

Methodology for Archaeological Survey and Reporting

Introduction

The project route passes within the important historical and archaeological sites and the cultural heritage assets included regions of Anatolia. The earliest human traces of these regions are dating back to 7000 B.C (Neolithic Period). Many registered and unregistered archaeological sites and cultural heritage assets are still waiting to research in these regions.

Therefore, the cultural heritage impact assessment studies will be carried on throughout the whole project route to make a proper impact assessment on cultural heritage assets which are located around the project route and the impact areas.

Objective

The general objective of the Cultural Heritage Impact Assessment study is to determine the impact of the project on the tangible and intangible cultural heritage in the project construction and the impact areas.

The main objectives of the study are:

- Determination of the current status and geographical distribution of the tangible and intangible cultural heritage assets that may be affected by the construction and operational activities of the Project.
- Identifying the negative effects that may occur due to the project construction activities on the tangible and intangible cultural heritage.
- Determining the necessary methods and suggestions to minimize the potential negative effects on the tangible and intangible cultural heritage through project activities and presenting them to the project investors.

Scope

The geographical scope of the study consists of the railway route, access routes, station buildings and other impact areas (such as quarries, campsites etc). The evaluation of the project impact on the archaeological and immovable cultural assets in the project route and its immediate surroundings constitutes the thematic scope of this study.

The identification of the archaeological and immovable cultural heritage assets that are likely to be found on the Railway Project route and connection roads and the impact of the project on these assets

will be evaluated along the project route, including the connection roads, over a wide corridor of the construction impact area. The focused-on study areas are shown below (*Hata! Başvuru kaynağı bulunamadı.*):

Table 1: Cultural Heritage Impact Assessment Survey Areas

Sections	Provinces	Main Route	
		KP (Start)	KP (Finish)
Section 1	Adana- Mersin	346+000	371+500
		20+000	43+000
		0+000	20+000
Section 2	Adana-Toprakkale	371+500	390+000
		390+000	407+000
		407+000	421+00
Section 3	Toprakkale-Bahçe	421+000	448+000
		0+000	21+500
		21+400	34+500
Section 4	Bahçe- Nurdağı	34+500	57+000
		0+000	17+000
Section 5	Nurdağı-Başpınar	78+000	98+000
		98+000	113+000
		113+000	131+000

In terms of intangible cultural heritage, the studies will be conducted in the villages and neighbourhoods on the project route ([Table 2](#)).

Table 2 Intangible Cultural Heritage Impact Assessment Study Locations

NO	Province	District	Village/Neighborhood
1	MERSİN	AKDENİZ	ÜÇÖCAK
2			MÜFİDE İLHAN
3			ÖZGÜRLÜK
4			ÇİLEK
5			KARACAİLYAS
6			KÜRKÇÜ
7			ADNAN MENDERES/HUZURKENT
8		TARSUS	MİTHATPAŞA
9			ŞEHİTİŞAK
10			KEMALPAŞA
11			YUNUSOĞLU
12			TEKELİÖREN
13			KAMBERHÖYÜĞÜ

14			YENİCE ATALAR
15	ADANA	SEYHAN	BÜYÜK DİKİLİ
16			SÖĞÜTLÜ/KÜÇÜK DİKİLİ
17			YEŞİLEVLER/ŞAKİRPAŞA
18			YENİ MAHALLE/ŞAKİRPAŞA
19			KURTULUŞ
20		YÜREĞİR	SERİNEVLER/KÖPRÜLÜ
21			YENİMAHALLE/İNCİRLİK
22			ESKİ MİSİS
23		SARIÇAM	MÜMİNİ
24		CEYHAN	SİRKELİ
25			MİTHATPAŞA
26			GAZİOSMANPAŞA
27			MUSTAFABEYLİ/RİFATİYE
28	OSMANİYE	TOPRAKKALE	GÖÇMENLER
29			FATİH SULTAN MEHMET
30			DAĞISTAN
31		MERKEZ	YENİMAHALLE
32		DÜZİÇİ	YAZLAMAZLI
33			YARBAŞI
34		BAHÇE	KARŞIYAKA
35			BAHÇELİEVLER
36			İSLAM
37			KIZLAÇ
38	GAZİANTEP	NURDAĞI	ASLANLI
39			BEYDİLLİ/SAKÇAGÖZÜ
40			ŞATIRHÖYÜK
41		ŞEHİTKAMİL	ESKİŞARKAYA
42			AĞAÇLI/BOYNO
43			AKTOPRAKLİK

APPLICABLE LEGISLATION AND STANDARDS

In Turkey, movable and immovable cultural and natural assets are protected and should be conserved as per the “Law on Preservation of Cultural and Natural Assets”, 2863 (amended by law numbered 3386), published in the Official Gazette numbered 18113 and dated 23 July 1983. According to the Law, essential assets which are identified as cultural and natural heritage under legal protection are defined as follows:

- Natural and immovable cultural assets belonging to 19th Century and before;

- Any immovable cultural asset constructed after the end of the 19th Century but categorized as “a significant asset which requires preservation” by the Ministry of Culture and Tourism;
- Immovable cultural assets located within the Protection Sites (in the Law, Protection Sites are defined as ancient sites and ruins which reflect the main social, economic or architectural characteristics of their era. Protection Sites may also be locations where fundamental historical events took place or areas containing considerable natural or cultural assets with natural or cultural features requiring preservation);
- Structures, buildings or places that have witnessed significant historical events during the Turkish Independence War or the foundation of the Turkish Republic, regardless of time and registration; and all dwellings and buildings that have been used by Mustafa Kemal ATATURK without considering their time of construction or status of registration.

In addition to the Law on Preservation of Cultural and Natural Assets, some regulations govern the procedures about the protection and preservation of cultural and natural assets. The most predominant one being the Principle Decision (No. 658, issued 5 November 1999) which states that all archaeological sites need to be classified and protected according to their significant features. Three main categories are determined relevant to archaeological sites as:

- **1st Degree Archaeological Sites:** Areas requiring highest level of protection. They should be preserved except for scientific excavations. The area should be free of any type of buildings and construction. All kinds of construction, excavation, and modification activities are prohibited. However, for exceptional cases such as the necessity for essential infrastructure construction, Regional Preservation Boards may permit such activities based on the approval of the relevant museum and the head of the scientific excavation team.
- **2nd Degree Archaeological Sites:** Areas requiring medium level of protection. They should be preserved based on the conditions of protection and utilisation set by the Regional Preservation Boards. Additional construction is prohibited. As the 1st Degree Sites, for exceptional cases such as necessity for infrastructure construction among others, Regional Preservation Boards may permit such activities based on the approval of the relevant museum and the head of the scientific excavation team.
- **3rd Degree Archaeological Sites:** Lowest level of protection area. Construction is permitted based on the decisions of Regional Preservation Boards. Before applying for a construction permit, test pit excavations should be conducted, and the outcomes of these excavations should be reviewed by the relevant museum and, if present, the head of the scientific excavation team. Reviews should be submitted to Regional Preservation Boards. The Boards may ask for extension of the coverage of test pits before taking any decision.

The Intangible Cultural Heritage which are located within the borders of the Republic of Turkey, is officially protected by "Law No. 5448 on 19/01/2006 on the Law on the Approval of the Convention for the Protection of the Intangible Cultural Heritage". The intangible cultural heritage legally protected by the relevant law is defined as follows:

- Any cultural value created by public in oral cultural environments and included in folklore research; verbal expressions and cultural traditions such as oral traditions, performing arts, social practices, rituals and festivals, popular knowledge, practices related to the universe and nature, tradition of handicrafts and production processes.

In addition to the laws and regulations described above, the guidelines given below, and the guiding principles of international organizations have been taken into consideration during the work carried out:

- International Finance Corporation - IFC Performance Standard 8; Cultural Heritage, January 2012
- European Bank for Reconstruction and Development- EBRD, Environmental and Social Policy, PR08, Cultural Heritage; April 2019
- Guidance on Heritage Impact Assessments for Cultural World Heritage Properties, ICOMOS 2011.

METHODOLOGY

Evaluating the present status of the tangible and intangible cultural heritage assets for the project will be conducted in five different phases which are;

- Desktop Study
- Field Research
- Risk Assessment
- Impact Assessment
- Reporting

Desktop Study

Publications on archaeological, ethnographic and intangible cultural heritage related to the field of study and its immediate surroundings will be compiled in order to determine the cultural heritage potential of the project construction and the impact areas. Existence of archaeological or cultural

heritage will be recorded in the project construction areas and the project impact areas will be researched. Resources used during desk study are as follows:

- Academic Publications
- Historical Maps
- Previous Cultural Heritage Studies and Surface Survey Results Reports.
- Inventory Records of the Ministry of Culture and Tourism.

Field Research

The field survey on tangible and intangible cultural heritage will be conducted by two teams separately. The surveys will be carried on the project route, impact areas and its surroundings by REGIO Cultural Heritage Field Team¹.

The project routes, the connection roads, quarries, dump sites, concrete batch plants and campsites of the project will be studied with walkover survey to identify tangible cultural heritage during the field research. The field survey will be conducted along the project route to identify possible archaeological and immovable cultural assets and observe the latest conditions of registered archaeological sites, the methods of “Field (Route) Walking”, “Intensive Field Survey”, and Extensive Field Survey” will be used. These studies will be conducted within the 100m corridor, which encompasses the construction impact area. The details of the Field (Route) Walking, Intensive Field Survey, and Extensive Field Survey are presented in the following paragraphs:

Field Walking

The “Field Walking” will be used as the main research method during the field survey conducted within the 100m corridor of the project route. The field survey will be realized mainly within the project construction corridor and the area which is considered as its impact area (100 m corridor covering the 50m right and 50m left of the construction axis). During field walking, the field survey team leader walked along the main axis of the project construction corridor using a GPS device, while two specialists of the archaeology team walked at both edges of the 100m corridor. The instant communication between the members of the field team who move forward in parallel will be provided by walkie-talkies. During the field walking, all archaeological traces (ceramic shards spread on the surface, architectural elements or traces, graves or traces of graves, mounds, tumuli, etc.) will be observed on the surface will be noted on the Archaeological Baseline Table (Annex 1). When

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archaeological traces were encountered in a region, the method of Intensive Field Survey, which is defined below, will be used to collect data.

Intensive Survey

This method will be followed when an archaeological site was encountered within the boundaries of the 100m impact corridor. The aim of this method is to determine the spread of the archaeological site, identifying its association with the project route on the map, revealing the area of distribution of archaeological surface findings and completing entire documentation, which would aid in interpreting the history of the site on the basis of archaeological artefacts on the surface. During this activity, by taking sufficient number of GPS coordinates (at least four different points) from each site, surface area of the site in current geography, and its location will be determined. Moreover, detailed photographs of each site will be taken from different angles and archived to be used in the reports. The area will be divided into 10x10 m wide squares in the north-south direction and the samples of archaeological material such as pottery, stone tool shards etc. on the surface will be systematically documented (photographing, etc). During all these works, the “Archaeological Baseline Table” (Annex 1), which will be prepared by the research team, will be filled separately for each site and all information related to the observations made in every site will be recorded in this document. This document will be also used as reference sources in preparation of the impact assessment report after the survey. By processing the GPS coordinates which will be taken on the site (WGS 1984, 6 Degree UTM) by using Esri ArcGIS software, the locations of the sites in association with the project route and other construction impact areas will be reviewed in the GIS environment and it will be used as the baseline information for impact assessment studies.

Extensive Survey

The greater part of the works for identifying the archaeological and immovable cultural assets within the 100m corridor alongside the railway route will be completed by using the method of field walking. In cases when walking does not possible (private property requiring permission, restricted zones etc.) the method of “Extensive Field Survey” will be followed. In this method, in order to determine the presence of archaeological and immovable cultural assets, the archaeological traces on the surface will be observed at the most accessible points of the areas, where the field walking could not be conducted. The archaeological data retrieved from desk research and the results of archaeological potential modelling will be taken into consideration in estimating the observed areas. For the sections, where the field survey will be conducted using this method, the “Archaeological Potential Modelling” works will be implemented in order to develop risk projection for these sections.

Field Study for Intangible Cultural Heritage

Field studies for intangible cultural heritage will be carried out by conducting face-to-face interviews in 43 settlements in the immediate vicinity of the project sections. Strategically, priorities will be given to people who have been living in the region for at least 3 generations and have an average age of 55 and over, who have accurate and reliable information about the history of these regions. Apart from the profile in question, people who are knowledgeable about the history, traditions and customs, and geography of the region will be interviewed. In addition, the observations made during the studies will be used as part of field studies on intangible cultural heritage. Social Impact Assessment related topics will not be included in the intangible heritage questionnaire. Only intangible cultural heritage related issues will be discussed during the face-to-face interviews.

Risk Assessment

As mentioned above, the field studies will be conducted as field walking as much as possible within the 100 m impact corridor of the project. However, the surface vegetation or upper soil may have covered some archaeological assets. Therefore, an "archaeological potential modelling" study will be carried out where the possible chance find could be encountered locations (Table 2), if necessary.

With the modelling study and the modelling maps will be produced as the result of the study, it is intended to identify the sections likely to encounter chance finds in the construction and impact area of the project. The developed model will be prepared for a 100-meter-wide corridor covering the construction and impact area of the project by using ESRI ArcGIS software. During the modelling study, 5 main factors will be taken into consideration. These factors are: the presence of water resources and proximity to water resources, the slope of the land, the classification of the land (woodland, grassland, agricultural field, irrigated farming area, etc.), proximity to ancient roads or known archaeological sites and modern settlements. Each factor will be divided into sub-factors and assigned different scores. Positive weighted values will be determined as positive effect during evaluation, while negative weighted values will be determined as negative effect. For example, in the land classification, the forest area category will be evaluated with -2 points, while dry agricultural production land will be evaluated with +2 points. Since many ancient settlements, etc. exist around modern villages or settlements, this modeling will be based on the assumption of the similarity of the convenience of the present environment for settlement with the convenience of the environmental conditions in ancient times.

After determining the score values of the sub-factors, the project route and the impact corridor will be divided into fields, and the points corresponding to the relevant sub-factor will be summed for each field depending on the characteristics of that field and as a result, positive or negative total scores will

be obtained for each field. The areas with positive scores will be evaluated as "Areas with High Archaeological Potential" and the areas with negative scores as "Areas with Low Archaeological Potential". The risk assessment study will be developed as a part of the ESIA report if required. Predictive parameters and sub-categories will be taken into consideration in modelling and the points defined for them are given below ([Table 3](#)).

Predictive Parameters	Predictive Sub-category	Critical Value	Predictive Weight
Hydrology/ Proximity to Water	Stream Order 1	750 m	2
	Stream Order 2	1000 m	2
	Stream Order 3	1000 m	1
	Stream Order 4	1000 m	2
	Stream Order 5	1500 m	-1
	Stream Order 6	1750 m	-2
	Lake/Sea Order 7	2 km	3
Slope	Slope	0-10	0
	Slope	10-90	-5
Land Classification	Patch Agriculture	Yes	2
	Fruit Tree Grove	Yes	2
	Arable Non-Irrigated	Yes	2
	Arable Irrigated	Yes	-2
	Forest Area	Yes	-2
	Grasslands	Yes	-2
	Barren Land	Yes	-2
	Wetlands or Water	Yes	-4
	Industry/Built Area	Yes	-4
	City Area	Yes	-4
	Proximity to wetlands	1 km	2
Proximity to Rural/Ancient Roads and Settlements	Proximity to Rural/Ancient Roads and Settlements	0-1 km	2
Proximity to Modern Settlements	Proximity to Modern Settlements	0-2 km	2

[Table 3: Predictive Parameters and Sub-Categories Taken into Consideration in Modelling](#)

Impact Assessment

It is possible that some activities conducted within the project and impact area of the project may cause irreversible negative effects on tangible and intangible cultural heritage assets in the area. Some mitigation measures will be proposed to minimise these effects. The impact of construction activities on the identified areas will be evaluated based on “Guidance on Heritage Impact Assessments for Cultural World Heritage Properties” document prepared by ICOMOS and adopted by the Ministry of Culture and Tourism for its use to properly assess the impact of construction activities on cultural sites. In line with the document, the archaeological and tangible cultural assets identified in the area will be classified based on their level of importance ([Table 4](#)).

Grading	Archaeology	Built Heritage or Historic Urban Landscape
Very High	Sites of acknowledged international importance inscribed as Word Heritage List property.	Sites or structures of acknowledged international importance inscribed as of universal importance as Word Heritage List property.
	Individual attributes that convey Outstanding Universal Value of the Word Heritage List property.	Individual attributes that convey Outstanding Universal Value of the Word Heritage List property.
	Assets that can contribute significantly to acknowledged international research objectives.	Other buildings or urban landscapes of recognised international importance.
High	Nationally-designated Archaeological Monuments protected by the State Party's laws	Nationally-designated structures with standing remains.
	Undesignated sites of the quality and importance to be designated.	Other buildings that can be shown to have exceptional qualities in their fabric or historical associations not adequately reflected in the listing grade.
	Assets that can contribute significantly to acknowledged national research objectives.	Conservation Areas containing very Important buildings
		Undesignated structures of clear national importance.
Medium	Designated or undesignated assets that can contribute significantly to regional research objectives.	Designated buildings. Historic (unlisted) buildings that can be shown to have exceptional qualities or historical associations.
		Conservation Areas containing buildings that contribute significantly to its historic character.
		Historic townscapes or built-up areas with important historic integrity in their buildings, or built settings.
Low	Designated or undesignated assets of local importance.	"Locally Listed" buildings.
	Assets compromised by poor preservation and/or poor survival of Contextual associations.	Historic (unlisted) buildings of modest quality in their fabric or historical associations.
	Assets of limited value, but with potential to contribute to local research objectives.	Historic Townscape or built-up areas of limited historic integrity in their buildings, or built settings.
Negligible	Assets with little or no surviving archaeological interest.	Buildings or urban landscapes of no architectural or historical merit; buildings of an intrusive character.

Unknown Potential	The importance of the asset has not been ascertained.	Buildings with some hidden (i.e. inaccessible) potential for historic significance.
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Table 4: Example Guide for Assessing Value of Heritage Assets

For assessing the severness of exposure to damage of these properties in the project area and its impact zone as the result of project activities a 5 grade classification will be used. This grading depends on the size of the asset carrying a risk of damage as the result of project activities (m2) and the size of the area to be negatively affected by project activities (m2) (*Table 5*).

Impact of Construction Activities on the Archaeological and Tangible Cultural Assets (%)	SCALE & SEVERITY OF CHANGE/IMPACT
0-20	No Change
21-40	Negligible change
41-60	Minor change
61-80	Moderate change
81-100	Major change

Table 5: Change / Impact Assessment Chart

The general impact assessment of the archaeological and tangible cultural assets within the project impact area has been made by considering “scale and severity of impact” and “value of the archaeological and tangible cultural asset” (*Table 6*).

Value of Archaeological or Immovable Cultural Heritage	SCALE & SEVERITY OF CHANGE/IMPACT				
	No Change	Negligible change	Minor change	Moderate change	Major change
For World Heritage List Properties VERY HIGH – Attributes Which Convey Outstanding Universal Value	SIGNIFICANCE OF EFFECT OR OVERALL IMPACT (EITHER ADVERSE OR BENEFICIAL)				
	Neutral	Slight	Moderate/ Large	Large/very Large	Very Large
For Other Cultural Heritage Assets	SIGNIFICANCE OF IMPACT (EITHER ADVERSE OR BENEFICIAL)				
Very High	Neutral	Slight	Moderate/ Large	Large/very Large	Very Large
High	Neutral	Slight	Moderate/ Slight	Moderate/ Large	Large/Very Large
Medium	Neutral	Neutral/Slight	Slight	Moderate	Moderate/ Large
Low	Neutral	Neutral/Slight	Neutral/Slight	Slight	Slight/ Moderate
Negligible	Neutral	Neutral	Neutral/Slight	Neutral/Slight	Slight

Table 6: General Impact Assessment Matrix

Reporting

During all studies, all data collected for tangible and intangible cultural assets will be evaluated in different mapping and analysis platforms² and the reporting will be completed by considering geographical positioning of tangible and intangible cultural assets and by developing mitigatory actions for protection/salvation of these assets.

The data collected related to the intangible cultural heritage during interviews will be transcribed after face to face interviews with local residents. The transcribed data will be analysed to evaluate the effects of the project on intangible assets and the analysis will be reported.

A project specific “Cultural Heritage Management Plan” and a “Chance Find Procedure” will be developed for the project during the reporting phase.

² ESRI ArcGIS