

**Public Use**



Luxembourg, 21 December 2021  
Operation No.: 1999-0272 and 2013-0129

# PROJECT COMPLETION REPORT

## BOSPHORUS TUNNEL & BOSPHORUS TUNNEL TRANCHE B

### TURKEY

#### TABLE OF CONTENTS

Scope.....	2
Cost and Schedule .....	2
Performance.....	3
EIB Involvement .....	3
ESCS.....	3
Promoter's Optional Final Comment .....	3

## Scope

The purpose of the Project, also known as the Marmaray Project, is to provide a safe, reliable, comfortable, efficient, cost-effective and environmentally friendly railway transport system for passengers and freight throughout the metropolitan area of Istanbul, connecting the European and Asian sides of the city by a tunnel crossing the Bosphorus Strait. The Marmaray Project consists of a 76.3 km high-capacity railway between Halkali on the European side and Gebze on the Asian side. The Project provides a fast and frequent commuter service aimed at serving a peak demand of 75,000 passengers, per hour and per direction at an operational headway of 120 seconds, in 2025. The railway on both the European and Asian sides consists of three tracks with operating speeds up to 80 km/h on the two tracks dedicated to commuter operations and 100 km/h on the third track dedicated to intercity passenger operations. This part of infrastructure consists of 62.7 km of railway with two tracks for commuter rail services and a third track for intercity railway operations, construction of 38 stations, depots and workshops, electrification, telecommunication and signalling systems.

The Bosphorus Crossing has only two tracks and consists of 1.4 km immersed tube tunnel and 12.2 km approaching bored tunnels, three underground and one at-grade stations.

The Marmaray Project also includes design, manufacturing, delivery to site, testing and commissioning of new 440 railway cars which form a fleet of 10-car and 5-car EMUs.

The Project has been implemented through three main design and build contracts:

1. Bosphorus Crossing contract (BC1) which consists of all works including tunnels, three underground and one at-grade stations, E&M works as well as track works between Kazlıcesme and Ayrilikcesme;
2. Commuter Rail contract (CR2) which includes design, manufacturing, delivery to site, testing and commissioning as well as maintenance for two-year period, of 440 rail cars. The rolling stock consists of a mixed fleet of EMUs (10-car and 5-car trainsets);
3. Commuter Rail contract (CR3) which includes civil works, electrification and signalling as well as upgrading of 36 stations and construction of two new stations, between Halkali and Kazlıcesme and between Ayrilikcesme and Gebze. There are three tracks on the alignment of the CR3 contracts. Two tracks are for commuter rail operations and the third track is for intercity operations. This contract consists of signalling, electrification, train protection system, telecommunications, Operation Control Centre, automated fare collection and SCADA systems throughout the entire alignment, including tunnels and deep stations of the BC1 contract. The contract includes also workshops, stabling areas for storage and maintenance of all systems for a two-year period. The scope of the CR3 contract was included in a previous contract named CR1. The CR1 contract was terminated due to a dispute between the contractor and the Promoter and re-tendered under the name of CR3.

The Marmaray project was the subject of three EIB operations, i.e. BOSPHORUS TUNNEL (1999-0272), BOSPHORUS TUNNEL TRANCHE B (2013-0129) and BOSPHORUS TUNNEL - COMMUTER TRAINS (2005-0103). The first two operations financed the infrastructure part of the Marmaray project, more specifically the CR1 contract and, following its termination, the CR3 contract (the EIB did not finance the BC1 contract). The third EIB operation financed the rolling stock to be used on the Marmaray infrastructure, i.e. it financed the CR2 contract.

The first two operations are the subject of this PCR, whilst the third operation is subject of a different PCR.

Promoter name: Altyapi Yatirimlari Genel Mudurlugu (AYGM), i.e. the Infrastructure Investments General Directorate of the Ministry of Transport, Maritime Affairs and Communication

Link to Website: [Altyapi Yatirimlari Genel Müdürlüğü \(uab.gov.tr\)](http://uab.gov.tr)

## Cost and Schedule

The total project cost, as estimated by the Promoter, is EUR 4,039.63 million. This cost includes earth works, structures, tunnels, track works, stations, electrification, signalling, rolling stock, design and supervision, land acquisition, all contingencies, variation orders and claims. The total project cost increased by about 7.8% if compared with the cost estimated by the Bank at appraisal stage in 2013.

Project works were completed with the exception of works related to Haydarpasa station and its stabling area. These works are expected to cause further delays due to the size and importance of archaeological findings and are foreseen to be completed in the first quarter of 2023. The estimated completion date of works at appraisal stage in 2013, was end of 2019.

## **Performance**

The 76.3 km of railway currently operate in two loops, i.e. an inner loop covering the stations located in the central area of Istanbul and an outer loop which covers more peripheral stations until both ends of the line, on the European and Asian sides. The inner loop is operating with a frequency of 8 trains per hour and per direction, i.e. 15 minutes headway between Zeytinburnu and Maltepe. The outer loop is operating with 4 trains per hour and per direction, i.e. 7.5 minutes headway for trains which travel between the two ends Halkali and Gebze. The 2025 target is high frequency railway operations in three loops. An inner loop with 28 trains per hour and per direction between Yenikapi and Sogutlucemesi, a middle loop with 14 trains per hour and per direction between Atakoy and Pendik and an outer loop with 7 trains per hour and per direction between Halkali and Gebze.

The project contributes to reduce traffic congestion in Istanbul through a significant modal shift from road to rail and consequent decrease of road accident rates, noise emission levels, air pollution and GHG emissions. The project brings improved accessibility to the public transport system in Istanbul which will also have a long term effect in land use.

The EIRR calculated at appraisal was about 10% and, although it was not re-calculated at project completion, the significant demand that was attracted by the Project, with the evident socio-economic benefits, supports this very good rating given at appraisal stage.

Moreover, the project works gave the opportunity to bring to light many archaeological findings, including the large archaeological site in the Haydarpaşa station area.

## **EIB Involvement**

The EIB got involved in the Project since early stages. The Bank appraised the infrastructure part of the project twice, i.e. in 2004 and 2013 and the rolling stock in 2005. The Bank constantly monitored the Project, participating in site visits and steering committees which were arranged twice a year, together with the other lenders CEB and JICA.

This PCR is based on the information provided by the Promoter's PCR.

## **ESCS**

The Environmental and Social Completion Sheet (ESCS) has been published separately.

## **Promoter's Optional Final Comment**

No comments.