

Izmir Metropolitan Municipality and Izmir Metro A.Ş.

Buca Metro Line Project

Non-Technical Summary



April 2021

1. What is this document?

This Non-Technical Summary (NTS) document provides an overview of the proposed Project and presents a summary of relevant potential environmental and social issues and impacts related to the construction and operation of the proposed Buca Metro line Project (“Project”). Appropriate measures to mitigate the key adverse environmental and social impacts that may arise during construction and operation of the Project are also presented within this document.

2. The Project Summary

The metro system in the City is presently primarily an above-ground metro system carrying 240,000 passengers daily presently, with 182 carriages and, a 20-kilometer network and 17 stations network. The existing system comprises one line which starts from Fahrettin Altay station in the southern part of the metropolitan area and runs towards the northeast to end at Evka-3 in Bornova. A 7 km extension from Narlidere station to Fahrettin Altay district which will be below ground is currently under construction.

The proposed Buca Metro line is the third major expansion and the fifth phase of the Izmir Metro Network development. It comprises a 13.3 km long line with 11 stations, 6 km of depot tunnel, and a total indoor area of 80 thousand m². The line will be an underground metro line with the stations and tunnel having an average depth between 30 to 45 meters below ground level. The line will start at Bozyaka and there will be 11 stations namely Bozyaka, Ucyol, Zafertepe, General Asım Gündüz, Şirinyer, Buca Municipality, Kasaplar, Hasanağa Bahçesi, Dokuz Eylül University, Buca Koop, and Çamlıkule station. The Buca Metro line will meet with the second stage line along F. Altay-Bornova at Üçyol Station, with the İZBAN line at Şirinyer Station. The system will allow unattended train operation, although it will not operate in driverless mode.

The Buca District is one of the oldest settlements in Izmir and is among the fastest-growing counties in terms of population growth. According to the last census, it was the fastest-growing district at the metropolitan level in 1990, with an increased rate of 97% compared to 1980. The Project is expected to result in safer and more reliable transport services for about 350,000 passengers per day and will help to reduce traffic congestion and noise pollution. The new Buca Metro line, together with its integration to the existing network, will replace high-carbon modes such as private cars and minibuses, thereby reducing air pollution, with the abatement of emissions of c. 22,626 tCO₂e, 57,193 tNO_x and 902 tPM per year (starting in 2026), resulting in 45,7 percent reduction in GHG emissions compared to current conditions. The metro construction is expected to start in 2021 and will take approximately 4 years to complete.

The Project will cross under state owned lands in residential areas and so will not require acquisition of private lands or resettlement due to land acquisition. It is not located within any biodiversity or nature reserve areas or national parks. Details of environmental and social impacts and mitigation measures are provided below.

3. Project Finance

The Project involves an overall expected construction investment of 648 million Euros (excluding value added taxes), of which 497 million Euros are related to the civil works and the remaining 151 million Euros concern Engineering and Maintenance. The final construction investment cost will depend on the final negotiation between the City and the Construction Contractor.

The City has obtained all the necessary approvals from the central government to include the Project in the National Annual Investment Program (“NAIP”) for making the Project eligible for foreign financing. Subject to approval by their respective authorities, the following international financial institutions are considering providing long-term finance to the City for this project:

- The European Bank for Reconstruction and Development (the “EBRD”)
- Asian Infrastructure Investment Bank (AIIB),
- Agence Française de Développement (AFD), and
- Other Lenders

4. Who are Project owners?

The parties of interest for the planning, tendering, construction, and operation of the metro lines are Izmir Metropolitan Municipality (IMM), Izmir Metro A.S. (IM), Construction Contractor, and Owner’s Engineer.

Izmir Metropolitan Municipality (IMM):

IMM has the authority to:

- Develop and implement the metropolitan transportation master plan, planning and coordinating transport and public transport services; and
- Carry out public transportation services within the metropolitan and for this purpose to establish, build, operate, or to allow operation the necessary facilities

IMM therefore will develop, implement the tendering process for the planning, design, and construction of the proposed metro line. IMM will appoint an Owner’s Engineer to monitor the construction process in line with the contract specifications agreed with the main Construction Contractor which will be selected through a procurement process in line with Lender requirements.

Izmir Metro A.S.:

Izmir Metro A.S. (“Izmir Metro”, “IM” or the “Company”) was established in 2000 as the municipal metro operator. It is owned by IMM and incorporated as a joint-stock company. Assets of the rail system (e.g. vehicles, station equipment, etc.) are owned by the City, whilst these assets are operated by the Company.

The roles and responsibilities of the Company and the City in building and operation of the metro system are defined by a lease agreement signed in 1999 for an indefinite period. According to this agreement, IM has the authority to undertake public transportation services tasks including operating and having operated on and above ground with rail, trackless, mobile machinery on behalf of IMM.

Therefore, the Project will be constructed under the responsibility of IMM and operated by IM.

5. Public Transportation System in Izmir

IMM has prepared the first Izmir Transport Master Plan in 2007 with the latest revision being in 2019. Studies were based on traffic studies, surveys, transportation network physical data, and complementary preliminary research, theoretical and technical studies. Research and studies were made by IKBNI 2005 (Izmir Regional Urban Land Use Plan (<https://mpgm.csb.gov.tr/izmir-manisa-planlama-bolgesi-1-100.000-olcekli-cevre-duzeni-plani-i-82265>)) decisions and forecasts, current and projected

population data, and current and projected land use data.

The Izmir Transport Master Plan was developed, with 2030 as a target year to finish the planned works. The modal priority hierarchy was stated as 1. Pedestrians, 2. Bicycles, 3. Public Transport, 4. Private Vehicles, and 5. Car Parking. Short-term visions of the plan were stated as urgent traffic reorganization plans, pedestrian-bicycle-traffic circulation plans in the city center, intersection reorganization projects and signalization plans, public transport rehabilitation plans, paratransit rehabilitation plans, and parking lot planning. The long-term vision of the plan (2030 target) is a comprehensive transport plan by urban land use plan and decisions, comprising plans for the railway system, roadways, waterways, bicycle, and pedestrian plan; all well-integrated with inter-urban transportation.

Izmir public transport system is a multi-modal system, organized with multiple inter-connected transport modes (walking, cycling, bus, railway, and ferries) controlled in a single center. Izmir Transport Centre offers online information regarding trip planning, available parking spots, bus-tracking, real-time bus data, road accidents and constructions, and others. There is an online platform controlled by the Izmir Transport Centre through over 10.000 smart devices. The public transport network makes up IZBAN, Izmir METRO, Tram, ESHOT, IZULAŞ, IZDENİZ, and BISİM.

IZBAN rail system is a single line connecting urban and suburban areas in the north-south direction. Izmir Metro operates in the east-west direction of the southern side of the gulf with expansion under construction towards the west and new line plans towards the land interior. There are two tram lines in operation: Karsiyaka tram line (northern side of the gulf) and Konak tram line (southern side of the gulf). Further on, ferry connections for passengers and cars provide a direct north-south gulf connection. The network is completed with the bus connections, ensuring a comprehensive transport system. Currently, there are 5 major interchange stations in the network are Egekent, Bostanlı, Hıdırlapınar, Konak, and Fahrettin Altay.

The extension of the current metro system and further integration of the metro system with existing transport modes, and connecting city bus services, is in line with the Izmir Transport Master Plan, enabling the provision of frequent and efficient services to Izmir residents in a way that is fast, reliable, comfortable, and environment-friendly, providing an alternative to the use of cars.

6. Izmir Metro System

The present Izmir Metro network consists of three stages as described below:

- **Stage 1:** Establishment of 11.6 km long network with 10 stations between Bornova and Üçyol. Stage 1 network commenced operation in May 2000.
- **Stage 2:** 5.5 km extension of the existing network from Üçyol station to Fahrettin Altay station (5 stations). Stage 2 has been planned as two stages. İzmirspor and Hatay stations have been in operation since December 2012. Göztepe, Poligon and Fahrettin Altay stations have been in operation since July 2014.
- **Stage 3:** Establishment of 2.3 km of the network (with 2 stations) after Bornova station. This network has been in operation since March 2012.

As of today, the metro system in the City is primarily an above-ground metro system carrying 240,000 passengers daily, with 182 carriages and, a 20-kilometer network and 17 stations.

In Izmir metro network system, there are 11 underground stations (Evka-3, Ege University, Basmane, Cankaya, Konak, Uçyol, Izmirspor, Hatay, Goztepe, Poligon, and Fahrettin Altay) and 6 aboveground stations (Hilal, Halkapinar, Stadyum, Sanayi, Bölge, and Bornova). Elevations of underground stations vary from -20 m and -36 m below the ground depending on land conditions. The metro system has two rails, and these are fed from the third rail (known as the electrified rail located along the two rails) with 750 Volt DC electrical power. There are currently 182 Light Rail Vehicles (LRVs) operated by IM. All LRVs are self-powered, and the drive and braking systems are controlled by an on-board computer. Interlocking and Automatic Train Protection (ATP) systems are used in the metro system to ensure safe public transportation.

Buca Metro line connects with the existing Izmir Metro line at a perpendicular angle, connecting the south-eastern part of the city to the railway system. Buca metro line will have one interchange station with the existing Metro line at Üçyol Station, and one interchange point with IZBAN line at Şirinyer station. The Buca line is represented with a bright yellow in the IMM's railway network map (Figure 1).



Figure 1: Integration of new line with transportation system

At the time of the assessment, the construction of the Fahrettin Altay to Narlidere route which is 7.5 km long with seven underground metro stations was ongoing. This is the fourth development stage and the second major expansion of the Izmir Metro network. Of the seven new stations, Balcova and Kaymakamlık stations were being developed with a car park structure with a 460-vehicle capacity. The City anticipates encouraging car commuters to park their cars at the station to transfer to the metro line. The stations included: the Fahrettin Altay Station (existing metro station), Balcova Station (including a car park structure), Cagdas Station, DEU (Dokuz Eylul University) Hospital Station, Guzel Sanatlar Station, Narlidere Itfaiye Station, Siteler Station, and Kaymakamlık Station (including a car park structure).



Figure 2: Network (Navy Line) And Planned Metro Lines (Üçyol-Buca Metro Line Shown with Yellow Line, Narlıdere-Balçova Metro Line Shown with Green Line), Red Line Shows the IZBAN Network

7. Buca Metro Line Project Description:

The overall Buca Metro line will serve a densely populated area, with a critical need for high capacity transit systems to increase public transport performance and decrease the pressure on the road system (already with high levels of congestion). The expanded Project is made up of three phases.

- **Phase I:** Buca district will be connected with the railway system, with connections to IZBAN, and Metro line. This phase is constructed under the Project.
- **Phase II:** The line will be extended in its southern part and will be connected with the IZBAN line at Inkilap Station.
- **Phase III:** The line will be extended towards north, connecting with IZBAN and the existing metro line in other stations.

In its final stage, the Buca Metro line will have a total length of 24.8 km and 22 stations.

The Project includes the construction of the first phase that will include:

- 11 underground metro stations; Buca metro line will have one interchange station with the existing Metro line at Üçyol Station, and one interchange point with the IZBAN line at Şirinyer station (See Figure 2.3).
- 1 depot – depot access tunnel (approx. two tunnels 3 km each)
- The total length of 13.4 km (Roundabout Line of approx. 3.8 km and a Line of 9.5 km)

The metro line passes through predominantly residential areas of Buca district, Izmir's most populated district with 500,000 inhabitants, administrative buildings, and two large educational campuses, namely two Dokuz Eylul University campuses: Tinaztepe (DEU Kampus Metro Station) and Dokuzcesme (Hasanaga Bahcesi Metro Station). The figure below presents the Izmir Metropolitan Municipality

railway network map, and the yellow metro line designation indicates the planned Buca Metro line.

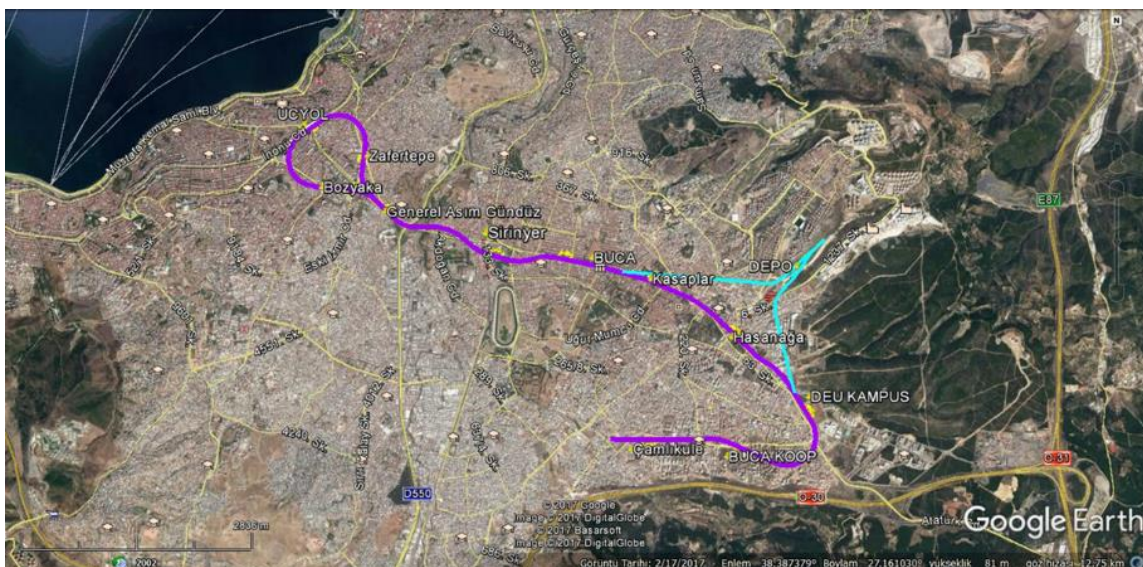


Figure 3: Satellite image of planned Buca Metro Line

8. What Environmental And Social Studies Have Been Undertaken?

Under the Environmental Impact Assessment Regulation (Official Gazette Date/Number: 25.11.2014/29186), an ‘EIA not Required’ decision (Decision Date: 22.09.2017 Decision No: 48657465 220-02 E-201728129.06.2016) was issued for the Project.

A third party Environmental and Social Due Diligence (ES DD) was commissioned by the EBRD for the Project. The objective of the ES DD was to identify and assess the environmental and social impacts associated with the construction and operation of the proposed metro line and the capacity of the Project development to address these impacts in line with the Lender's environmental and social requirements.

The Project has been designated as a category B project by the EBRD’s 2019 Environmental and Social Policy as the potential E&S impacts associated with the project are assessed to be limited and can be readily addressed and managed through the implementation of the Environmental and Social Action Plan (ESAP). The potential environmental and social impacts/risks will be mitigated through careful design and implementation of effective measures including avoidance of physical and economic resettlement during the design stage, use of tunnel boring machine (TBM), and New Austrian Tunneling Method (NATM) technique resulting in fewer impacts compared to other techniques. The potential environmental and social impacts are generally site-specific and can be avoided or mitigated by adhering to relevant Lenders’ performance requirements, procedures, guidelines, and design criteria.

9. Scope of the Environmental and Social Due Diligence

The scope of ES DD work comprised of the following:

- Identify existing and Project-related environmental and social impacts and risks;
- Describe and characterize a relevant environmental and social baseline commensurate with the risks posed by the current site operations and the Project;

- Identify any issues and gaps in management and monitoring of the current metro construction activities and propose recommendations measures;
- Identify gender issues and risks including design, construction, and operational measures i.e., accessibility issues, security of stations, and gender-based violence and harassment (GBVH) risks to workforce, communities and passengers and propose appropriate mitigation measures to address the gender risks and impacts;
- Determine emissions reduction of the Project, including CO₂ and toxic emissions (NO_x, SO_x, CO, PM, etc.) based notably on modal transfer from existing transport mode.
- Identify if any additional studies will be required to cover relevant aspects in greater detail (e.g., biodiversity, land acquisition and resettlement risks, cultural heritage impacts retrenchment/demobilization plan, contractor control management plan, etc.).
- Identify affordability and accessibility issues and propose robust mitigation measures for any potential gaps; Assess stakeholder engagement and complaint management policies and practices, identify improvement areas and address these gaps through a detailed Stakeholder Engagement Plan developed specifically for the Project and through ESAP actions.
- Identify potential vulnerable groups and assess proposed measures to address risks to the vulnerable people including disabled, elderly, children, women, low-income, etc. in line with PR 1 requirements.

The scope of the ES DD undertaken for the Project included an environmental and social audit through a site visit to the selected existing facilities of IM and selected construction sites of an ongoing metro construction project, interviews with management and construction workforce, review of available environmental and social documents and a detailed environmental and social management review and analysis for the Project about national regulatory requirements and relevant international standards.

As part of the ES DD, a detailed Environmental and Social Due Diligence Report, an Environmental and Social Action Plan (ESAP) and a Stakeholder Engagement Plan (SEP) and this Non-Technical Summary (NTS) were prepared for the Project.

10. What are the key environmental and social impacts of the Project and the proposed mitigation measures?

The main benefit that will be experienced by the Project will be the extension of the current metro system in line with the Izmir transport masterplan, enabling the provision of frequent and efficient services to Izmir residents in a way that is fast, reliable, comfortable, and environmentally friendly, providing an alternative to the use of cars. There will be time savings due to decreased travel time compared to using buses and minibuses, as well as a reduction in the vehicle operating costs in public transportation in the city and reduction in the minibus and bus traffic in the route which is expected to result in savings in road maintenance costs.

On the other hand, the Project can potentially result in some negative impacts on the environment and people, if not managed carefully. The ESDD has identified all potential environmental and social impacts associated with the construction and operation phase of the Project and appropriate mitigation measures were agreed as part of ESAP. IMM and the Construction Contractor will be responsible for the management of construction phase impacts whereas the IM will be implementing measures to prevent, reduce, or mitigate any potential negative impacts of the operation of the metro line.

The Buca District is one of the oldest settlements in Izmir. It has 47 neighborhoods, and The District

area is 133.90 km². All settlements are established on the plain, and there is no urbanization in mountainous lands. There are 47 neighborhood headmen in the district center. Kemalpaşa and Bornova are in the district's north, Konak in the west, Menderes in the south, and Torbalı District in the east.

The Project will be carried out mostly within residential areas. Üçyol district, Karabağlar, and Buca settlements are the regions where a significant portion of the population of the central city lives. In terms of land use, the route passes mainly through areas where residential buildings are located however the Project will cross state lands and therefore will not impact any private lands and will not cause any physical resettlement due to land requirements. There are several sensitive receptors such as schools and hospitals within the zone of influence of the construction sites at stations, which will need to be carefully considered during the establishment of the construction area and management of the construction process. The zone of influence for the physical environment will be based on the noise propagation, air emissions distribution, impacts on traffic created by construction activities, soil settlement, and vibrations in the soil matrix caused by the tunneling activities, vibration impacts on buildings and structures. Each station vicinity will have its unique set of Area of Influence (AOI); the exact AOI will be established and then monitored regularly through air, noise, vibration, waste and traffic measurements and observations during the construction activities. Stakeholders including schools, hospitals, universities, residents, shop owners, passengers, vulnerable people such as women, elderly, disabled and children etc. will be informed and consulted about Project activities, risks and mitigations at each phase of the project. An effective grievance management system will be developed and implemented for the project. Lenders will monitor effective implementation of the project throughout Project lifetime.

A summary of key potential environmental and social impacts and mitigation measures are presented in Table 1 below. If you need further information, please contact the project team through the contact details provided at the end of this NTS.

Table 1. Potential Environmental & Social Impacts of the Project During the Construction Phase and Operation Phase and Proposed Mitigation Measures

Impact Topic	Potential Impact / Source		Proposed Remedial Measures
	Source	Significance	
Organisational Capacity & Management Systems	<p>Construction Phase: Based on Technical Specifications prepared for the Project, IMM requires contractors to perform a sound environmental and social performance and to prepare management plans specific to construction sites.</p> <p>Operation Phase: IM operates the metro lines and will be required to implement the operational measures in line with the agreed ESAP.</p>	High	<p>Construction Phase:</p> <ul style="list-style-type: none"> • IMM to establish a Health, Safety, Environment, and Social (HSES) management system in line with ISO 14001, ISO 45001, and SA 8000 standards; • IMM to establish an HSES team to monitor construction projects including H&S, environment and community liaison experts (CLOs) to manage stakeholder engagement activities and complaints ; • Contractor to develop and implement an environmental and health and safety management system in line with the requirements of ISO 14001 and OHSAS 18001 (ISO 45001:2018) and SA 8000 standards; • Contractor to develop and implement environmental and social management system (ESMS) and plans to mitigate E&S impacts and risk; • Contractor to establish a strong HSE team with clearly defined roles and responsibilities, and authority; • Owner's Engineer to be selected by IMM to undertake appropriate E&S monitoring during construction and commissioning to ensure PRs/ESAP requirements are met by the Contractor; • Contractor and IMM to develop a clear and comprehensive procedure for supply chain risk assessment and management <p>Operation Phase:</p> <ul style="list-style-type: none"> • IM to continue their EHS Management System in place to manage impacts associated with the operation of metro line and improve the capacity of team through additional trainings proposed as part of ESAP.
Permit requirements	<p>Generation of excavated earth material</p> <p>Generation of domestic wastewater at construction sites</p>	Medium	<p>Construction phase:</p> <ul style="list-style-type: none"> • Contractor to obtain all relevant permits including excavated earth material disposal permit; IZSU water and wastewater connection permits at sites; work permits at sites etc.

Impact Topic	Potential Impact / Source		
	Source	Significance	Proposed Remedial Measures
	Generation of wastewater for IM operations		<ul style="list-style-type: none"> Contractor responsible for establishment of the registration statuses, protection areas, and protection statuses of buildings before construction and then obtain the necessary permissions; IMM and its Owner's Engineer to monitor and ensure all permits are obtained <p>Operation Phase:</p> <ul style="list-style-type: none"> IM to obtain all relevant permits required for the operation of the metro line
Air quality	<p>Generation of dust during site preparation and excavation works, vehicle movement, stockpiles, unpaved surfaces in the working area.</p> <p>Exhaust emissions from construction machinery/vehicles. IM has air emission sources that need to be monitored</p>	Medium	<p>Construction phase: Contractor will:</p> <ul style="list-style-type: none"> Develop and implement an air quality management plan for construction sites Undertake air Quality Measurements at construction sites; Ensure regular water spraying at sites during dry/windy weather conditions Regular maintenance of vehicles; IMM will monitor implementation of these measures. <p>Operation Phase:</p> <ul style="list-style-type: none"> IM to take the necessary steps to ensure all air emission parameters are within the threshold as per the regulation. IM to ensure that activities in the new depot facility will comply with air quality regulations.
Noise and Vibration	<p>Generation of noise and vibration from construction/installation activities and construction machinery/vehicles.</p> <p>Generation of noise and vibration during operations</p>	High	<p>Construction phase:</p> <p>IMM to ensure that the following measures are undertaken at all construction sites:</p> <ul style="list-style-type: none"> Contractor to develop a noise and vibration management plan for construction phase; Contractor to implement noise and vibration measurements at construction sites in line with the plan;

Impact Topic	Potential Impact / Source		
	Source	Significance	Proposed Remedial Measures
			<ul style="list-style-type: none"> Conduct survey for the structural integrity of buildings within the zone of influence of the construction activities; <p>Operation Phase:</p> <ul style="list-style-type: none"> IM to develop and implement a noise and vibration monitoring plan for the operation phase of the Project IM to continue periodic noise monitoring at the above-ground and underground stations of the existing metro line to ensure compliance with the regulatory requirements;
Geology, Soils, and Groundwater	<p>Existing petroleum retail stores near the Project line may have adversely impacted the soil and ground water</p> <p>Potential to affect soil and groundwater quality through spills from hazardous chemicals and solvent tanks.</p>	Medium	<p>Construction Phase:</p> <ul style="list-style-type: none"> Contractor will conduct soil and groundwater analysis on potential sources of contaminants; Contractor will conduct a geological assessment after any natural hazards like an earthquake for the structural integrity of buildings within construction areas. <p>Operation Phase:</p> <ul style="list-style-type: none"> IM will obtain an opinion letter from the MoEU officials as to whether the IM facilities performing repair and maintenance fall within the RSPC Regulation.
Biodiversity	The Project will affect existing trees and bushes along the Project corridor which will need to be replanted.	Medium	<p>Construction Phase:</p> <ul style="list-style-type: none"> IMM to ensure a baseline survey for trees conducted carefully by relevant experts before construction; IMM to ensure that trees and flora is relocated at IMM plant nursery for replantation later and the former biodiversity characteristics are recaptured to conditions before construction activities following completion of construction <p>Operations Phase:</p> <ul style="list-style-type: none"> IMM will ensure that the biodiversity characteristics are maintained after redevelopment

Impact Topic	Potential Impact / Source		Proposed Remedial Measures
	Source	Significance	
Surface and Wastewater	<p>Runoff from construction has the potential to impact the surrounding waterways by increasing suspended solids, oil and grease, and chemical pollutants</p> <p>Generation of domestic wastewater at construction and operational sites</p>	Medium	<p>Construction Phase: Contractor will:</p> <ul style="list-style-type: none"> • Develop and implement a surface water management plan for construction; • Will discharge domestic wastewater to IZSU sewer system at construction <p>Operations phase:</p> <ul style="list-style-type: none"> • IM to discharge domestic wastewater to IZSU sewer system at operational facilities (depot, stations, etc.). <p>Both IMM and IM will monitor effective management of surface and waste water.</p>
Waste	Risks from the generation of excavated soils, solid wastes (including domestic and packaging wastes), construction and operation waste, and generation of hazardous wastes including waste oil, oily rags, and similar.	Medium	<p>Construction Phase:</p> <ul style="list-style-type: none"> • IMM to ensure that the Contractor will develop and implement a waste management plan for the construction phase; <p>Operations phase:</p> <ul style="list-style-type: none"> • IM to continue waste-related management practices including renewal of the waste management plan and to implement similar plans and regulatory compliance with the new depot activities; • IM to renew compulsory liability insurance
Hazardous Material	EHS risks due to potential poor storage conditions at the site, lack of MSDS	Medium	<p>Construction Phase:</p> <ul style="list-style-type: none"> • IMM will ensure that the main contractor will develop a hazardous material management plan for the construction phase; <p>Operations phase:</p> <ul style="list-style-type: none"> • IM to perform an inventory of the transformers, and oil-used in the transformers and if needed analyse and treat in line with the related regulations

Impact Topic	Potential Impact / Source		Proposed Remedial Measures
	Source	Significance	
Traffic	Adverse impact on existing roads and surroundings of the construction sites	High	<p>Construction Phase:</p> <ul style="list-style-type: none"> • IMM to ensure that Contractor will identify traffic risks around construction sites; • IMM to ensure that the Contractor develop and implement a Traffic management plan • IMM to ensure Contractor designs and implements traffic awareness campaigns around the construction sites for stakeholders with a specific focus on vulnerable groups such as children. <p>Operations phase:</p> <ul style="list-style-type: none"> • IMM to manage traffic risks around the stations during the operational phase
Cultural Heritage	Potential for encountering archaeological findings during construction Adverse impact for existing cultural assets during construction	High	<p>Construction Phase:</p> <ul style="list-style-type: none"> • IMM to resubmit the Project route to the İzmir 2nd Cultural Heritage Protection Council for review and approval; • Contractor to develop a Cultural Heritage Management Plan and a Chance Find Procedure; • IMM to undertake regular monitoring work related to cultural heritage conducted in the vicinity of the metro construction where vertical excavations are being undertaken; • Contractor to develop a detailed risk assessment that should be specifically conducted for buildings of interest with an archaeological expert within the zone of influence of the metro construction and operation.
Neighbouring facilities-community health and safety	Impact to neighbouring facilities because of installation/construction activities	High	<p>Construction Phase:</p> <ul style="list-style-type: none"> • IMM to ensure Contractor will include public safety issues in the risk assessment process including GBVH risks;

Impact Topic	Potential Impact / Source		
	Source	Significance	Proposed Remedial Measures
			<ul style="list-style-type: none"> • Contractor to take prevention measures around construction camps with fencing, safety signs, and safety bands under the security guard control; • Necessary safety precautions to be controlled regularly by IMM/Owner's Engineer during construction activities to ensure public safety; • Contractor will conduct a detailed survey of the structural integrity of buildings within the zone of influence prior to construction activities; • IMM and contractor will develop and implement a building evacuation and resettlement procedure, if needed, following the Resettlement Framework aligned with PR5 and this will be linked into the Emergency Response Plan. These unexpected temporary/permanent resettlement cases will be monitored and reported to EBRD in a timely manner; • IMM to ensure that its main Contractor develop and implement road safety policy, practices, and procedures to include a defensive, off-road, and antiskid driving training program for own drivers, shareholder companies, metro construction contractor and subcontractors' drivers; • Contractor to assess the skills of the drivers of the heavy vehicles before hiring or the skills of existing drivers need to be evaluated to ensure that they have the right driving skills and monitor speed limits of the drivers daily; • IMM to ensure its main Contractor conduct a regular risk assessment to address risks related to third-party access to the construction areas and risks related to driving from the construction site to the excavated material storage areas; • IMM to monitor community safety risks and implementation of measures by the Contractor and conduct root cause analysis to all potential incidents during construction activities; • Contractor to Develop and implement: <ul style="list-style-type: none"> ○ Air quality management plan ○ Noise and vibration management plan

Impact Topic	Potential Impact / Source		
	Source	Significance	Proposed Remedial Measures
			<ul style="list-style-type: none"> ○ Traffic management plan <p>Operations Phase:</p> <ul style="list-style-type: none"> • IM to develop and implement a noise and vibration monitoring plan for the operation phase of the Project • IM to continue periodic noise monitoring at the above-ground and underground stations of the existing metro line to ensure compliance with the regulatory requirements; • IMM to manage community safety risks at stations and metros including GBVH risks during the operational phase. • Undertake periodic emergency action plans which include earthquake scenario assessments as well as COVID-19.
Workers Health and Safety Risk Assessment	Lack of OHS management system written work permit procedure creates the risk of accidents and injuries Covid 19 pandemic	High	<p>Construction Phase:</p> <p>IMM to ensure that the Contractor will:</p> <ul style="list-style-type: none"> • Develop and implement an OHS management plan and procedures; • Develop and implement all necessary risk assessment documentation; • Develop and implement written work permit procedures; • Ensure Covid 19 measures are fully implemented • Implement an OHS training programme for all workers and communities • Implement an OHS monitoring and audit programme at site <p>Operations phase:</p> <ul style="list-style-type: none"> • IM to implement their exiting EHS Management System to manage operation phase impacts of the Project with improvement areas defined in this ESAP such as alignment of HR policy with Bank requirements including gender based violence and harassment, and child and forced labor.

Impact Topic	Potential Impact / Source		Proposed Remedial Measures
	Source	Significance	
Accident reporting system and Key Performance Indicator	Lack of written procedure prevents the effectiveness of accident reporting system Lack of KPI definition prevents measuring the effectiveness of safety systems in place Lack of monitoring and analysis of public accidents and incidents related to construction activities	High	<p>Construction Phase:</p> <p>IMM to ensure that the Contractor will:</p> <ul style="list-style-type: none"> • Develop a clear definition of targets and objectives and development of KPIs and implement and report regularly • Record and report public accidents and incidents <p>Operations phase:</p> <ul style="list-style-type: none"> • IM to continue the existing EHS Management System to manage operation phase impacts with an accident reporting system and KPI
Equipment Usage	Risks due to: Lack of driving safety policy and procedure Use of non-approved personnel lifts in shafts	High	<p>Construction Phase:</p> <p>IMM to ensure that the Contractor will :</p> <ul style="list-style-type: none"> • Develop and implement road safety policy and defensive driving training; • Test personnel lifts and loading equipment; <p>Operations phase:</p> <ul style="list-style-type: none"> • Test personnel lifts and loading equipment; • Conduct equipment testing periodically
Working conditions	Risks due to: Lack of noise, vibration, illumination, thermal comfort, and air quality measurements create risks in the work environment Ventilation systems do not present in shafts and tunnels creates poor ambient air quality	High	<p>Construction Phase:</p> <p>IMM to ensure that the Contractor will:</p> <ul style="list-style-type: none"> • Conduct noise, vibration, illumination, thermal comfort, and air quality measurements for the construction process; • Develop a work permit system for non-routine tasks. Before entry into confined spaces, CH₄, O₂, H₂S, and VOC measurements should be conducted before entering inside the confined spaces. This should be conducted for all three tiers IMM, IM, and Contractor; • Establish the LOTO procedure

Impact Topic	Potential Impact / Source		Proposed Remedial Measures
	Source	Significance	
			<ul style="list-style-type: none"> Monitor the working conditions of contractors regularly during construction IMM to develop and implement a worker grievance management system <p>Operations phase:</p> <ul style="list-style-type: none"> IM to implement the exiting EHS Management System to manage operation phase impacts of the Project IM to establishing the LOTO procedure
Emergency Planning	Risks due to deficient emergency planning covering all potential scenarios	High	<p>Construction Phase:</p> <ul style="list-style-type: none"> IMM to ensure that Contract will develop and implement a comprehensive emergency response plan and implement the exercise of a worst-case scenario with a strong emphasis on earthquake scenarios; COVID-19 response plan should be integrated with the site emergency plan for all three tiers IMM, Contractor and their subcontractors; IMM to conduct a complete life and fire safety review of the Project components by third-party competent fire experts before commissioning. <p>Operations phase</p> <ul style="list-style-type: none"> IMM to update the comprehensive emergency response plan as needed and implement the exercise of a worst-case scenario with a strong emphasis on earthquake scenarios;
Employment Human Resource Policies and Working Relationships	Creation of employment opportunities during the construction process Labour and working conditions; Risks due to Inadequate implementation of HR procedure	High	<p>Construction Phase:</p> <ul style="list-style-type: none"> IMM to ensure that the main construction Contractor develop and implement an HR Policy and a Personnel Regulation Procedure and a Code of Conduct which defines key employee rights in line with

Impact Topic	Potential Impact / Source		
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	<p>and policy information dissemination</p> <p>Lack of awareness of the ethical and social responsibility policies and procedures among working personnel</p> <p>Lack of personnel regulation document</p> <p>Insufficient staffing for document preparation for HR activities</p> <p>Poor communication between IM and Workers and Worker Representatives</p>		<p>national laws and Lenders' requirements including clear requirements on non-discrimination, gender equality, and avoidance of child, forced labour, and gender-based violence and harassment;</p> <ul style="list-style-type: none"> • IMM to ensure that the Contractor communicate its HR procedures and policies, including labor rights of workers and the grievance mechanism to all its subcontractors and its workers at the time of the hiring; • IMM and Contractor shall ensure that its HR policy and standards are adopted by all sub-contractors through contractual requirements and regular audits • IMM to regularly monitor labour and working conditions of construction workers; • IMM to ensure accommodation camps are constructed and managed in line with EBRD/IFC Guidelines • IMM to develop and implement a worker grievance management system. Status of GRM will be reported to Lenders on a regular basis. <p>Operation phase</p> <p>IM shall:</p> <ul style="list-style-type: none"> • Develop and implement an Employee Engagement Programme including clear communication channels, tools, and frequency of meetings between senior management and the workers as well as workers' organizations to improve the social dialogue at the workplace for IM; • IM to develop and implement a Gender Action Plan including clear requirements on non-discrimination, gender equality, and avoidance of gender-based violence and harassment; • Conduct wage/salary benchmark and compensation survey by job positions between workers employed at Izmir Metro AS and other affiliates of Izmir Municipal. Make improvements and take corrective action in line with benchmark results;

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			<ul style="list-style-type: none"> IM will develop and implement capacity/skill building programmes to senior management, the mid-level managers, and supervisors of white and blue collar employees to improve their general management skills; gender equality and GBVH issues etc IM to organize regular training to blue-collar and contractor workers on their labour rights including freedom of association and collective bargaining rights; IM to create an internal HR audit system within the company and to its contractors on regular basis ensure that contractor and their subcontractors comply with the national labour laws and regulations including those related to payment of wages during regular work hours and overtime, hours worked, and mandated benefits;
Wages, benefits, and conditions of work and accommodations	Noncompliance of workers work schedule with the Turkish Labour Laws and ILO Conventions Noncompliance of dormitory conditions with IFC/EBRD - Workers' accommodation; process and standards	High	<p>Construction Phase</p> <ul style="list-style-type: none"> IMM to conduct an internal labour audit every quarter at each site during construction, checking all the employment documentation in place, ensure that wages and social security records are in line with regulations for all workers, compliance of contractors and subcontractors against the legislation and PR2 and conditions of worker accommodation sites. IMM to develop and implement a worker grievance management system. IMM to ensure accommodation camps are constricted in line with EBRD/IFC Guidelines; <p>Operations Phase:</p> <p>IM to:</p> <ul style="list-style-type: none"> Establish an internal audit team trained in "Social Compliance", "Labour rights and regulations" for IM operations; Participate in a third-party audit approved by the International-accredited firms across the facilities and address audit findings for IM Operations; Develop a proper recording system for worker hours for workers;

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			<ul style="list-style-type: none"> Implement work schedules and paid leaves to comply with Turkish Labour Laws and Lender requirements;
Grievance Mechanism	Lack of procedure or grievance mechanism for obtaining suggestion/complaints of contracted and subcontracted employees (of the construction contractor)	High	<p>Construction Phase</p> <ul style="list-style-type: none"> IMM to ensure that the Contractor to establish and implement a “formal employee grievance mechanism” for all direct and subcontracted employees/workers and provide them information on channels for internal communication and raising grievances. IMM and Contractor to monitor implementation of grievance mechanism and report to Lenders on a regular basis. <p>Operation Phase:</p> <ul style="list-style-type: none"> IM to require establishment and implementation of an effective Employee Grievance procedure from all its contractors that is accessible and allows anonymous complaints and establish specific reporting lines for gender-based harassment and violence. IMM to monitor implementation and report to Lenders on a regular basis.
Unauthorized access to the site	Risks due to the presence of illegal workers (i.e., without a work permit) in subcontractors of the construction contractor	High	<p>Construction Phase:</p> <ul style="list-style-type: none"> IMM to ensure the Contractor implements work permit system and checks the IDs and work permits for anyone entering the site including subcontractors and suppliers; Signs are available for no access to unauthorised people Security control measures against ingress to sites including appropriate fencing, safety signs, and safety bands under the security guard control. <p>Operations Phase:</p>

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			<ul style="list-style-type: none"> IM to continue engaging with a subcontractor for security service for its operations Train security officers on GBVH risks
Subcontractor Management	<p>Risks due to: inadequate subcontractor management / insufficient control mechanisms Insufficient wage benefit control system in place for subcontracted workers</p>	High	<p>Construction Phase:</p> <ul style="list-style-type: none"> IMM to develop clear and comprehensive procedure on subcontractor management IMM to develop a contractor management plan to cascade all E&S requirements throughout contractors IMM to appoint an owner's engineers and HSES team to monitor the implementation Contractor to be selected and IMM to develop a clear and comprehensive procedure for supply chain risk assessment and management <p>Operations Phase:</p> <ul style="list-style-type: none"> No action was foreseen for subcontractor management.
Land acquisition and economic displacement	<p>The lands needed for the planned along long metro lines and stations belong to the IMM, therefore no land acquisition or resettlement activities will occur about the construction activities.</p> <p>Economic displacement and potential temporary resettlement may likely occur if structural damages occur during metro construction</p>	High	<p>The Construction Contractor will:</p> <ul style="list-style-type: none"> Conduct a risk assessment and building structure survey by expert institutions and will identify a list of potential apartments/households under risk, and shall monitor the risks to these buildings; Develop a Building Evacuation Plan and implement it in cases where the building structure is identified as risky for households living in it. Assessment and compensation measures shall be implemented in line with the EBRD PR 5 requirements, and as per the Resettlement Framework. This should also include identification of and conduct of meaningful engagement with vulnerable groups as the elderly, sick, people living in poverty situation/unregistered buildings, single women households, university students with livelihood difficulties or there may be informal tenants such as students and refugees;

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			<ul style="list-style-type: none"> • Ensure timely information disclosure and conducting meaningful consultation with affected people if they need to be resettled temporarily or permanently during construction. • Implement a proper monitoring and evaluation plan to monitor outcomes and ensure that displacement does not cause worse-off situations; • The process should be closed with a consent letter to be signed by the affected households after they move back to their houses to ensure no issue left. • A list of local businesses close to construction areas will be developed and their basic economic data will be recorded by the Contractor under the supervision of IMM (i.e., customers, sales, and revenues) and monitored. Despite all measures, if losses occur due to construction impacts these shall be assessed case by case basis and verified income losses shall be compensated. • IMM to ensure with a selected contractor that there will be no road closures and traffic/pedestrian restrictions or blocking of loading and display areas of businesses to prevent economic impacts on local businesses; • Effective dust and noise control shall be ensured to protect local businesses from customer and revenue losses; • An effective complaint management process will be implemented <p>Operations phase:</p> <ul style="list-style-type: none"> • The operation of metro line will bring possible positive impacts for residences. It will increase mobility and access of the public to both social and health services, universities, public institutions.
Stakeholder and Information Disclosure	Lack of stakeholder engagement leads to uninformed PAPs and result in opposition to the project	High	<p>Construction Phase:</p> <ul style="list-style-type: none"> • IMM to ensure the Stakeholder Engagement Plan is implemented effectively for the Buca Metro Line, with a specific focus on vulnerable groups;

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			<ul style="list-style-type: none"> • IMM and Contractor shall ensure that all stakeholder engagement activities are documented and reported to the Lenders in line with PR 10 requirements; • IMM to ensure that a strong community relations team is established for the Project (both within IMM and the Contractor) • IMM to ensure that an effective grievance mechanism is established, disseminated, and implemented • IMM to ensure Contractors, implement a community awareness-raising programme to manage safety & security risks to community members. • IMM to monitor implementation of the GRM and report to Lenders on a regular basis. <p>Operations Phase:</p> <ul style="list-style-type: none"> • IM to continue to implement a stakeholder engagement/communications plan for operations phases of all of its operations • IM to raise awareness of passengers on GBVH and other safety issues. • IM to continue to implement a grievance management process • IM to ensure adequate social resources available to manage external relations within the Company during operations • IMM to monitor implementation of the GRM and report to Lenders on a regular basis. •
Gender issues/Gender-Based Violence and Harassment	Gender-based violence and harassment risks are high in general in Turkey. This risk effects not only mental and physical health of women but it also create barriers against women's mobility.	High	<p>Construction and Operation Phases:</p> <ul style="list-style-type: none"> • Gender issues/ barriers against women's mobility will be identified and addressed throughout construction and operation of the metro line including initiation of a safe transport initiative (i.e. Physical measures such as lightening at stations and CCTVs, notifications etc and operational measures) . Identify opportunities and welfare for women in the design, construction, and operations phase of the project.

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			<ul style="list-style-type: none"> • A GBVH policy will be developed by IMM and circulated to the Owner's Engineer company and contractors as well as operation company, Izmir Metro A.Ş. to be integrated into their E&S policies and management plans; • The GBVH policy will be turned into the delivery arrangement through cascading into all relevant documents: including tender documents, code of conduct, E&S management plans, grievance management plan, operation plans, contractor control plan, risk documents, monitoring, and evaluation plans, audits/reports as well as field control form; • GBVH Policy and identified actions will be complemented with training and awareness-raising by IMM and all contractors/affiliated operational companies. • The policy will be communicated to affected communities, passengers and wider public to promote awareness and engagement on gender based violence and harassment risks through public campaigns (i.e., posters, brochures, display in digital boards) in trains and stations). • The grievance mechanism and complaints line will be revised to track GBVH issues. Access to complaint and helplines for women on violence prevention in trains and stations will be made more visible; • Appoint specially trained staff (including security staff at stations) and GBVH focal points to who will address GBVH related complaints. • Contractors and operations on the field will also be scrutinized to monitor risks of underreporting and misconduct towards female workers and community members; • Cooperation between IM with women's organizations, NGOs, relevant ministries, and international organizations on gender issues. • IMM and IM to disclose gender activities implemented as part of this project through their websites, newsletters, social media etc.. •

11. How will IM and IMM communicate and engage with stakeholders?

Both IM and IMM consider stakeholder engagement (including dialogue, consultation, and the disclosure of information) to be a key element of Project planning, development, and implementation and are committed to a transparent and respectful dialogue with stakeholders.

IMM mapped out the potential stakeholders and their interests and developed a Stakeholder Engagement Plan. This will ensure conduct of regular engagement with the affected people and vulnerable people, wider communities, local/national government, and non-governmental organizations, and media to inform them about project activities, plans and developments on an ongoing basis, and gather any complaints or feedback. Special attention will be given to vulnerable people including women, elderly, disabled and children throughout the project activities. The stakeholder engagement plan (SEP) is disclosed at <http://www.izmirmetroinsaati.com/TR/haber/paydas-katilim-plani-51>

12. How can stakeholders make a request, complaint or inquire?

Both IM and IMM established Grievance Mechanisms which provide a process for all people to easily convey their complaints and suggestions and allows the project to respond to and appropriately resolve the issues. Grievance procedures provide an opportunity for people to raise anonymous complaints if they wish to.

You can raise requests, questions, feedback, and complaints through the contact details provided below.

can be lodged:

The contact details for submitting grievances to
Izmir Metropolitan Municipality (IMM) and Izmir Metro A.S. (IM) are provided
below:

**IMM HEMŞEHİRİ İLETİŞİM MERKEZİ
(HİM) CUMHURİYET BULVARI NO: 1
KONAK / İZMİR**

E-mail: him@izmir.bel.tr

Telephone (Customer Call Centre): +90 444 40 35 or

185 Website: <http://him.izmir.bel.tr/>

İZMİR METRO A.S.

2844 SOK. NO:5 35110-01 MERSİNLİ / İZMİR

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