in-depth supervision once a month for each ESHS area, with specific protocol for, e.g., electrical works, mechanical works, PPE, manual handling, etc. depending on the project activities. Main goal of the monthly audits is to evaluate the ESMMP implementation carried out by the Contractor. The Nakkaş Otoyol A.Ş. E&S team will be located on site, and as such Nakkaş Otoyol A.Ş. representatives will be involved in these audits.
- **External Bi-Monthly Audits**: the internal monthly monitoring carried out by the Contractor shall be supervised by an external Nakkaş Otoyol A.Ş. Consultant by means of bi-monthly site inspections reviewing the Contractor´s ESHS documentation, training, reporting and performance, and providing a general ESHS compliance assessment of the project. As a result, the external auditor will deliver an ESHS Construction Audit Report, describing findings, issues, and non-compliances, and proposing actions for amendment.
- **External Quarterly Audits by the Lenders:** Lenders' ESHS Advisor and Lenders' representatives will conduct quarterly audits during the construction phase to monitor ESHS performance of the Project against ESIA and the Lenders' requirements. The Nakkaş Otoyol A.Ş. will be required to develop corrective actions in liaison with KGM and EPC to address audit findings in a timely manner.

11.1.1.2 Audits during Operation Phase

Monitoring during the **Operation Phase** shall continue to ensure safety maintenance of the works, as well as community health and safety, according to the following program:

- **Semi-Annual Audits**: during the first 2 years of operation.
- **Annual Audits**: from third year of operation, including same activities as those listed for the semi-annual audits but on an annual basis.
- **External Annual Audits by the Lenders:** Lenders' ESHS Advisor and Lenders' representatives will conduct annual audits during the operation phase to monitor ESHS performance of the Project against ESIA and the Lenders' requirements.
- **External Completion Audit for RAP**: Minimum two years after RAP implementation, the external Auditor shall undertake a final RAP implementation compliance evaluation.

11.1.1.3 Non-Conformity and Corrective Actions

All non-conformances identified during audits, inspections and monitoring activities will be recorded and followed up as non-conformity. Clear processes for actions stated in the Nakkaş Otoyol A.Ş. ESMS Handbook will be followed.

12. STAKEHOLDER ENGAGEMENT PLAN AND GRIEVANCE MECHANISM

12.1 Stakeholder Engagement Plan (SEP)

A stand-alone Stakeholder Engagement Plan (SEP) has been developed for the Project as part of the ESIA study package. It identifies key stakeholders and sets out engagement activities to ensure that, where relevant, stakeholders are informed and consulted in a timely and meaningful manner of the potential effects of the Project. Stakeholders are individuals and organizations (such as businesses, public authorities, media, academia, NGOs etc.) that may be directly or indirectly affected by the Project either in a positive or negative way, and who wish to express their views.

Following the completion and submission of the ESIA to the Lenders for their consideration, the ESIA will be subject to public comment through disclosure and public consultations. The ESIA, NTS, SEP and RAP will also be available on the Project website (http://www.nakkasotoyolu.com/tr).

The Project established a Community Relations team including a social manager, community liaison officers and resettlement experts who will be implementing the SEP actions throughout the project lifetime with the support of agricultural and business development experts.

12.2 Grievance Mechanism

A Project-level Grievance Mechanism (GM) has been established and is a process for receiving, evaluating, and addressing Project-related complaints for anyone with concerns about, or affected by, the Project. It should be noted that GM does not replace any other available redress mechanisms.

To ensure that the Project is implemented in compliance with the Project requirements, regulations and standards, the following policies have been developed:

- E&S Sustainability Policy.
- Occupational H&S Policy.
- Human Rights Policy.
- Human Resources Policy.
- Gender Based Violence and Harassment Policy; and
- Gender Action Plan.

Nakkaş Otoyol A.Ş will set up Project specific Grievance mechanisms (GM), which includes the following key components:

- Consideration of both external[20] and internal[21] stakeholders' grievances.
- Integration of specific Gender Based Violence and Harassment (GBVH) provisions to manage grievances linked to GBVH (e.g., separate channel for GBVH related grievances and GBVH focal points to be trained and assigned to address all GBVH grievances).
- Definition of the timeframes for acknowledgement of the receipt of complaints and subsequent resolution; and
- Practical arrangements for maintaining confidentiality, reviewing, and resolving grievances, including resources and organisational arrangements.

[20] External stakeholders comprise fence line community, Project-affected households (PAHs) due to land acquisition, and other relevant parties that may be affected due to Project operations.

[21] The internal stakeholders comprise the employees and workers engaged by the Project, its contractors and subcontractors, for activities linked to the Project.

Grievances can be raised verbally or written, via the following channels:

Contact Persons: Baran Demirpençe and Zübeyde Fidan

- **Telephone: 0 800 655 10 00 Email Address: baran.demirpence@ronesans.com and zubeyde.fidan@mras.com.tr**
- **Face to face**: Stakeholders, including the public, can discuss their grievance with assigned personnel of Nakkas Otoyol at local offices at KMO Şantiyesi - Şahintepe Mahallesi, Muratdere Caddesi KMO Şantiye No: 134/2 Başakşehir / İstanbul.
- **Grievance Form:** Stakeholders, including the public, can fill in the paper grievance form in Appendix A and either send it to Nakkaş Otoyol's offices, or e-mail it to baran.demirpence@ronesans.com and to zubeyde.fidan@mras.com.tr
- **Online application:** Stakeholders can fill out the grievance form online at project website (http://www.nakkasotoyolu.com/tr).

13. FURTHER INFORMATION AND CONTACT DETAILS

Nakkaş Otoyol A.Ş. will continue to engage with Stakeholders during construction and operation of the Project as set out in the SEP. At any time, interested persons can provide comments/queries to Nakkaş Otoyol A.Ş. via a Free Telephone Hotline within Turkey (available 7/24): **0 800 655 10 00** or via the Project website at www.nakkasotoyolu.com

APPENDIX A GRIEVANCE FORM

GRIEVANCE FORM

Reference No. *(To be assigned by Project office personnel):*

Preferred language for communication	☐ **Turkish** ☐ **English** ☐ **Other, please specify:** _____

Please enter your contact information and grievance. This information will be dealt with confidentially.

Please note: If you wish to remain anonymous, please enter your comment/grievance in the box below without indicating any contact information – your comments will still be considered by

Full Name	
Anonymous submission	☐ **I wish to raise my grievance anonymously.** ☐ **I request not to disclose my identity without my consent.**
Please mark how you wish to be contacted (mail, telephone, e-mail).	☐ **By telephone (please provide telephone number):** _____ ☐ **By e-mail (please provide e-mail address):** _____

Description and type of the incident or grievance: ☐ **Construction nuisance due to noise, dust, vibration, blasting, etc.** ☐ **Land acquisition, compensation, livelihood, damage to property** ☐ **Employment, procurement, supply chain** ☐ **Gender based violence and harassment.** ☐ **Human rights** ☐ **Workplace (discrimination, forced labour, child labour, overworking hours, payments, occupational health and safety etc.)** ☐ **Community Health, Safety and Security** ☐ **Others (Please specify)**	What happened? Where did it happen? Who did it happen to? What is the result of the problem?

Date of incident/grievance: _____	☐ **One time incident/grievance (date _____)** ☐ **Happened more than once (how many times? _____)** ☐ **On-going (currently experiencing problem)**

What would you like to see happen to resolve the problem?

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