



# **TURKEY**

## **IRRIGATION MODERNIZATION PROJECT (P158418)**

### **MANİSA ALAŞEHİR IRRIGATION REHABILITATION PROJECT**

#### **ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)**

**JULY-2019**



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## **Abbreviations**

APIRP	Alasehir Plain Irrigation Rehabilitation Project
ESMP	Environmental and Social Management Plan
WB	World Bank
DSI	General Directorate of State Hydraulic Works
EIA	Environmental Impact Assessment



## **1 Introduction**

This Environmental and Social Management Plan (ESMP) has been prepared to set out the measures required to be taken to eliminate and/or mitigate to acceptable levels the environmental and social impacts that may be caused during the construction and operation stages of Manisa-Alasehir Irrigation Rehabilitation Project (AIRP) planned to be carried out under the Turkey Irrigation Modernization Project. This ESMP aims at clearly defining by whom, when, how often and how the measures will be taken during the construction and operation stages. This ESMP has been prepared in compliance with primarily the laws and regulations of Turkey, in addition to the World Bank's policies and safeguards measures.



## **2 Project Description**

The infrastructure investments to be financed primarily under Component 1 of Turkey Irrigation Modernization Project (TIMP) include the replacement of existing open channel systems (channel and distribution structures) with closed and pressurized systems. This component will be implemented by DSI, and will also include improved operations and maintenance, and capacity strengthening support for Water User Associations (WUAs). The sub-project covered by this ESMP and to be implemented under TIMP consists of the construction works and operation of irrigation systems within the existing Manisa-Alasehir Irrigation. Within the construction works, the existing channels will be replaced with pressurized pipe systems.

### **2.1 Project Location and Current State**

Manisa Alasehir Irrigation Rehabilitation works aimed at eliminating the problems that occurred over time in the irrigation field opened in 1979. These studies have been carried out within the framework of measures to be taken to water saving due to malfunctions in the network, operational and maintenance difficulties, water leaks due to wear and related casualties, and droughts experienced in recent years. In this study, in line with the rapidly increasing developments in irrigation methods and the intense demands from the local people, the irrigation system was transformed into a closed system (pressure pipe drip and sprinkler) and the rehabilitation of the irrigation network was aimed.



Rehabilitation area is located in western Turkey, in border of Manisa province, Alasehir district. Irrigation field is located on the axis extending from the north-west to the south-west of Alasehir district center. The eastern border extends to the west of the town center of Sarigol. Alasehir District center is located on 28° 31 '38' 'east longitude, 38° 21' 41 ' ' second north latitude and its' altitude above sea level is 189 meters.

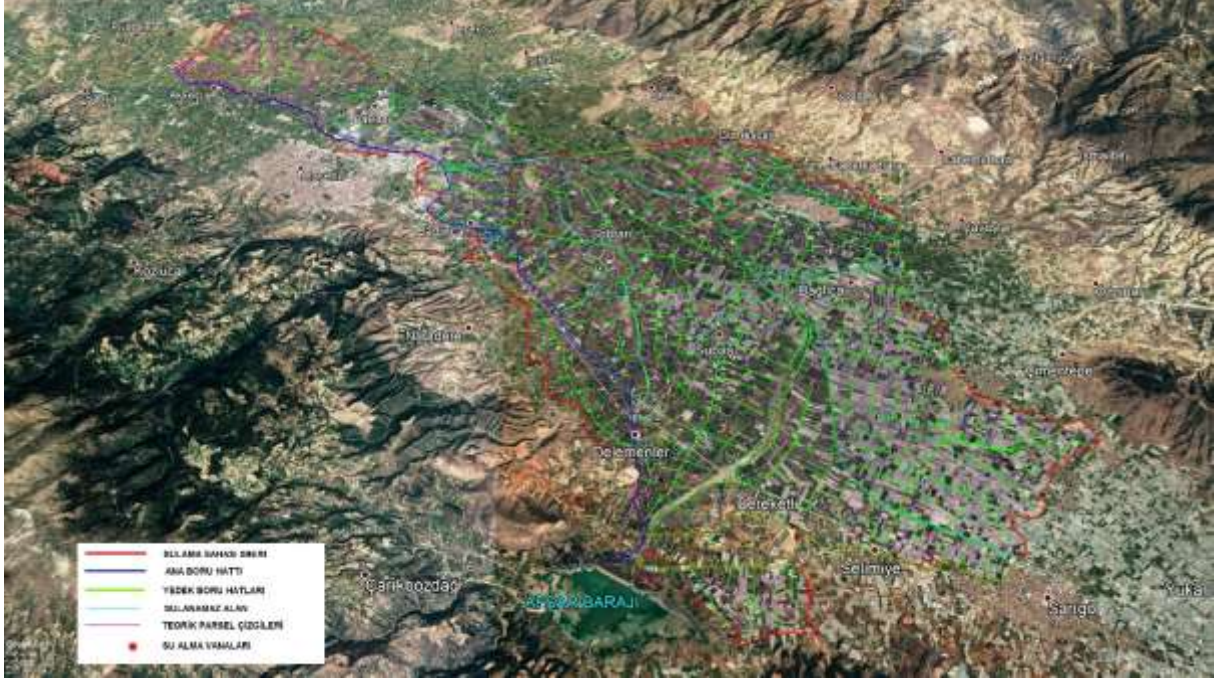
Manisa Alasehir Project Irrigation Area starts from between of Denizli Salihli Highway and Derbent Stream following Avsar Dam axis. By following Derbent Creek for a while, cutting towards Denizli Salihli Highway and heading towards north, in the north through Delemenler settlement and towards Dere District, it extends to Alasehir direction. Afterwards, it passes through the north of Badınca settlement and turns its direction to North West and ends before reaching the Alasehir District Center. However, with 71 groundwater wells drilled in 1984, both right and left banks irrigation areas increased and started to expand from the Avsar Dam. The right bank irrigation field follows the main canal from the fertile settlement and advances on the northwest axis from the west of Sarigol District Center to the north. The right bank irrigation field continues northwards from Dizdarlar settlement center and continues eastward from south of Canakci settlement. It has been enlarged to include the settlement area of Yeşilyurt, forming a border to Usak Highway. The left bank irrigation area has enlarged to the northwest, including the Alasehir settlement.

All of the fields, which have been placed in the WUA area and irrigated by the facilities of the WUA, are irrigated by surface irrigation. Another important situation in the field of irrigation is the decrease in the irrigated area over the years through the WUA. In the same period, an increase was observed in the irrigated area with farmer means. Among the reasons of non-irrigated areas despite being within the irrigation area, rainfall is considered sufficient due to the effect of climatic conditions and the personal preferences of the farmers are directed towards products with low water demand and labor requirements. Another important reason is that the modern irrigation demands of farmers who have turned to viticulture cannot be met with today's irrigation system. Most of the project area is dominated by vineyards. Farmers drilled their own wells for continuous and clean water supply due to the high amount of sediment carried by the existing open canal system and drought. In addition to this, another reason for farmers to turn to irrigation with their own means is the desire to implement modern irrigation systems due to developing technology. But the water requirement without sediment which is the need of irrigation with dropping system decreases the desire of farmers of irrigating from channels. When the irrigation field is examined, it is seen that on average 40% of the area under operation is irrigated by the WUA. It is known that this low ratio mainly results from the collapse that occur in the main channel and are effective in some places. The loss of transmission as a result of collapse is around 30%. Hence, the public turned to groundwater and groundwater utilization rate reached 50%. As a result of the people turning to groundwater, the accrual rate of the Union decreases gradually, and this prevents the maintenance and repair works. The farmer who tends



to utilize groundwater is experiencing loss of income due to high costs and therefore wants to rehabilitate the irrigation.

As a result, if the irrigation network is rehabilitated, the reasons preventing the development of irrigation will be eliminated and the farmers will start to use the drip irrigation method completely.



**Scheme 2.1.1: Alasehir Irrigation Project Area**

## 2.2 Project Components

- The water source of the project is Avsar Dam, which is located on Derbent stream and joins Gediz River. Avsar Dam has been put into operation in 1979.
- The Manisa Alasehir Irrigation Project irrigation field is the agricultural land located in the southeast of Alasehir District in Manisa province and downstream of Avsar Dam. In the irrigation area, there are agricultural lands belonging to Alasehir district, Delemenler, Hacialiler, Subasi, Sobran, Uzumlu, Badinca, Cakircaali, Ilgin, Baklaci, Akkcecili, Ahmetaga, Bereketli, Selimiye, Trazlar, Canakci, Baglica and Yesilyurt villages.

**Table 2.2.1: Annual Intake Flow of Avsar Dam**

AVSAR DAM INTAKE FLOWS (AVSAR DAM TOTAL MONTHLY FLOWS - ORENCIK POND INTAKE FLOWS WERE EXCLUDED.)		
Precipitation		
Area:	536.6	km <sup>2</sup>



Years	October	November	December	January	February	March	April	May	June	July	August	September	TOT.
1985	0.51	1.49	1.21	23.34	9.29	7.96	5.47	4.74	0.66	0.19	0.22	1.96	57.03
1986	0.30	1.36	1.38	8.84	18.38	7.22	1.91	1.00	0.54	0.06	0.00	1.73	42.72
1987	0.72	0.73	4.58	18.20	5.73	10.26	10.01	3.30	1.15	1.85	0.19	0.65	57.34
1988	0.29	0.61	2.1	1.17	4.02	20.06	7.27	2.00	0.03	0.53	2.46	0.01	40.74
1989	0.84	2.04	4.95	0.77	0.79	1.20	0.33	0.53	0.00	0.00	0.43	0.28	12.15

**AVSAR DAM INTAKE FLOWS**  
(AVSAR DAM TOTAL MONTHLY FLOWS – ÖRENCİK POND INTAKE FLOWS WERE EXCLUDED)

Precipitation

Area: 536,6 km<sup>2</sup>

Years	October	November	December	January	February	March	April	May	June	July	August	September	TOT.
1990	0.28	4.47	5.87	1.31	5.73	1.87	2.41	1.02	0.70	0.00	0.87	0.53	25.06
1991	0.22	0.39	7.33	1.29	2.22	2.02	1.86	3.31	0.00	0.07	2.64	0.11	21.46
1992	0.02	0.18	0.84	0.69	0.16	1.84	3.44	0.28	0.36	11.71	0.00	0.00	19.51
1993	2.07	1.02	1.41	0.93	7.76	12.83	4.41	3.24	0.72	10.48	0.33	0.28	45.46
1994	0.04	0.37	1.79	0.95	1.79	4.01	2.56	1.65	0.00	0.93	0.33	0.21	14.61
1995	0.33	2.86	2.66	13.94	2.16	16.20	13.10	3.73	0.89	0.00	0.00	0.26	56.12
1996	0.22	2.31	3.21	1.52	23.93	9.76	0.51	9.27	0.00	0.00	0.00	0.72	51.44
1997	0.35	0.80	7.50	6.12	1.61	5.84	20.96	3.30	0.00	0.00	1.21	0.00	47.68
1998	1.18	0.99	13.96	11.85	17.69	13.78	9.13	15.85	2.14	1.12	0.00	0.00	87.71
1999	0.76	1.55	7.62	14.31	10.74	5.78	9.91	1.56	0.00	0.17	0.29	0.00	52.70
2000	0.32	0.74	1.71	2.40	12.39	16.75	12.04	6.31	0.00	0.00	0.00	0.00	52.66
2001	0.01	0.14	0.19	0.38	0.85	0.66	1.62	0.61	0.00	0.00	0.88	0.30	5.65
2002	0.13	4.88	29.45	10.24	4.23	9.56	16.78	3.90	0.00	0.66	0.00	5.11	84.93
2003	0.57	1.69	3.96	8.46	33.60	14.99	14.51	3.64	0.89	0.00	0.00	0.20	82.49
2004	1.76	0.77	3.32	25.62	15.51	8.53	4.13	2.20	0.29	0.00	1.20	0.58	63.91
2005	0.40	1.44	0.21	0.39	7.12	14.89	2.15	1.17	0.50	0.00	2.45	0.68	31.40
2006	0.92	4.83	2.62	7.07	24.04	20.13	6.18	2.28	0.20	0.79	1.19	0.22	70.46



2007	1.01	10.15	0.30	0.98	1.14	0.82	0.38	0.30	1.09	0.75	0.27	0.16	17.34
2008	0.43	2.33	11.37	0.23	0.45	2.36	4.34	0.40	0.39	0.33	0.37	0.17	23.16
2009	0.64	0.93	0.21	13.33	35.27	26.06	20.85	5.40	0.00	0.00	0.17	0.07	102.92
2010	0.14	0.88	7.04	16.29	43.51	22.13	7.30	1.87	1.08	0.00	0.00	0.00	100.23
2011	1.54	1.12	6.74	9.87	9.58	13.28	8.73	4.75	3.83	5.32	2.44	0.30	67.49
2012	1.21	0.07	3.21	27.81	30.36	16.81	17.11	7.80	0.00	1.25	0.09	0.00	105.71
TOT.	17.19	51.11	136.96	228.30	330.04	287.56	209.41	95.42	15.45	36.15	17.99	14.49	1440.07
AVE.	0.61	1.83	4.89	8.15	11.79	10.27	7.48	3.41	0.55	1.29	0.64	0.52	51.43

## PROJECT CHARACTERISTICS (CURRENT)

Precipitation Area : 537.00 km<sup>2</sup>

### Annual Average Water

Annual Average Flow : 51.43 hm<sup>3</sup>/year

### Annual Average Precipitation

Sarigol (DSI) : 486.67 mm

Alasehir (DMI) : 470.78 mm

### Average Temperature

Annual Average Temperature : 16.8 °C

### Storage Facility

The storage facility of the Project is Avsar Dam.

### Avsar Dam

Active Capacity : 62.945 hm<sup>3</sup>

Dead Capacity : 8.055 hm<sup>3</sup>



Maximum Operation Capacity	: 71.000	hm <sup>3</sup>
Maximum Operation Level	: 259.05	m
Normal Storage Capacity	: 48.232	hm <sup>3</sup>
Normal Water Level	: 254.75	m

(The capacity was 69 hm<sup>3</sup> at 254.75 m according to Avsar Dam Planning Report; but according to the bathymetric map of 2006, it decreased to 48 hm<sup>3</sup> at 254.75 m)

Maximum Storage Capacity: 81.901hm<sup>3</sup>

Maksimum Water Level : 260.95m

Minimum Water Level : 242.58m

(The dead capacity was 8.4 hm<sup>3</sup> at 236.75 m according to Avsar Dam Planning Report; but according to the bathymetric map of 2006, it corresponds to 8.055 hm<sup>3</sup> in 242.58 m)

### **Current Irrigation Facilities**

Irrigation System : Classical Concrete Covered Channel

Gross Irrigation Area : 13306ha

Net Irrigation Area : 11616ha

Length of the Transmission Channel: 1146m

Initial Capacity: 7.515m<sup>3</sup>/s

Length of the Right Coast Main Channel: 27457m

Initial Capacity: 3.985m<sup>3</sup>/s

Length of the Left Coast Main Channel: 23324m

Initial Capacity: 4.850m<sup>3</sup>/s

### **Small Bottom Outlet Irrigation (Avsar Dam Pumping Irrigation)**

Gross Irrigation Area : 344ha



Net Irrigation Area : 300ha

Length of the Tertiary: 2189m

Initial Capacity of the Tertiary: 0.453m<sup>3</sup>/s

### **Irrigation Facility within the Scope of Renovation**

The Y1 line (Ø450 High Density Polyethylene pipe (HDPE), which starts from Avsar Dam valve room and departs from the Ø1800 GRP main transmission line at KM:0+652,57, will serve our first irrigation area of 344 hectares namely Small Bottom Outlet Irrigation (Avsar Pumped Irrigation). Immediately afterwards; the Y2 line (Ø1600 GRP), which will be separated at KM: 1 + 122,91, will serve the Right Bank Irrigation Site with a size of 5188 ha. Later on, the main transmission line together with Y3 secondary line starting at KM: 1 + 418.70, will serve the 8118 ha Left Bank Irrigation Site and will end at KM: 25 431.95,

Water taken from the main transmission lines will be supplied to the network via hydrant and water intake at the points. The water taken from the main transmission lines will be transported to the irrigation area by means of Polyethylene pipe (PE) type pipes, which works as pressurized, secondary, tertiary and hydrant connection lines.

The length of the transmission line is 1 + 160 km and the initial capacity is 11.314 m<sup>3</sup> / s, the right bank main channel length is 27 + 559 km and the initial capacity is 4.486 m<sup>3</sup> / s, the left bank main channel length is 22 + 642 km and the initial capacity is 6.957 m<sup>3</sup> / s.

Moreover, on the right bank, the water taken from the small bottom outlet irrigates some of the lands located on the upper elevations of the right main canal and irrigation network in this area will be rehabilitated within the scope of the project as well.

The works on pipeline route and network solutions are based on cost estimation and the network details will be determined during the project phase. At this stage, 1/25 000 scale map irrigation system has been designed, the diameters of the main transmission lines are calculated and their pressures are shown.

**Irrigation System: Sprinkling Dropping System with Pressurized Pipe**

Gross Irrigation Area : 13650ha

Net Irrigation Area : 11916ha

Length of the Transmission Channel: 1122.91m

Initial Pipe Diameter and Type: 1800mm (CTP Pipe)

Initial Capacity: 5.215m<sup>3</sup>/s

Total CTP Pipe Length: 33397.67m

Total HDPE Pipe Length: 336260.38m



Total IV (hydrant) Number: 1136

**Length of the Left Bank Main Channel:** 25 431,95m

Initial Pipe Diameter and Type: 1800mm (CTP Pipe)

Total CTP Pipe Length: 21 867.7m

Total HDPE Pipe Length: 186 251.24m

Total H type IV (hydrant) 1 out.: 128

Total H type IV (hydrant) 2 out.: 478

Total H type IV (hydrant) 3 out.: 51

Total IV (hydrant) Number: 657

Initial Capacity: 3.081m<sup>3</sup>/s

Gross Left Bank Irrigation Area: 8118 ha

Net Left Bank Irrigation Area: 7087ha

**Length of the Right Bank Main Channel:** 9 036.80m

Initial Pipe Diameter and Type: 1600mm (CTP Pipe)

Total CTP Pipe Length: 11,529.97m

Total HDPE Pipe Length: 140,787.25m

Total H type IV (hydrant) 1 out.: 102

Total H type IV (hydrant) 2 out.: 326

Total H type IV (hydrant) 3 out.: 23

Total IV (hydrant) Number: 451

Initial Capacity: 2.123m<sup>3</sup>/s

Gross Right Coast Irrigation Area: 5,188ha

Net Right Coast Irrigation Area: 4,529ha

### **Small Bottom Outlet Irrigation**

Initial Pipe Diameter and Type: 450mm (HDPE Pipe)

Initial Capacity: 0.183m<sup>3</sup>/s

Total HDPE Pipe Length: 9 221.89m



Total H type IV (hydrant) 1 out.: 2

Total H type IV (hydrant) 2 out.: 1

Total D type IV (hydrant) 1 out.: 1

Total D type IV (hydrant) 2 out.: 1

Total BSV type IV (hydrant) 1 out.: 6

Total BSV type IV (hydrant) 2 out.: 17

Total IV (hydrant) Number: 28

Gross Irrigation Area : 344ha

Net Irrigation Area : 300ha

### **Pressure Breaker Valve Chamber 1**

Line and Km.: Main Transmission Line KM: 5+700.00

Pipe Diameter and Type: Ø 1300 CTP

Pressure R. Valve Diameter and Number: Ø 700 PN10 - Two

### **Pressure Breaker Valve Chamber 2**

Line and Km.: Y2-1 Line KM: 13+750.00

Pipe Diameter and Type: Ø 450 HDPE

Pressure R. Valve Diameter and Number: Ø 450 PN10 - One

### **Pressure Breaker Valve Chamber 3**

Line and Km.: Y3 Line KM: 11+370.00

Pipe Diameter and Type: Ø 450 HDPE

Pressure R. Valve Diameter and Number: Ø 450 PN16 - One

**Site Facilities:** 1 500 m<sup>2</sup> building area is planned for site facilities.



## **Service Roads**

Since the irrigation area is in operation, in order to prevent damage to fixed facilities, the pipelines are laid as close to the roads and existing lines as possible. Therefore, existing service routes will continue to serve.

## **Construction Energy and Machinery**

The energy required for Manisa Alasehir irrigation rehabilitation network and related facilities construction will generally be supplied from Alasehir district. Back up generator and generator set shall be provided by the contractor. Machines that will be required during construction are; excavator, truck, grader, dozer, scraper, derer, channel lining machines, pipe laying machines, aggregate warehousing and concrete mixing plants.

## **Borrow Pit**

Research will be carried out in areas close to the project area for the need for bearing/coating material to be used in piped transmission lines within the scope of the project and for the need of concrete aggregate to be used in hydrant and other art structures. Samples will be taken and examined with laboratory tests to determine the suitability of the determined equipment areas. If there is no suitable building material available in the project area and its vicinity, construction materials to be needed within the scope of the project will be met by purchasing from the private sector and firms on gravel mining and ready mixed concrete production.

DSI and the contractor will check and ensure that related EIA and the other legal requirements for the borrow pits to be used are completed.

## **Other Facilities and Structures**

### **Tributary Engineering Structures**

The rehabilitation of the main streams and some side streams causing flood problems have been previously done by the DSI 2<sup>nd</sup> Regional Directorate and in the upstream basin of Avsar Dam, sediment holding structures will be installed. The streams in the project area have no negative impacts on flood and erosion. The narrowing portions of the existing stream beds will be reclaimed from time to time. In the land to be irrigated, Alasehir Stream acts as a natural evacuation. Irrigation network project side stream engineering structures will be detailed during the project phase.

Excavation storage areas may be needed to store the excess material from the channel excavations during the construction of the project. In case of such a field is needed, DSI will apply to the relevant municipality and / or Manisa Provincial and Environmental Directorate to determine the appropriate dumping area.



### **3. Legal Framework and Applicable World Bank Safeguard Measures**

This section sets out the requirements of laws and regulations as well as the World Bank safeguard measures taken into consideration when preparing the ESMP.

#### **3.1 Legal Framework**

ESMP has primarily been prepared in compliance with the laws and regulations of Turkey as indicated in Part 1.

Environment Law No. 2872, published in the Official Gazette of Republic of Turkey no. 18132 dated 11 August 1983, and amended through Law No. 6486 published in the Official Gazette dated 29 May 2013, is Turkey's primary framework for environmental legislation and is supported with many regulations. Article 10 of Environment Law draws the overall framework of the Regulation on Environmental Impact Assessment (EIA Regulation), published in the Official Gazette no. 29186 dated 25 November 2014. The environmental and social protection measures of the World Bank require the borrower country to make an Environmental Assessment Study compatible with its EIA Regulations and with the Operational Policy of the World Bank (OP 4.01) towards environmental impact.

Irrigation projects are not covered by the Turkish EIA Regulation. For this reason, irrigation projects are exempted from the EIA process. Accordingly, an Environmental and Social Management Plan (ESMP) has been prepared for meeting the conditions of WB Environmental Assessment Policy (OP 4.01) and Physical and Cultural Resources (OP 4.11). The aim of this plan is to evaluate the Project according to possible social and environmental impacts and to define its environmental and social management conditions.

The evaluation processes implemented in the infrastructural projects are initiated in the pre-development and operation phases of the Project. Additional regulations are put into effect after the projects come into operation. As part of the European Union membership process, Turkey has made many institutional and legal reforms. Thanks to these reforms, environmental legislation and environmental safeguards have been aligned with the international standards. The regulations concerning construction activities are listed below, but the applicable regulations are not limited to these.

- Waste Management Regulation, published in Official Gazette no. 29314 dated 2 April 2015;
- Regulation on the Incineration of Wastes, published in Official Gazette no 27721 dated October 2010,



- Regulation on the Control of Hazardous Wastes, published in the Official Gazette no. 25755 dated 14 March 2005, and most recently revised in the Official Gazette no. 28812 dated 5 November 2013,
- Regulation on the Control of Waste Oils, published in the Official Gazette no. 26952 dated 30 July 2008 and most recently revised in the Official Gazette no. 28812 dated 5 November 2013;
- Regulation on the Control of Vegetable Oils, published in the Official Gazette no. 29378 dated 6 June 2015;
- Regulation on the Control of Package Wastes, published in the Official Gazette no. 28035 dated 24 August 2011;
- Regulation on the Control of Used Batteries and Accumulators, published in the Official Gazette no. 25569 dated 31 August 2004 and most recently revised in the Official Gazette no. 28812 dated 5 November 2013;
- Regulation on the Control of Medical Wastes, published in the Official Gazette no. 25883 dated 22 July 2005 and most recently revised in the Official Gazette no. 28948 dated 21 March 2014;
- Regulation on the Control of Excavation Material, Construction and Demolition Wastes, published in the Official Gazette no. 25406 dated 18 March 2004 and most recently revised in the Official Gazette no. 27533 dated 26 March 2010;
- Regulation on the Control of Worn-out Tires, published in the Official Gazette no. 26357 dated 25 November 2006 and most recently revised in the Official Gazette no. 29292 dated 11 March 2015;
- Regulation on Sanitary Landfilling of Wastes, published in the Official Gazette no. 27533 dated 26 March 2010 and most recently revised in the Official Gazette no. 29292 dated 11 March 2015;
- Communiqué on the Recovery of Certain Non-Hazardous Wastes, published in the Official Gazette no. 27967 dated 17 June 2011 and most recently revised in the Official Gazette no. 29292 dated 11 March 2015;
- Regulation on the Control of Waste Electrical and Electronic Devices, published in the Official Gazette no. 28300 dated 22 May 2012;
- Regulation on Control of Soil Pollution and Areas Contaminated by Point Sources, published in the Official Gazette no. 27605 dated 8 June 2010 and most recently revised in the Official Gazette no. 28704 dated 7 June 2013;
- Regulation on the Control of Water Pollution published in the Official Gazette no. 25687 dated 31 December 2014;



- Regulation on the Monitoring of Surface Waters and Ground Waters, published in the Official Gazette no. 28910 dated 11 February 2014;
- Regulation on the Protection of Ground Waters from Pollution and Degradation, published in the Official Gazette no. 28257 dated 07 April 2012;
- Regulation Amending the Regulation on the Control of Pollution Caused by Hazardous Substances on in Water and Environment, published in the Official Gazette no. 26005 dated 26 November 2005;
- Regulation on Waters for Human Consumption, published in the Official Gazette no. 25730 dated 17 February 2005
- Urban Wastewater Treatment Regulation, published in the Official Gazette no. 26047 dated 01 January 2006;
- Regulation on Evaluation and Management of Air Quality, published in the Official Gazette no. 26898 dated 06 June 2008;
- Regulation on the Reduction of Ozone-Depleting Substances, published in the Official Gazette no. 27052 dated 12 November 2008;
- Regulation on Evaluation and Management of Ambient Noise, published in the Official Gazette no. 27601 dated 04 June 2010;
- Regulation on Equipment and Protection Systems used in Potentially Explosive Environments, published in the Official Gazette no. 26392 dated 30 December 2006.
- Law and regulation on Occupational Health and Safety (No. 6331), published in the Official Gazette no. 28339 dated 30 June 2012.

In addition to the environmental laws and regulations, there are many other laws involving environmental assessments directly or indirectly and thus are applicable to the project. These legal arrangements include the following:

- Law on Ground Waters (Law no. 167), published in the Official Gazette no. 10688 dated 23 December 1960;
- Law on the Protection of Cultural and Natural Assets (Law No. 2863), published in the Official Gazette no. 18113 dated 23 July 1983;
- Highways Traffic Law (Law No. 2918), published in the Official Gazette no. 18195 dated 18 October 1983;
- Highways Traffic Regulation, published in the Official Gazette no. 23053 dated 18 July 1997;
- Regulation on Opening and Operation of Workplaces, published in the Official Gazette no. 25902 dated 10 August 2005;



- Regulation on Buildings to be Constructed in Disaster Prone Areas, published in the Official Gazette no. 26582 dated 14 July 2007;
- Regulation on Buildings to be Constructed in Seismic Zones, published in the Official Gazette no. 26454 dated 06 March 2007;
- Regulation on the Transportation of Hazardous Substances via Highways, published in the Official Gazette no. 28801 dated 24 October 2013;
- Regulation on Principles and Procedures Governing the Production, Import, Transportation, Storage, Sale, Use, Disposal and Control of Non-Monopoly Explosives, Hunting Materials and the Similar, published in the Official Gazette no. 19589 dated 29 September 1987;
- Regulation on Septic Tanks Constructed in Districts without Sewerage System, published in the Official Gazette no. 13783 dated 19 March 1971.

The EIA Regulation in force requires limited and project-specific assessment of social impacts. In this context, it does not satisfy international standards. Still, through the reforms implemented in recent years, some legal arrangements that will help manage social impacts have been added to the legislation. Some of these are listed below:

- Law on Occupational Health and Safety (No. 6331), published in the Official Gazette no. 28339 dated 30 June 2012, and other relevant regulations
- Regulation on Sub-Employers, published in the Official Gazette no. 27010 dated 27 September 2008

In terms of involuntary resettlement, some of the relevant legal arrangements of Turkey are listed below:

- Expropriation Law no 2942, published in the Official Gazette no. 18215 dated 8 November 1983, and other relevant regulations
- Law No. 4650 on the Amendment on Expropriation Law, published in the Official Gazette no. 24393 dated 5 May 2011

### **3.2 World Bank's Safeguard Policies**

The World Bank's environmental and social safeguard policies require the borrower country to conduct an Environmental Assessment in compliance with the EIA Regulation and the World Bank's operational policy on environmental impacts (OP 4.01). In this direction, this Environmental and Social Management Plan (ESMP) has been prepared to fulfill their requirements of the World Bank's policies on Environmental Assessment (OP 4.01) and Physical and Cultural Resources (OP 4.11). The objective of this plan is to assess the project according to its potential social and environmental impacts and define environmental and social management conditions.



#### **OP 4.01 Environmental Assessment:**

Activities carried out in the scope of simple construction works, by their nature, create environmental and social impacts which are not very critical, within the existing project boundaries. WB's Policy on Environmental Assessment has to be applied even if the impacts are not very critical. Together with the implementation of OP 4.01, environmental and social management instruments have to be prepared. The mentioned Project, by considering its possible temporal impacts, is evaluated within B Category projects.

The ESMP includes a consideration of the broader impacts of the transformation of the open-channel irrigation systems to "closed" water systems, as well as mitigation measures to address any negative impacts. Moreover, the ESMP aims at assessing the possible impacts of water utilization on resource sustainability, communities and other water users.

The key social and environmental impacts that may be caused by the project are expected to affect the sensitive recipients near the project area (e.g. schools, hospitals, health centers, houses). In this context, the whole project area and surrounding areas have been evaluated in terms of vulnerable recipients. It is expected that the environmental impacts will be limited with the impacts of basic construction works. In general, major impacts are related to excavation, waste disposal, disposal of demolished material, loss of topsoil and vegetation, dust formation, noise, occupational and community health and safety.

#### **Natural Habitats OP/BP 4.04:**

No Natural Habitat will be affected from the Project.

#### **Physical Cultural Resources OP/BP 4.11:**

Implementation of this policy will depend on the outputs of the Project preparation phase. The laws -especially the Law No. 2863 dated 21.07.1983 on the Protection of Cultural and Natural Assets (revised through the amendment issued on 27.07.2004 dated Official Gazette- and implementations in Turkey fulfill the World Bank requirements.



Regulation on Researches, Drillings and Excavations in Relation to the Cultural and Natural Assets, which was published in the Official Gazette No. 18485 dated 10.08.1994 define the procedures and obligations concerning the cultural and natural assets found out during construction. DSI is responsible for the implementation of the mentioned laws and regulations. DSI is also responsible for avoiding or mitigating impacts on physical or cultural resources of the financed projects. Therefore, DSI will not proceed with sub-project funding until all requirements of the Turkish legislation are met. Since the national legislation on the protection of cultural assets is strictly implemented, an additional condition beyond the WB safeguard policies is not expected. However, a chance find procedure including responsibilities for managing accidentally discovered or chance find cultural artifacts, which will warn the supervision consultants and contractors about the steps to be followed, will be implemented. Additionally, all relevant official letters to be exchanged before or during construction activities will be recorded and annexed to periodic monitoring reports.

#### **Involuntary Resettlement OP/BP 4.12:**

This includes the replacement of open channel systems (channel and distribution structures) with closed and pressurized systems. At the project preparation stage, the project team will assess whether any construction works or expansion of these channel systems will result any involuntary land acquisition, land leasing, temporary land use or product loss. OP 4.12 will be activated if such a situation is detected.

#### **Dam Safety OP/BP 4.37:**

Avsar Dam, located on Derbent Creek that flows into Gediz River, is the water source of the Project and it was taken into operation in 1979. There are no dam safety studies regarding Avsar Dam in recent years. However, a situation that attracts attention in terms of dam safety has not been reported during the operational activities. The biggest problem in the Avsar Dam is the rapid decrease in active lake volume due to the high amount of sedimentation coming from the upper basin. According to the values determined in the conducted studies; in the Planning Report of Avsar Dam, the volume at 254.75 m was 69 hm<sup>3</sup>, however according to the bathymetric map taken in 2006 the volume at 254.75 m decreased to 48 hm<sup>3</sup>. While the dead storage capacity at 254.75 m was 69 hm<sup>3</sup>, according to the bathymetric map prepared in 2006, the capacity at 254.75 m decreases to 48 hm<sup>3</sup>.

There are not any dam-related activities financed within the scope of the project, but the amount of water to be taken from the dam will change as a result of the project. Regarding this issue, a dam safety expert from the World Bank conducted a field visit to Avsar Dam on 26 March 2018 and reported the results. According to these results, no structural problems were detected in the

dam and there were no cracks requiring urgent intervention. However, it has been concluded that dam safety procedures should be reviewed and that areas requiring intervention are mainly improvement and rehabilitation of instrumentation and monitoring systems. Recommended measures specific for Avsar Dam are shared with DSI and DSI will be responsible for the implementation of these measures.

- i. Leakage monitoring will be improved and regular leakage monitoring at toe drain will be performed.
- ii. Stone quality in the emergency spillway channel must be controlled. For this reason, geophysical survey and drilling works may be required.
- iii. Movement acceleration recorders will be placed at the crest and the base level.
- iv. The operation and maintenance instruction will be revised in a manner that will include the new instrumentation added in 2004 and 2012. Limit values for piezometers shall be determined.
- v. Dam log book will be prepared. This log book will contain information on dam safety design documents, instrumentation reading records from previous years, inspection and test reports as well as operational records and research results.
- vi. An emergency response plan will be prepared.
- vii. Access road will be built to remove and control accumulated sedimentation.

#### **Projects on International Waterways OP/BP 7.50:**

Manisa Alasehir Irrigation area is not located on international waterways.

In addition to all applicable precautionary policies, the World Bank Group General Guide on Environment, Health and Safety is applicable to this project and will be followed where relevant.

#### **4. Environmental and Social Impacts and Measures to be Taken**

This section describes the current environmental and socioeconomic characteristics of the project area and its surroundings. The information given in this section, have been compiled from the studies conducted in the region so far and the final reports.

##### **4.1 Geographical Formations and Geology**

The northeast and southwest of the irrigation area is surrounded by mountains. Irrigation area of the Manisa Alasehir Irrigation Project is an agricultural land located in the southeast of Alasehir District of Manisa and at downstream of the Avsar Dam. In the irrigation area, there are agricultural lands belonging to Alasehir district, Delemenler, Hacialiler, Subasi, Sobran, Uzumlu, Badınca, Cakircaali, Ilgin, Baklaci, Akkeçili, Ahmetaga, Bereketli, Selimiye, Trazlar,

Canakci, Baglica and Yesilyurt villages. The project area is located in IZMIR L20-b2 and USAK L21-a1, L21-a3, L21-a4, L21-d1 L21-d2 sheets of 1/25 000 scale maps. Paleozoic and Cenozoic metamorphic and sedimentary units observed in and around the project area have been fluctuated as a result of tectonic activities of Alpine orogeny. The project area and its surroundings have been affected by the horst - graben structures formed due to tectonism. Faults in the immediate vicinity of the project area are generally dip-slip faults in NE-SW direction. The current geomorphological formation of the project area and its vicinity was formed after the Miocene. The study area is located on the graben formed as a result of vertical slip and dip-slip faulting. The study area is located on the northern wing of the Menderes massive. The elevations seen in the North and South of the irrigation area are horst formations. Since tectonic activity, which forms the horst graben structures in the Aegean region, is still continuing, collapses continue in the plains of the grabens and vertical pulses can be measured after significant earthquakes. Since the tectonic activity that forms the horst graben structures in the Aegean region still continues, collapses in the plains of the grabens are also continuing and vertical pulses can be measured after significant earthquakes. Tectonic activities in the region between Menderes and Gediz grabens (through Sarigol - Alasehir – Salihli) affects the opening and collapse of the plains in the region. Since the study area and its surroundings are dense in terms of tectonic movements, fractured structures within the geological units are frequent and dense.

The average altitude of the irrigation field is around 175 m and the general slope is from southeast to northwest. The irrigation area is generally composed of bottom lands and has a flat topography. The general slope ranges from 2 to 10%. The 4.59% (681 ha) of the overall area has a normal slope (g2) of 2-6%. 0.48% (71 ha) of the overall area has a normal slope (g3) of 7-10%. The project area is a typical graben. Since the end of the neogene period, this plain area has collapsed at least 1500 m compared to the mountains. There are many dip-slip faults between the plain and the mountains. The formation of the plain can be explained by these faults. In the whole study area, alluvial sedimentary gives broad crops. Those alluvial sedimentary were formed as a result of loose and irregular stowage of coarse block and gravel materials such as sand, silt and clay brought by the side streams.

Accumulations of Paleozoic and Cenozoic old rocks as well as Quaternary alluvial and talus are observed in the various facies and lithologies of the project area and its surroundings. The dominant geological unit within the boundaries of the irrigation area is the alluvial fan accumulated by the rivers. Horsts in the North and South of the study area, formed as a result of tectonic movements, constitute the North wing of the Menderes massive. Old migmatites and gneisses (Pzgm) from Precambrian period, form the sub-base of the Menderes massive. Old Permo - Triassic metamorphic schists and marbles (Pzgm) are laying over precambrian migmatites and gneisses incompatibly. Since migmatites and gneisses are exposed to alteration, they form an arena locally in the region. Gneisses are generally coarse grained and rigid. Schists



can be classified as distinct sericite schist, chlorite schist, muscovite schist and fine-grained gneisschist among themselves. The rock groups in the Menderes massive are generally densely fractured and have high strength. The young units on the horst structures formed as a result of tectonic movements were generally eroded by erosion and stored in the graben cup.

According to the earthquake zones map of the Ministry of Environment and Urbanization, the project area is classified as a first-degree earthquake zone. The Mercalli Intensity Value of the first degree earthquake zone is  $> 9$ , whereas the maximum expected ground acceleration is greater than 0.28 g.



Figure 4.1-1 Earthquake Map of Manisa Province and Alasehir Region

## 4.2 Water Resources and Hydrogeology

The water resource of the Project is the Avsar Dam which was put into operation in 1979 on Derbent stream flowing into Gediz River and the precipitation area is 537 km<sup>2</sup>. Some part of Avsar Dam was filled with sediment by Ambar, Derbent and Kısıık creeks. While the dead storage of Avsar Dam is 8.4 hm<sup>3</sup> at 236.75 m; the volume is 8.055 hm<sup>3</sup> at 242.58 m that is the minimum water intake elevation according to the bathymetric map.

The Project area was divided with creeks, passes and draining channels. The area including the drainings and Buldan and Alasehir Passes at the downstream of Kocaçay and Alasehir Creek stretches east and west as a fan. Its height from the sea level changes between 100-300 m.

The groundwater of Alasehir plain changes from place to place. The groundwater level increasing during November, December, January and February when the amount of precipitation is high decreases significantly in July, August and September because of

evaporation. The groundwater level is in compliance with geographical formations in general. However, there are resources and marshes where groundwater level and topography crosses. In the field, groundwater is used for irrigation by drilling artesian wells. During five-six-year arid years, these wells were used considerably for irrigation and operated with electricity and diesel fuel in nearly every parcel. As a result of these excessive irrigations, the groundwater level has decreased considerably and deactivated significantly today.

### **4.3. Soil Composition**

Project area is a typical graben. This plain has collapsed at least 1500 m when compared with the mountains since the end of neogene period. There are many dip-slip faults between the plain and mountains. We can explain the formation of the plain with these faults. The broad alluvium seen on the whole working site has been formed as a result of the loose and disordered accumulation of materials with the dimensions of sand, silt and clay as large blocks and gravels drifted by tributary streams. The alluvium has different characteristics in short distances and on vertical sections according to the climatic situation and precipitation regime. Its colour is light or dark brown. The top soil is generally granular to a large extent and the sub soil is block-structured. The soil of the Project area is light, very light, heavy and medium-weight.

In 821 ha area, the top and sub-soil are heavy; in 75 ha area, the top soil is heavy and sub-soil is medium-weight; in 119 ha area, top soil is heavy and sub-soil is light; in 9 ha area, the top soil is heavy and the sub-soil is very light; in 446 ha area, the top soil is medium-weight and sub-soil is heavy; in 2481 ha area top and sub-soil are medium weight; in 808 ha area, top soil is medium-weight and sub-soil is light; in 288 ha area, top soil is medium-weight and sub-soil is very light; in 470 ha area, top soil is light and sub-soil is heavy; in 1674 ha area, top soil is light and sub-soil is medium-weight; in 4735 ha area, top and sub-soil are light; in 1266 ha area, top soil is light and sub-soil is very light; in 322 ha area, top and sub-soil are very light; in 87 ha area, top soil is very light and sub-soil is light; in 49 ha area, top soil is very light and sub-soil is medium-weight.

### **4.4 Climatic Features**

A transition climate (Mediterranean climate-continental climate) prevails in the irrigation area. Summer months are very hot and dry in the region where generally has a temperate climate. The temperature can increase upto 40 °C during summers in the region. The precipitation is generally rain; but it is snow in December and January. The average six-month temperature in summer period is 32 °C; and the average six-month lowest temperature in winter period is -3 °C. The average annual precipitation in winter is 500 mm. The number of frost day is 24 days in the irrigation area. Exact agriculture activities continue 224 days, which also include the vegetation processes of the plants. This long period is enough for the harvest of 2 products in

one year. The winter and spring precipitations of the irrigation area correspond to 74% of the total precipitation. This means that the spring precipitation enables the cereals to be irrigated and grown; but that the other summer and perennial products have absolute water needs as from June.

#### **4.5 Flora and Fauna**

The vegetative cover of the Mediterranean climate zone is prevalent in the region; but the pine and oak forests of Çaldağı-Aktaş region and the philyrea, poplar trees; all kinds of fruit trees and few number of willow and plane trees on other areas make up the range of vegetation.

The common types of the vegetative cover of Manisa province in general: Black pine, Calabrian pine, Juniper, Poplar, Willow, Walnut, Chestnut, Hornbeam, Oak, Valonia Oak, Elm, Mulberry, Bay, Plane, Sharberry, Quince, Forest berry, Crab apple, Sour cherry, Wild pear, Blackberry, Rowan, Milk vetch, Redbud, Sainfoin, Clover, Woodwaxen, Trefoil, Alsike Clover, Euphorbia, Sumach, Hibiscus, Pistacia, Mallow, Tamarix, Crocus, Spruce, Myrtle, Ivy, Sandalwood and Radish, Licorice, Poppy, Foxglove, Mullein, Dandelion, Nettle, Sorrel, Dock, Cockscomb, Violet. The dominant agricultural production in Alasehir plain base on viticulture, which enables the production of seedless “Sultana Grape” on an extensive area. 28% of the total viticultural area of Turkey is in the Aegean Region and nearly the whole seedless raisin production of our country is in this region, which is increasing day by day. The average yearly precipitation of the district, which is 500 mm, and the plant-growing period, which is, more than 200 days enables nearly all cultivated plants in addition to grape to be grown on the agricultural lands of the district. Tobacco, wheat, barley, rye, tare, chickpea, broad bean, potato are the main planted agricultural products. Moreover, vegetables and fruits such as tomato, green bean, fresh broad bean, spinach, eggplant, pepper, apple, olive, pomegranate, quince, plum, cherry, peach, almond, fig and, the most important, sultana grape can also be grown.

According to the studies within the Provincial Environment Status Report, the flying game animals of the province are: sparrowhawk, hawk, vulture, falcon, francolin, windhover, black and grey woodpecker, crag martin, house martin, turtle dove, wild pigeon, starling, woodcock, partridge and stork. None of these types are endemic. According to Red List of IUCN, they are classified as LC or not included in the list.

#### **4.6. Sensitive Areas**

There are no sensitive areas within the borders of Manisa Alasehir Irrigation.

#### **4.7. Socioeconomic Status**

#### 4.7.1 Population

There are many settlements within the irrigation area. Since some settlements having village or town status in 1990s have become municipality, changed their names and have new names following their uniting with other settlements today, there are villages, which were existing in 1990s; but today they are included in another settlement. Therefore, their names are not mentioned. As a result of the field surveys, the rural-urban migration is within its own province and district; so it is better to make a district-based survey instead of searching each village one by one. However, the population of the villages are given in the Table: 4.7.1.

<b>TABLE NO: 4.7.1 POPULATION OF THE SETTLEMENTS IN THE PROJECT AREA</b>				
<b>Settlement</b>	<b>Years</b>			
	<b>1997</b>	<b>2000</b>	<b>2010</b>	
ALASEHIR	12043	13045	13758	
SARIGOL	342	459	456	
BEREKETLI	958	985	936	
AHMETAGA		761	649	
SELIMIYE	1274	1268	1300	
TRAZLAR		1513	1418	
CANAKCI		1611	1423	
BAGLICA				
YESILYURT	328	320	312	
CAB.KAMARA		948		
GUMUSCAY	3458	3367	2496	
KILLIK		1045	1002	
CAVUSLAR				
				Population Growth
				Population Forecasting



				Rate	2015	2020	2050
<b>TOTAL</b>	<b>20393</b>	<b>27322</b>	<b>25760</b>	(-)			

#### 4.7.2 Education

A large part of the irrigation area includes Alasehir District and the fields of its villages. Other part is comprised of the fields of the villages of Sarigol District. Therefore, here are the information on the education of these two districts. There is 1 pre-school education institution in Alasehir District and its towns and villages; there are 27 primary education school in the center; there are 35 primary education school (at least one in the villages), 29 secondary schools, 2 Anatolian High School, 3 Multi-Program High School, 1 Vocational High School, 1 Imam Hatip High School, 1 Industrial Vocational High School, 1 Science High School, 1 Girls' Technical High School (Totally 10 High Schools) and 1 Public Education Center, 1 Central Vocational Training Directorate and 3 private schools in the whole district, town and villages of the irrigation area. In the towns and villages of the Sarigol District, there are 1 Vocational Collage affiliated to Celal Bayar University, 1 Anatolian High School, 1 Imam Hatip High School, 1 Multi-Program High School, 1 Medical Vocational High School, 1 Public Education Center, 1 Vocational Training Center and 4 Primary Schools in the district center. There are also 13 primary schools in 13 villages and 11 multigrade-class primary schools in 10 villages of the district. Total number of the schools and educational institutions is 36. The literate rate of both districts and their towns and villages is 98%.

#### 4.7.3 Healthcare Services

The largest healthcare institution in Alasehir district is the Alasehir State Hospital. It serves to 110 000 people including the ones also from the surrounding districts. It covers totally 7500 m<sup>2</sup> area (5000 m<sup>2</sup> of which is indoor space). With its 145 beds, the hospital works with 70% occupancy rate generally. There are 2 Primary Care Clinics in the district center and 8 Clinics in totally 8 villages. There are 2 Primary Care Clinics in the center of Sarigol district and also 5 Clinics in the villages. The Primary Care Clinics in Baglica, Bahadirlar, Canakci, Dadagli and Karacaali villages serve in the old buildings of the Public Healthcare Centers of those villages. 3 primary care physicians and 3 allied health personnel work in the No 1 and 2 Central Primary Care Clinics. In addition, there is 1 primary care physician and 1 allied health personnel in the other primary care clinics in the villages.

#### 4.7.4 Infrastructure Services

According to the site studies, all settlements in the Project area have adequate drinking water networks. The roads of the villages within the Project site is covered with asphalt; and there

is no transportation problem in summer and winter seasons. The situation of telecommunication is very good since the Project site is the Alasehir district and around. About telecommunication, use of mobile phone is widespread within the citizens in addition to PTT organization.

#### **4.7.5 Sources of Livelihood**

Trade and economy of the district base on agriculture, husbandry and industry. Sultana grape is the most important commercial product of trade. It is also exported. There is no market problem for the other products. Both sides of the irrigation area are surrounded with large districts and since the Salihli, Odemis Highways are passing through the irrigation area, it is an advantage in terms of transportation.

**Agriculture:** The dominant agricultural production in Alasehir plain base on viticulture, which enables the production of seedless “Sultana Grape” on an extensive area. The average yearly precipitation of the district, which is 500 mm, and the plant-growing period, which is, more than 200 days enables nearly all cultivated plants in addition to grape to be grown on the agricultural lands of the district. Tobacco, wheat, barley, rye, tare, chickpea, broad bean, potato are the main planted agricultural products. With the increase in foreign trade in recent years, fruit growing has also become important. It is generally engaged in mountainous areas, in the places close to the springs of the streams and in the fields having suitable climate. Chestnut, cherry, walnut, quince and pomegranate are some of them. Cherry, quince and pomegranate are grown in the temperate zones within the valleys not in mountainous areas. The production of cherry, especially the Napolyon type, has developed much in recent years and its plantation area has increased upto 10-15 times in the last five years. Oil is grown on the hillsides surrounded by vineyards and, despite very few, on the sides of the plane.

**Industry:** There are 60 grape exporting firms, 40 grape producers, Taris Raisins and Integrated Plants, Suma Factory and Sarikiz Mineral Water Factory in Alasehir district and its towns and villages. There are also family-run businesses on carpet-rug weaving. The industrial branches are not common in Sarigol district, in its towns and villages having fields in the irrigation area. There are small-scaled factories in the district center, which includes 2 motor-weaving looms and 2500 manual weaving looms. With these looms, traditional rugs, hand towels, quilts and peshtemal are woven. The rugs are very popular in many countries, especially in the USA, England and Germany. Moreover, wicker hand works are also very common and popular.

**Husbandry:** Husbandry is developed in the working site; and large-small ruminant and poultry breeding (broiler) are widespread.

**Mining:** Mercury mineral, titanium ore, 99.734.000 tons of travertine (marble) and many hot water resources are seen around Alasehir.

**Tourism:** Although there are historical ruins and places, there is not an intensive tourism activity in the region.

#### **4.7.6 Land Use and Crop Pattern**

**Table: 4.7.6.1 Land Use and Crop Pattern**

<b>CROPS</b>	<b>CURRENT SITUATION</b>	
	HIGHER SYSTEM VINE	67,00
FRUIT	4,50	531,27
S. CORN	1,50	177,09
VEGETABLE	6,00	708,36
CEREALS	11,00	1298,66
UNCULTIVATED LAND	10,00	1180,60
<b>TOTAL</b>	<b>100</b>	<b>11806,00</b>

**Table: Dry and Wet Farming Rate in Total Area**



TOTAL AREA	IRRIGATED AREA	FIELD WITHIN WATER USERS ASSOCIATION'S AREA; BUT NOT IRRIGATED WITH THE MEANS OF WATER USERS ASSOCIATIONS
(Ha)	6742.4	5063.6
(%)	57.11	42.89

Tobacco, wheat, barley, rye, tare, chickpea, broad bean, potato are the main planted agricultural products. Moreover, vegetables and fruits such as tomato, green bean, fresh broad bean, spinach, eggplant, pepper, apple, olive, pomegranate, quince, plum, cherry, peach, almond, fig and, the most important, sultana grape can also be grown. Dry farming is also a common production type of the district. The dry farming products are generally grown on brown forest and Mediterranean and regosol soils. Areas of irrigated farming covers less area than dry farming; but is an important income source of the district. 200–400 mm additional water needed for the crops during the dry period between April and October is provided by irrigation for making use of the soil at a maximum capacity on the irrigated farming fields. The required irrigation water is provided from the dam and ground water.

#### **4.7.7 Expropriation**

During the Project, rehabilitations of the existing facilities will be made as far as possible; but partial expropriations will be conducted in compulsory situations. Land acquisition will be ensured by expropriation since the Project area is not suitable for consolidation. Land acquisition process will be implemented in the direction of a Land Acquisition Plan to be prepared by DSI according to the OP 4.12 of the World Bank.

### **5. Environmental and Social Impacts**

**Air Quality:** Dust formation is expected during the construction and site preparation stages of the project due to the stripping of top soil layer and other excavation works. In addition, during the production of sand-cobblestone and limestone materials, dust formation will occur when extracting, loading and transporting the materials. The provisions of Regulation on Control of Air Pollution from Industrial Sources and Regulation on the Evaluation and Management of Air Quality will be complied with when operating the borrow pits. These impacts are envisaged to be temporary and reversible. Furthermore, exhaust emissions are expected to originate from construction machines and equipment. Necessary measures will be taken against dust and exhaust gas emissions. In this scope, construction machines and equipment will be periodically maintained and controlled. Thus, these impacts are expected to be at a low level. However, in





case the emission levels are negatively affecting the nearby communities or other sensitive receptors, further corrective measures will be taken.

**Noise:** The noise to be generated by construction equipment and vehicles is expected to negatively affect the sensitive receptors in the close vicinity of the project. In order to minimize the impact, construction activities will be carried out during daytime hours (07:00 – 19:00). In addition, noise levels will be monitored at the sensitive receptors regularly and necessary mitigation measures will be taken if required.

**Water and wastewater:** Water need will arise mostly from daily domestic water needs of employees in the campsite, construction site and material pits. In addition, water will be used for concrete mixing and curing operations, washing the machines, and watering the materials and roads against dust formation. DSI and the contractor are responsible for supplying water without stressing the groundwater and surface water sources. The quality of the water (for domestic use and, if needed, for concrete preparation works) will be monitored regularly. Wastewaters will generally be originated from the borrow pits and campsites in domestic wastewater form. These wastewaters shall be either stored in impermeable septic tanks in compliance with local regulations and the Bank requirements, will be regularly stored by licensed companies and will finally be discharged to receiving bodies after being treated. The water to be used for spraying process to prevent dust formation in the project site will not generate wastewater. During the operation stage, domestic wastewaters will be disposed in compliance with the Regulation on the Control of Water Pollution.

**Community health and safety:** During preparation of site and construction activities, DSI will ensure that contractors take precautionary measures such as providing timely information to local community on construction schedule and location, using proper signs to demonstrate construction site, watering in dry seasons etc. to create a safe and healthy environment.

As a result of the establishment of worksite camping areas, the interaction of new labor force with the close settlements is inevitable. Therefore, the campsite to the extent possible, will be positioned far from the local communities. In addition, the workers will be informed about the code of conduct via their contracts.

Furthermore, construction activities will result in increase in the local traffic due to the vehicles going in and coming out from the construction site. The construction sites could potentially



cause risk of accidents for local people, compromising community health and safety, if not fenced appropriately and marked with appropriate warning signs.

**Occupational Health and Safety:** The construction activities may pose risk to workers' health and safety if necessary precautions are not taken. In this context, DSI and contractors will be responsible for supplying a safe and healthy working environment for the workers. The workers should be aware of their job descriptions, responsibilities and relevant occupational health and safety risks. Necessary personal protective equipment and job-specific and occupational safety trainings will be given to the workers, regularly. The campsites should also be equipped with necessary facilities for the workers to meet all their needs.

**Hazardous materials:** For the time being, fuel filling and vehicle maintenance activities are not planned to be carried out on the construction site. However, such need may arise if heavy vehicles are used on the construction site. DSI and sub-contractors will take necessary measures for storing and using the hazardous materials to be used in this scope. Furthermore, chemicals spills and other potential hazardous substance accidents will be added to the possible scenarios under emergency management plans, and the required equipment will always be kept ready on-site and relevant drills will be carried out regularly.

**Waste management:** The modernization of open channel irrigation system includes removal of the existing materials and pipes, eventually making them idle. The pipes and other materials that become idle need to be appropriately stored and finally disposed of in accordance with local regulations and the Bank requirements. As the topsoil will be used for rehabilitation works after construction, no excavation waste is expected to be generated. However, in case the excavated material will be excessive, coordination with relevant authorities for appropriate disposal of excavation material shall be established.

In addition to excavation wastes, domestic and hazardous wastes are also expected to be generated. These wastes will be stored separately at the construction and campsites, as required by local regulations, and will be transferred to / disposed of by licensed facilities. DSI and its sub-contractor is responsible for coordinating with these licensed companies and ensuring that wastes are disposed/recycled in compliance with relevant local regulations and the WB requirements.

**Natural Habitats:** No natural habitat will be affected within the project.



**Infrastructure:** The existing roads will be used during the modernization works. Damages to road surfaces during transport of heavy machinery will be rehabilitated by the construction contractor. Should any damages on infrastructure occur on private land due to construction, mitigation measures specified in the LAPF will be put into practice by the contractor. Any campsite that will be established during construction will secure its own infrastructure without placing an additional demand on community infrastructure during construction. Thus, impacts on local infrastructure are considered to be negligible.

**Land Acquisition:** No physical resettlement activity is envisaged for the implementation of the project. However, some temporary and minor livelihood losses may occur because of the construction works. In line with the project principles, state-owned lands will be used to the extent possible by avoiding private properties and agricultural lands. However, where this is not possible, expropriations will be made. In such cases, land acquisition plans (LAP) specified for the project-site will be prepared and implemented in compliance with the LAPF.

**Assets and land-based livelihoods:** As there will be no physical resettlement under the project; loss of structures and buildings are not expected. The design of the project considers following the existing irrigation network and utilizing existing roads as transportation roads. with minimum need for additional access roads. If there is a loss in the existing crops and trees with economic value according to the situation of the land required for the Project and the land use, mitigation measurements or compensation methods defined within the LAPs prepared for the Project will be used.

**Farmers, local community and other stakeholders including vulnerable groups:** Considering that the project could improve the efficiency of the existing irrigation system, it is expected to have a positive impact on local communities in general.

Agricultural workers (i.e. seasonal and daily workers, Syrian workers) and women engaged in agricultural practices who are also categorized as vulnerable groups may also be affected from the project since the project may result in limiting the labor demand for irrigation as well as cultivation and harvesting of products. Seasonal workers travel with their families and engage in farming as a family. In the area of the Project where seasonal agricultural workers are needed, children do not work as paid labor however can assist their families. This type of child labor is not a form of forced labor as the national labor law forbids worst forms of child labor. Hence, according to the Stakeholder Engagement Plan (SEP), continuous consultation both by DSI and WUAs will be carried out to inform all project stakeholders including vulnerable groups on project impacts and construction schedule as well as their rights for compensation should they



suffer from loss of land or livelihood due to the project activities. Mitigation measures for such groups have been dealt within LAPF and site-specific mitigation measures will be applied through LAPs.

**Gender Impact:** Irrigation modernization, with its expected change to higher value crops and modern technologies, thus provides an economic opportunity for women who play an active role in agriculture. There are no legal restrictions on female tenancy arrangements or land ownership. However, customary traditions limit women's shared ancestral land. On the other hand, following the land consolidation practices, participation of women having consolidated lands in agricultural production may increase. Female water users in the WUAs could be both tenants and land owners. Women's role in WUA management and decision-making is thus extremely limited and is perceived to be a domain for men. Cultural factors and social norms also hinder women's participation in meetings and training events related to irrigated agriculture. In order to decrease women's hesitance to take part in WUA management and decision-making mechanisms, periodic stakeholder consultations will be arranged by WUAs and DSI field staff as part of irrigation modernization Project or regular WUA operations. With the collaboration and support of the Bank, DSI's field staff will design and deliver sensitization training on gender aspects of irrigation in the subject project. These trainings will support DSI field offices and the WUAs to implement measures to narrow the above gender-gaps in line with the Stakeholder Engagement Plan (SEP), such as WUA consultation meetings specifically for women (before and after the land consolidation and after irrigation modernization). The training will also lay the foundation for WUAs to develop their own measures to encourage women involvement in WUA governance and measures to allow female farmers to benefit from services, like agricultural advice/training, delivered through the WUA, in collaboration with DSI (on-farm water management), and Ministry of Agriculture and Forestry. DSI will monitor gender disaggregated data in terms of the female water users benefiting from the Project, and gender-disaggregated feedback from the monitoring reports and surveys carried out in the subprojects. Where feasible, DSI's SUTEM application will ensure the gender-disaggregated data to be collected.

**Labor conditions, influx and child labor:** A campsite will be established for the project area. The campsite will be minimum in size, requiring around 60 workers at site. The campsite to the extent possible, will be positioned far from the local communities to avoid unnecessary interaction with local public. Each campsite will include infrastructure such as water, electricity, sewage and communication network. The campsite will be accessible by road network and will use existing roads to the extent possible. In cases where accommodation is provided on-site, DSI will ensure that contractors have a code of conduct as well as providing training on communication with local communities for workers prior to employment. On site



facilities (i.e. sanitary facilities and canteen) will ensure compliance with Bank standards. The Project will fully comply with requirements of the Turkish Labor law, which is in compliance with principles of international labor standards, most of which is ensured through compliance with ILO Conventions Turkey is party to. Therefore; child labor, forced labor and discrimination (of race and gender) will not be tolerated.

**Cultural Assets:** At this stage of the project, no impact is envisaged in connection with cultural assets. A chance find procedure will be developed in accordance with the Turkish legislation, and the relevant authorities will be contacted in case of a chance-find to enforce the applicable legislation.

## **6. Measures to be Taken and Monitoring Plan**

The potential environmental and social impacts that may arise during the project construction stage, measures to be taken to manage these impacts and the monitoring plan are presented in Table 6.1 and Table 6.2, respectively. The tables contain all details including the type of potential impact, at what stage of the project they may arise, and what measures must be taken to control the impact.

### **Grievance Mechanism**

DSI has a four level grievance system in place in addition to the national grievance system (Presidency Communication Centers) that is also used to submit grievances. DSI, through its additional efforts, will make arrangements to collect grievances on specific irrigation systems to be addressed and resolved during project implementation. Concerns, requests and complaints of Project affected stakeholders on both environmental and social impacts of the project will be dealt with through grievance mechanism.

Information, consultations and other engagement activities on pre-construction works such as land consolidation and land acquisition etc., on construction schedule and on how to reach the grievance mechanism of the Project will be disclosed to the affected communities through DSI official website as well as through related regional directorates, provincial branches and WUAs.

Due to the nature of the sub-projects, project affected communities may have concerns regarding the planning, design and implementation of TIMP. DSI will engage Public Relations Expert(s) for disseminating information regarding the GM. Grievances to be communicated under the Project will be addressed at four levels:

WUA level (settlements);

Provincial directorate level



Regional Level

National Level (through Headquarters and national GM system)

Although there is no obligation, a Public Grievance Form has been prepared for convenience, and is presented in Annex-2. All the complaints, concerns and suggestions received through the grievance mechanism will be archived and solved within a predefined timeframe. The statistics of grievances will be regularly reported to the WB.

Similar to ESMF, site-specific ESMP will timely be prepared and published in both Turkish and English for public information to allow the interested stakeholder groups to review and comment on it before the public consultation meetings. After revision of the site-specific ESMPs in accordance with the comments from the communities, the final versions will also be available for public review.

**Table 6.1. Measures to be taken during the Project and Monitoring Plan**

Impact/Issue	Mitigation Measure	Cost (TL)	Institutional Responsibility	Comments
Workforce and Camps	<ul style="list-style-type: none"> <li>Local authorities and local people must be consulted during the determination of camps.</li> <li>Camps must be selected as distant as possible from settlements</li> <li>When preparing the campsites, the vegetated soil layer (approximately 30 cm) will be scraped and stored in a suitable area. After the completion of construction work, this vegetated soil layer will be used for restoring the campsite.</li> <li>In order to prevent potential conflicts between the local people and project employees, consultation must be maintained with the local people and complaints from people must be taken into consideration. In order to prevent potential conflicts between the local people and project employees, consultation must be maintained with the local people and complaints from people must be taken into consideration.</li> <li>The workforce to be employed under the project must be trained about the sensitivities of local people and a policy of “work ethics and moral values” must be prepared and attached to the contracts of employees.</li> <li>Recruit unskilled or semi-skilled workers from local communities to the extent possible.</li> <li>Provide adequate lavatory facilities (e.g. toilets and washing areas) should be provided for the number of people to work in the work site.</li> <li>The wastewaters to originate from the camp sites must be appropriately discharged to receiving bodies pursuant to the local legislation and the WB Safeguards Policies. Campsite must have necessary infrastructural arrangements such as electricity, water, sewerage, communication network as well as proper accommodation facilities (dormitory, canteen) for the workers that will accommodate on site.</li> <li>Campsites must have the areas and equipment (waste bins, containers, etc.) required for recovery, temporary storage and disposal of solid wastes in accordance with the related local legislation.</li> <li>Waste disposal through incineration shall be avoided in the campsites.</li> <li>When selecting the areas to store fuel, hazardous chemicals, hazardous wastes, etc., sensitive receiving bodies such as surface waters will be taken into account and sufficient distance shall be maintained from these areas (e.g. 50 meters to surface waters).</li> <li>If fuel filling and vehicle maintenance works will be carried out in the campsites, these areas shall be prepared in compliance with regulations, and their grounds shall be made impermeable to prevent soil pollution (through concrete coating, etc.).</li> <li>Fuel filling areas will be equipped with oil and chemical absorbing equipment, etc. to prevent contamination through accidental spills.</li> <li>Fuel tanks will be placed in fully-impermeable pools in compliance with the regulation.</li> <li>The workers staying in the campsite will be provided with domestic water compliant with the related regulations and standards.</li> <li>The drinking and domestic waters supplied to the camp sites will be regularly analyzed (weekly or monthly).</li> </ul>	<p>There is no additional cost.</p> <p>The cost is included in bid price.</p>	<p>Contractor</p> <p>Supervision responsibility with DSI site staff.</p>	Tender and contract documents
Temporary storage areas, excavation material disposal areas, and other areas.	<ul style="list-style-type: none"> <li>The existing open channel materials to be removed from the site under irrigation modernization and their demolition materials, will be removed from site, stored and disposed of in accordance with the Regulation on the Control of Excavation Material, Construction and Demolition Wastes (OG no. 25406 dated 18 March 2004).</li> <li>Since the earth to be excavated from the areas where underground irrigation pipes will be laid will mostly be used for backfill, a large amount of excavation waste is not expected to be generated. In case temporary excavation waste are generated, they will be stored in areas permitted by the related local authority, in compliance with the Regulation on the Control of Excavation Material, Construction and Demolition Wastes (OG no. 25406 dated 18 March 2004).</li> <li>The topsoil layer of temporary storage areas and excavation material disposal areas will be stripped and conserved for use in restoring these areas. The soil remaining in areas that cannot be restored (e.g. excavation and demolition materials storage areas) may be sent to areas needing it in coordination with the related Agriculture Directorates.</li> <li>Where the project requires a crushing, sifting and/or concrete plant, required permits will be obtained for these units within the framework of the EIA Regulation.</li> <li>DSI will seek to provide land for such areas from its own assets or other public land permitted/transferred from other public authorities. In cases where these lands are under private ownership, DSI will prepare a scheme specific LAP that will outline the acquisition process, entitlements and compensation measures for the subject land to be used.</li> </ul>	<p>There is no additional cost.</p> <p>The cost is included in bid price.</p>	<p>Contractor</p> <p>Supervision responsibility with DSI site staff.</p>	Tender and contract documents
Fuel filling and vehicle maintenance	<ul style="list-style-type: none"> <li>As a general principle of the project, fuel filling or vehicle maintenance processes will not be carried out in the construction site. Fuel filling or vehicle maintenance processes will be carried out at special areas or facilities designated for these purposes outside the site. However, in case heavy work machinery is used (e.g. crawler excavators and loaders) it may not be possible to carry out the fuel filling and maintenance processes for these vehicles outside the site. In such cases, the area where such processes will be carried out shall be equipped with all equipment and instruments required for response to a potential spill. (oil pans, oil and chemical absorbents, etc.). The Contractor shall be obliged to prepare all procedures, and provide and document trainings required to carry out these processes in compliance with environmental, labor, health and safety standards and regulations.</li> <li>Emergency response procedures shall be applied in case of any spillage, and such incidents shall be reported to the site supervisor.</li> </ul>	<p>There is no additional cost.</p> <p>The cost is included in bid price.</p>	<p>Contractor</p> <p>Supervision responsibility with DSI site staff.</p>	Tender and contract documents



Land consolidation and land take	<ul style="list-style-type: none"><li>Private properties and agricultural lands will be avoided to the extent possible. Public lands will be utilized where additional land is required. Land consolidation will be made use of in places where applicable to minimize the need for expropriation.</li><li>Where expropriation is inevitable, site specific Land Acquisition Plans will be prepared and implemented in accordance with the LAPP.</li><li>Any grievances related to land consolidation carried out by MoAF will be dealt with through DSI's GRM and resolved under the scope of the modernization activities to the extent possible. Land consolidation carried out by DSI will be implemented according to OP 4.12 and any cases requiring mitigation measures will refer to Entitlement Matrix in LAPP or to the site specific LAP (in any)</li><li>Site-specific LAP will be appropriately implemented.</li></ul>	Included in the planning cost.  No additional cost.	DSI	
Public Participation and Access to Information	<ul style="list-style-type: none"><li>ESMP and LAP will be disclosed to the public so that people can easily access and comment on it.</li><li>The information on the Grievance Redress Mechanism will be introduced to the people.</li><li>Consultation meetings will be organized with local people including vulnerable groups and other relevant stakeholders about project components and project activities. Special arrangements will be made for the inclusion of women farmers/ water users.</li><li>People will be informed about traffic arrangements, construction activities etc.</li><li>Announcements, disclosure of documents will be made in public places accessible to women and other possible vulnerable groups.</li></ul>	No additional cost. Cost included in contract price	Contractor  Supervision responsibility with DSI site staff.	Tender and contract documents





Construction Stage				
Waste Management and Hazardous Wastes	<ul style="list-style-type: none"> <li>Measures will be taken to ensure minimum waste generation.</li> <li>Wastes will be classified in accordance with the applicable regulations (recyclable, hazardous, inert, non-hazardous, etc.) and it will be ensured that wastes are collected, temporarily stored, transferred and disposed of within the framework of this system.</li> <li>As necessary, a temporary waste storage area will be designed and constructed in a specifically designated area in order to ensure that hazardous wastes are appropriately stored in the construction site.</li> <li>Records will be kept about the waste generation, storage and disposal.</li> <li>It will be ensured that wastes are disposed of in licensed facilities.</li> <li>Employees will be trained about waste management practices.</li> </ul>	No additional cost. Cost included in contract price	Contractor  Supervision responsibility with DSI site staff	İhale ve kontrat dokümanları
Construction and Excavation Wastes	<ul style="list-style-type: none"> <li>Irrigation Modernization Project involves the replacement of existing open channels with pressurized closed channel system. In this scope, the wastes from existing system will be disposed of in accordance with Regulation on the Control of Excavation Material, Construction and Demolition Wastes OG no. 25406 dated 18 March 2004).</li> <li>In cases where permanent storage of excavation wastes is necessary, these wastes will be stored in areas that will not harm the local people, flora and fauna species, in line with the opinion of the related authority in line with the Regulation on the Control of Excavation Material, Construction and Demolition Wastes OG no. 25406 dated 18 March 2004). Erosion control measures will be taken for areas where excavation materials and construction wastes are stored.</li> <li>Necessary measures will be taken to prevent silt flow and similar impacts on from the storage areas to surface waters.</li> </ul>	No additional cost. Cost included in contract price	Contractor  Supervision responsibility with DSI site staff	Tender and contract documents
Excavation works	<ul style="list-style-type: none"> <li>Excavation works will be carried out only within the related area, and any damage on neighboring areas by excavation works will be avoided.</li> <li>Excavated earth and topsoil will be stored separately and their mixture with each other will be prevented.</li> <li>Excavated earth may need to be temporarily stored along the canal route for use in refill process later on. In this case, the contractor shall ensure that sufficient area is left along the construction route and make an arrangement for storage of excavated earth and topsoil.</li> <li>The area will be restored later, and the topsoil will be used for this purpose.</li> <li>Excess excavation material (including rocks and stones extracted during the excavation) will not be left on site after completion of construction works.</li> <li>All excavation works will be carried out in a controlled manner during rainy seasons.</li> <li>The channels involving underground pipes will be closed soon after the completion of works and approval of the related supervision engineer, and they will not be left open to environmental impacts for a long time.</li> <li>The excavated channels will be protected against flooding due to surface waters.</li> </ul>	No additional cost. Cost included in contract price	Contractor  Supervision responsibility with DSI site staff	Tender and contract documents
Noise	<ul style="list-style-type: none"> <li>Construction activities will be carried out between 07:00 and 19:00 hours to the extent possible. The necessary permissions will be obtained and the local authorities and people will be informed beforehand if any work is necessary beyond these hours.</li> <li>Residents in close settlements will be informed throughout the construction process.</li> <li>Threshold values will be observed for continuous construction site noise (daytime - 70 dBA) (Regulation on the Evaluation and Management of Ambient Noise). In order to ensure this, work machinery will be periodically maintained and lubricated, and parts that may cause excessive noise will be replaced.</li> <li>Fixed construction machinery will be placed away from sensitive recipients such as schools, hospitals and residences.</li> </ul>	No additional cost. Cost included in contract price	Contractor  Supervision responsibility with DSI site staff	Tender and contract documents  Weekly and monthly reports within the framework of monitoring schedule
Air Quality	<ul style="list-style-type: none"> <li>The emission threshold for dust and particulate matters, which is 3 mg/Nm<sup>3</sup> (Regulation on the Control of Air Pollution from Industrial Sources), will not be exceeded. For this purpose;</li> <li>Watering will be done during dry seasons.</li> <li>Filling and emptying processes will be done without scattering. Water sprinkling will be applied in order to prevent dust formation during the process. Furthermore, workers will be warned to be careful during the filling and emptying processes. The direction and speed of wind will be taken into account when loading and unloading materials.</li> <li>The top of trucks will be covered and a speed limit will be applied in order not to disturb the security of the local people and to prevent scattering.</li> <li>All the vehicles to be used must have exhaust emission permits.</li> </ul>	No additional cost. Cost included in contract price	Contractor  Supervision responsibility with DSI site staff	Tender and contract documents  Weekly and monthly reports within the framework of monitoring schedule
Surface waters	<ul style="list-style-type: none"> <li>All surface water resources within the project area will be protected from project-sourced wastes and activities and pollutants such as excavation materials to be temporarily or permanently stored.</li> <li>Surface water resources will not be used for washing and cleaning of vehicles to be used for construction works.</li> <li>In case the channels excavated for pressurized pipes are filled with surface water, ground water or rainwater, the potential muddy water to be discharged from these channels will not be discharged directly to receiving bodies.</li> <li>The wastewaters to be generated from the toilets and bathrooms in the construction site will be discharged after being treated in accordance with the applicable regulations.</li> </ul>	No additional cost. Cost included in contract price	Contractor Supervision responsibility with DSI site staff	Tender and contract documents  Weekly and monthly reports within the framework of monitoring schedule

Traffic	<ul style="list-style-type: none"> <li>Warning plates will be placed along the excavation route to ensure safety of people, and entrance to the construction site will be blocked using plastic stripes, barriers and luminous warning lights.</li> <li>Necessary measures will be taken through the related authorities in order to ensure a safe flow of traffic.</li> <li>Local people will be informed about the construction program.</li> <li>In case of any interruption or cessation of work during the construction stage, the trenches must not be left open and necessary measures must be taken.</li> <li>In order to prevent any interruption in the flow of traffic on roads used by local people, during the construction activities, an alternative road route will be determined.</li> <li>The roads to be used will avoid passing nearby sensitive recipients such as schools and residences, to the extent possible.</li> <li>The project area and environs will be equipped with safety and traffic warning signs.</li> <li>Speed limit rules will be complied with.</li> <li>The vehicle drivers and work machine operators to be employed during the construction will be informed about safe drive.</li> <li>Existing roads will not be damaged during the transportation activities.</li> <li>In case existing roads are damaged during the traffic of heavy vehicles, the cost of damage will be compensated and covered by the contractor.</li> <li>In case of any accident related to environment, occupational health safety, and social health safety in the project field, the contractor will inform DSİ at once about the accident. DSİ will inform World Bank (WB) in 3 days. Detailed report (root cause analysis, measures taken after the accident, and information concerning the compensation) must be forwarded to DSİ and WB in 30 days.</li> </ul>	No additional cost. Cost included in contract price	Contractor Supervision responsibility with DSİ site staff	Tender and contract documents
Occupational health and safety	<ul style="list-style-type: none"> <li>The employees will be provided with all types of protective equipment (helmet, safety belt, safety clothes, eyeglasses, gloves, safety boot, etc.).</li> <li>The employees will be trained about occupational health and safety. All the employees will be informed about the safety rules, risks and applicable regulations required to be complied with during the construction activities.</li> <li>If channels deeper than 1.5 m. have to be excavated when laying the pressurized pipes, confined space working procedures shall be applied.</li> <li>Appropriate protection measures (e.g. shoring with aluminum, steel or wood panels, application of trench box) will be taken against collapse or sliding of soil. No workers will be allowed to enter the excavated area without appropriate protection measures in place. The Contractor will take required measures pursuant to the applicable regulations to protect and enhance occupational health and regulate working standards in particular.</li> <li>The Contractor will comply with the principles of fair treatment and non-discrimination and create equal standards for all employees.</li> <li>In case of any accident related to environment, occupational health safety, and social health safety in the project field (e.g., accident involving death or serious personal injury, environmental collapses etc.), the contractor will inform DSİ at once about the accident. DSİ will inform World Bank (WB) in 3 days. Detailed report (root cause analysis, measures taken after the accident, and information concerning the compensation) must be forwarded to DSİ and WB in 30 days.</li> </ul>	No additional cost. Cost included in contract price.	Contractor  Supervision responsibility with DSİ site staff.	Tender and contract documents
Cultural Heritage	<ul style="list-style-type: none"> <li>Chance-find procedure will be created.</li> <li>In case of a chance-find, all activities that may damage the archaeological find will be stopped and the related Museum Directorate will be contacted immediately.</li> <li>If deemed necessary by museum officials, assistance will be provided to the formation of a research team under the Museum Archaeologist and mitigation measures required by the research team will be implemented.</li> </ul>	No additional cost. Cost included in contract price.	Contractor  Supervision responsibility with DSİ site staff.	Tender and contract documents
Employment and Local Procurement	<ul style="list-style-type: none"> <li>Any skilled or unskilled worker among the local impacted community will be given priority during vacancies of construction works.</li> <li>Materials and services required throughout construction to the maximum will be purchased/obtained from local suppliers and service providers.</li> </ul>			
Land consolidation and land take and livelihood losses	<ul style="list-style-type: none"> <li>Any loss of assets, or livelihood will be compensated through site specific LAPs.</li> <li>Consultations with all stakeholders including vulnerable groups will be realized in line with SEP to inform about the land consolidation/acquisition process.</li> <li>Grievances related to previous consolidation activities carried out by MoAF will be collected through GRM and addressed as much as possible under the scope of modernization activities.</li> </ul>	No additional cost. Cost included in contract price.	DSİ Contractor	
Infrastructure	<ul style="list-style-type: none"> <li>Damages to existing infrastructure and superstructure (telecommunication lines, bridges, high-voltage lines, etc.) will be avoided to the extent possible. Any damages will be compensated in line with LAPs.</li> </ul>	No additional cost. Cost included in contract price.	Contractor Supervision responsibility with DSİ site staff.	Tender and contract documents
Labor	<ul style="list-style-type: none"> <li>Civil work contracts will oblige the contractor to follow the national legal framework and ban the worst forms of child labor.</li> </ul>	No additional cost.	Contractor, Supervision responsibility with DSİ site staff.	Tender and contract documents
<b>Post-Construction</b>				
Temporary storage areas and camp sites	<ul style="list-style-type: none"> <li>Temporary storage areas and campsites will be restored before operation, and no excess excavation materials, construction materials and debris must be left in the site.</li> </ul>	No additional cost. Cost included in contract price.	Contractor Supervision responsibility with DSİ site staff.	Tender and contract documents
Borrow pits	<ul style="list-style-type: none"> <li>Make sure all necessary permits have been obtained for the borrow pits to be used for construction activities.</li> </ul>	No additional cost. Cost included in contract price.	Contractor Supervision responsibility with DSİ site staff.	Tender and contract documents

**Table 6.2. Monitoring Plan**

Subject	What are the parameters to be monitored?	Where will the parameters be monitored?	How will the parameters be monitored / what are the monitoring	When will the parameters be monitored? Measurement frequency / continuous	Why will the parameters be monitored?	Cost	Responsible institution*	Start date	End date
<b>Pre-construction Stage</b>									
Land consolidation and land take and livelihood losses	People whose land was consolidated or confiscated.  People's Complaints  Pending Suits or cases on trial	Construction Area, campsite, settlements closest to the permanent and temporary storage areas	Visual observations  Interviews in nearby settlements  Instantaneous measurements	Upon complaint and schedule in accordance with the Land Acquisition Plans (LAP) and Land Consolidation Land Acquisition Plans (LTAP) as well as schedule Stockholder Participation Plans	To compensate people's damnification timely due to these works	No additional cost (within project budget)	DSI  External Auditors (at the end of the project)	Beginning of construction work	Completion of construction work
<b>Construction Stage</b>									
Dust-particulate matter (dust to originate from the movement and exhaust gas of construction machinery)	Dust to originate from the movement and exhaust gas of earth-moving and construction machinery (mg/Nm <sup>3</sup> )  Complaints from public	Construction Area, campsite, settlements closest to the permanent and temporary storage areas	Visual observations  Interviews in nearby settlements  Instantaneous measurements	Weekly / instantaneous measurements during excavation / intensive construction times  Upon complaint / in accordance with the Regulation	Regulation on the Control of Air Pollution from Industrial Sources,  Regulation on the Evaluation and Management of Air Quality  WBG's General Environment, Health and Safety Manual	No additional cost (within project budget)	Contractor/ DSI	Beginning of construction work	Completion of construction work
Noise	Complaints from public  Noise level (dBA)	Construction Area, campsite, settlements closest to the permanent and temporary storage areas	Interviews in nearby settlements  Level of noise to be measured by Noise meter (noise level meter)	Weekly / instantaneous measurements during excavation / intensive construction times  Upon complaint / in accordance with the Regulation	Regulation on the Evaluation and Management of Ambient Noise  WBG's General Environment, Health and Safety Manual	No additional cost (within project budget)	Contractor/ DSI	Beginning of construction work	Completion of construction work
Wastewaters originating from campsites	Connection to sewerage system  In case use of a WWTP, COD, BOD, pH, SS, E-coli, Total Coliform at the outlet  In case use of septic tank, collection schedule and the WWTP utilized for final disposal -	Sewerage connection  Septic areas	Connection Permit  Transfer and discharge documents	N/A  As mentioned in the discharge permit	Water Pollution Control Regulation  World Bank Group's (WBG) General Environment, Health and Safety Manual	No additional cost (within project budget)	Contractor/ DSI	Beginning of construction work	Completion of construction work



Surface waters	COD, BOD, pH, SS, E-coli, Total Coliform, depending on the discharge to the receiving bodies, if wastewater treatment plant is established  Turbidity due to the discharge of water accumulated in trenches due to rainfall and ground waters, to the receiving body	Receiving body, before and after discharge  Receiving body, before and after discharge	Discharge permit  Visually, or using measurement device upon site upon complaint	At times mentioned in the discharge permit  Instantaneous  Upon complaint	Water Pollution Control Regulation  WBG's General Environment, Health and Safety Manual	No additional cost (within project budget)	Contractor/ DSI	Beginning of construction work	Completion of construction work
Excavation, solid and hazardous wastes originating from the construction sites	Permit certificate for excavation waste storage areas and temporary storage areas  Excavation material and waste storage areas  Certificates of transportation to acceptance to disposal facilities	Construction Area  Campsite, permanent and temporary storage areas	Visually	Weekly and monthly	Waste Management Regulation, Regulation on Control of Soil Pollution and Areas Contaminated by Point Sources, Regulation on the Control of Excavation Material, Construction and Demolition Wastes and Regulation on Control of Waste Oils  WBG's General Environment, Health and Safety Manual	Not high, although subject to the availability of a municipal and/or licensed recovery plant.  Not high, although subject to the availability of a municipal and/or licensed recovery plant.	Contractor/ DSI	Beginning of construction work	Completion of construction work
Wastes to originate from the vehicle park	Wastes oils, batteries, used tires and scrap vehicle materials	Vehicle park	Review and control of vehicle examination certificates	In case of breakdown / during periodic maintenance	Regulations on Control of Waste Oils, Control of Waste Batteries and Accumulators, and Control of Used Tires  WBG's General Environment, Health and Safety Manual	Not high, although subject to the availability of a licensed recovery plant	Contractor	Beginning of construction work	Completion of construction work
Health and safety	Incident and accident statistics  Documentation about the health and safety training  Certificates of participation in training  Safety equipment used by the workers in the construction site (helmet, gloves, shoes, safety belt)	Construction Site  Campsite, permanent and temporary storage areas  Pump stations and other permanent facilities	Review and control of incident Statistics  Visually	At the beginning of each work Stage  Daily	Labor Health and Safety Regulation  WBG's General Environment, Health and Safety Manual	No additional cost (within project budget)	Contractor/ DSI	Beginning of construction work	Completion of construction work



Community and Traffic Safety	Plastic stripes, barriers, warning plates Traffic flow/intensity Familiarizing individuals and business owners living along the road route with construction program	Construction site, campsite, permanent and temporary storage areas	Visually	Throughout construction stage	WBG's General Environment, Health and Safety Manual	No additional cost (within project budget)	Contractor/ DSI	Beginning of construction work	Completion of construction work
Cultural and historical assets	New cultural assets that may be found in the project area	Campsite, permanent and temporary storage areas	Visually	When a cultural asset is encountered, it will be monitored by Cultural and Natural Wealth Conservation officials	Compliance with Cultural and Natural Wealth Conservation Law	Not high unless a cultural asset is damaged	Museum Directorate / Regional Protection Board	Beginning of construction work	Completion of construction work
Land consolidation and land take and livelihood losses	Information on individuals subject to land consolidation or land acquisition	Construction site Lands used permanently or temporarily within construction site	Site specific LAPs Site visits Interviews with project affected people Regular reports from site on LC and land acquisition	Land acquisition and land consolidation will be monitored on a daily basis by local DSI officials throughout their process Semi annual reporting will be realized for WB	Compliance with Bank's OP 4.12	Costs will be included in project budget	DSI	Prior to construction	Completion of construction work

**Post-Construction**

Restoration and rehabilitation of degraded areas	Restoration, construction wastes left on site, excavation materials, solid wastes and other unused materials and wastes	Construction site, campsite, permanent and temporary storage areas	Visually	After completion of construction works	Waste Management Regulation, Regulation on Control of Soil Pollution and Areas Contaminated by Point Sources	No additional cost (within project budget)	Contractor/ DSI	Completion of Construction work	Provisional acceptance
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## 7 Roles and Responsibilities

The roles to be performed under ESMP and the parties responsible for these activities are shown in Table 7.1

**Table 7.1** Roles and Responsibilities

World Bank	<ul style="list-style-type: none"><li>• to review, approve and disclose ESMPs on WB's official website.</li><li>• to review the scheme specific ESMPs and LAPs and provide no objections to DSI.</li><li>• to provide assistance in the preparation of gender sensitization trainings to be given to DSI local staff and WUA representatives.</li><li>• to conduct implementation support missions in order to ensure that the Project is in compliance with WB Safeguards Policies.</li></ul>



DSI	<ul style="list-style-type: none"><li>• to implement the ESMF</li><li>• to prepare ESMPs</li><li>• to submit ESMPs the WB for prior review. (after the prior review of a defined number of ESMPs, the procedure may shift to post review subject to the mutual agreement of the WB and DSI).</li><li>• to perform the quality control and review of ESMPs.</li><li>• to disclose ESMPs on the official website of DSI and incorporate ESMPs into bidding documents.</li><li>• to appoint specialist for the environmental and social monitoring.</li><li>• to perform inspections of the implementation of ESMP by the construction contractor, make recommendations and decide whether additional measures are needed or not.</li><li>• in case of non-compliance, ensure that the contractor eliminates the noncompliance and inform the WB about the noncompliance.</li><li>• to prepare and implement the LAPF</li><li>• to prepare and implement the LAP for the lands subject to expropriation</li><li>• to prepare, update and implement a Stakeholder Engagement Plan (SEP) that considers vulnerable groups in addition to paying attention to the gender aspect of the Project,</li><li>• to hold consultation meetings, and prepare and distribute leaflets or other informative documents,</li><li>• to inform communities, recruit a community liaison officer on project, and its impacts and construction schedule as well as rights and entitlements of PAPs,</li><li>• to create a local level grievance mechanism</li><li>• to provide guidance to the construction contractor and engineering supervision firm.</li><li>• to summarize the environmental and social issues related to project implementation to WB in regular progress reports.</li><li>• to be open to comments from affected groups and local environmental authorities regarding environmental aspects of project implementation. Meet with these groups during site visits, as necessary.</li><li>• to coordinate and liaise with WB supervision missions regarding environmental and social safeguard aspects of project implementation.</li><li>• to conduct regular monitoring activities for the implementation of site specific ESMPs and LAPs also including updates on land consolidation activities previously conducted by MoAF,</li><li>• to prepare/design sensitization training and tools for DSI's local (regional and/or branch level) staff and WUA representatives</li></ul>
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<b>Contractor</b>	<ul style="list-style-type: none"><li>• to implement ESMPs on site, if required can revise the ESMP together with DSI.</li><li>• to manage the grievance mechanism at the contractor, communicate grievances to DSI regularly through ESMP monitoring reports.</li><li>• to monitor site activities on a regular basis (daily, weekly monthly etc.)</li><li>• to prepare the ESMP progress reports for the review of DSI.</li><li>• to compensate or fix damages occurred during construction (i.e. damages to crops, infrastructure) as set out by the ESMP or LAP/LAPF.</li></ul>
<b>Environmental and Social Specialist (to be appointed by DSI)</b>	<ul style="list-style-type: none"><li>• to ensure that ESMP is implemented correctly and in a timely manner by the contractor.</li><li>• to perform environmental and social monitoring as defined in ESMF and sub-project specific ESMPs.</li><li>• to collect information on environmental and social issues for progress reports submitted to the WB and make sure that these are all compliant with the Bank's requirements.</li></ul>
<b>Communication Specialist (to be appointed by DSI)</b>	<ul style="list-style-type: none"><li>• to prepare, implement and monitor the Communication Strategy of the Project.</li><li>• to prepare all communication and visibility tools (i.e. brochures, leaflets, banners, posters, meeting announcements etc.) that will be used to inform host communities.</li><li>• to oversee the process for printing and dissemination of the communication/visibility tools as well as planning and organization of public events and consultation meetings with Project beneficiaries.</li><li>• to prepare periodic reports on all communication and visibility activities realized under the Project to the DSI to be submitted to the Bank as a part of the monitoring process.</li></ul>



## 8 Public Consultation Meetings

A public consultation meeting was held in Manisa Alasehir on January 16, 2019 in order to introduce ESMF, LARPF and Manisa Alasehir ESMP and receive the comments of people (Photos 3, 4 and 5). The meeting was held with the participation of DSI representatives, Governorate representatives, farmers, workers and local people where at a total of 55 participants. The minutes of the meeting and the participant list is given in Annex 3 and 4. The attendees from the Governorate included Alasehir District Governor and Township Agriculture Director. Whereas DSI's side included DSI 2nd Regional Director, Project Design and Construction Branch Manager, Operation and Maintenance Branch Manager, Planning Branch Manager, and DSI 22nd Branch Manager. The attendees from the Alasehir Grape WUA included Alasehir Grape WUA President as well as attendees from Sarigol WUA and Bağ WUA. After opening speeches of DSI representatives, DSI presented information on the project in general, its advantages for the region and the farmers, as well as technical details of the Project. The attendees asked questions on the differences that the irrigation modernization would bring about.

**Photo 1: Public Consultation Meeting**



**Photo 2: Public Consultation Meeting**



**Photo 3: Public Consultation Meeting**





## 9 Reporting

The reporting processes required to be carried out during the project implementation stage and the requirements for these processes are presented in Table 9.1.

**Table 9.1:** Requirements of Reporting Process and Distribution of Roles

<b>Responsible</b>	<b>Requirement of Reporting Process</b>
<b>DSİ</b>	<ul style="list-style-type: none"><li>▪ Preparation and submission of the quarterly Project Information Notes in a regular manner to the Bank in line with the Bank's time schedule.</li><li>▪ Preparation and submission of the Project Progress Reports semiannually to the WB.</li><li>▪ Summarizing the environmental and social issues related to project implementation to WB in regular progress reports.</li><li>▪ Preparation of Monitoring Reports to the WB every six months before WB task team site visits.</li></ul>
<b>DSİ / DSİ Regional Directorates</b>	<ul style="list-style-type: none"><li>▪ Preparation of semi-annual monitoring reports for prior review of the World Bank.</li></ul>
<b>Contractor / Construction Supervision</b>	<ul style="list-style-type: none"><li>▪ Preparation of ESMP progress reports and their submission to the DSİ for approval</li></ul>



## **ANNEXES**



### **Annex- 1: Project Timetable**

1<sup>st</sup> Year : Tendering by DSI and Start of works

2<sup>nd</sup> Year : Completion and operation of 340 ha pump irrigation. Starting the construction of the Right Bank irrigation

3<sup>rd</sup> Year : Completion and operation of Right Bank irrigation area and Starting the construction of the Left Bank irrigation.

4<sup>th</sup> Year: Completion and operation of Left Bank irrigation area



**Annex- 2: Sample of Grievance Form**

<b>Reference No</b>	
<b>Name and Surname</b>	
<b>Communication (mail, phone, e- mail).</b>	
<b>Province/Township/House</b>	
<b>Date</b>	
<b>Grievance Category</b>	
1. Disused building (social buildings)	
2. Properties/assets effected by the project	
3. Infrastructure	
4. Decline or total loss in income sources	
5. Environmental issues (e.g. pollution)	
6. Employment	
7. Traffic, transportation and other risks	
9-Other (please indicate):	
<b>Description of Grievance</b> What happened ?, When happened?, Where happened? What is the conclusion of the problem experienced?	
<b>What do you expect to solve the problem?</b>	



**Signature**

**Date**



### Sample of Grievance closeout form

<b>Closing / Solved Grievanc number/code</b>	
<b>Describe the urgent action required</b>	
<b>Desciribe the long term action required (if necessary):</b>	
<b>Compensation Required?</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>Control of remedial action and decision</b>	
<b>Remedial action stages</b>	<b>Duration and responsible institutions</b>
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	

#### Compensation and final stages

This part will be filled in and signed by the complainant after the complainant has received compensation amount and his grievance has been cleared up.

Notes: Name and Surname and signature and date ..../...../.....

Complainant: Responsible institution/company reperesantative title-  
Name and Surname and signature



### **Annex- 3: Minutes of Public Consultation Meeting**

#### **ALAŞEHİR**

The meeting started at 14:00 hours on 16/01/2019, at the meeting hall of Alasehir Üzüm WUA in the district center of Manisa Alasehir. The meeting was attended by DSI 2nd Regional Director, Branch Managers of Planning, Project Design and Construction, Operation and Maintenance, Alasehir District Governor, and farmers.

The opening speech of the meeting was delivered by Serhat DOĞAN, Project Design and Construction Branch Manager of DSI 2nd Regional Directorate. General information on the irrigation scheme was explained. Manisa Alasehir Irrigation Rehabilitation Project was illuminated so that water control was not possible due to existing classic irrigation system and old and worn existing irrigation system.

Information was provided on environmental and social effects of Manisa Alasehir Irrigation Rehabilitation (Renewal) Project to be converted to closed pressurized irrigation system within the context of World Bank Irrigation Modernization. Projects in this context (5 units) are aimed to comply with local legislation together with main principles accepted by World Bank comply. Concerning land acquisition, Land Acquisition Framework Document will be prepared and published. Land Acquisition Plan will be laid out for each Project based on the Framework Document. Procedures will be pursued in line with the plan. Requests will be received and the process will be managed by a mechanism to be formed by DSI General Directorate, the DSI Regional Directorate, DSI Numbered Branch Managements, and WUA.

Utmost sensevity not to cause any environmental polution will be shown during the implementation stage of the renewable projects to be realized. As in the case all projects realized DSI General Directorate, the environmental assesment will be prepared and necassary measures will be taken for possible effects. Necassary measures will be taken not to give rise to adverse effects such as noise, air polution during the implementation. All necassary measures for workers to be employed during the construction have been laid down by the laws. The contractors will implement these measures religiously. In order not to cause any social adverse effect, work programs will be prepared in line with the production timetable and they will be implemented together with stakeholders.

When the meeting was over, questions & answers session was commenced.

#### **QUESTIONS & ANSWERS**

Will there be any reduction in crop yield during the costruction?

The costruction will be realized gradually to minimize any reduction in crop yield.



Will there be any reduction in crop yield because the crop habituation will change and crop stress may occur during 3-years the transformation period from open irrigation system to closed system?

Good management of WUA will minimize any reduction in crop yield

Will there be any expropriation?

Yes. there may any expropriation in compulsory situation.

When the construction will end?

The construction to be put in a tender by DSI General Directorate will end about 3-4 years.

Will there be any reimbursement?

There be any reimbursement as per DSI Law.

Will pipes laid down in the open canal route?

Yes, as much as possible, non-coincident sections will be expropriated.

Is there any measures for settlements in the Southeast of the area?

The irrigation main pipe will not cross that area. Perpendicular secondary and tertiary pipes will be solution for the problem.

Will there be any irrigation beyond the scheme if there is demand?

There will not be any irrigation beyond the scheme due to water potential of Avsar Dam.

Will there be any on-farm land improvement?

There will not be any on-farm land improvement in context of the Project.

What will be groundwater farmers' wells?

It is not possible to hinder farmers using groundwater as per the law, but the Project will reduce the need of the groundwater use.



Is there any alternative if Avsar dam expires?

Project called Avsar 2 on upstream of Avsar dam is in preliminary stage to be studied in detail later on.

Which periods will we irrigate?

Irrigation managed by WUA especially in the periods when grape needs irrigation will be possible.

Will there be measures to control debris?

There will be measures to control debris.

Alasehir District Governor: Abdullah UÇGUN

Alasehir Township Agriculture Director: Tarık MEMİŞ

DSI 2nd Regional Directorate

DSI 2nd Regional Director:Ali Fuat EKER

Project Design and Construction Branch Manager: Serhat DOĞAN

Planning Branch Manager: Özgür ULUSOY

Operation and Maintenance Branch Manager: Maksut İNCE

Manisa Branch Manager: Erol TUNCEL

President of Alasehir Üzüm WUA : Ahmet IŞIKLI



Annex- 4: Participant List of Public Consultation Meeting

	DSİ 2. BÖLGE MÜDÜRLÜĞÜ	Doküman No	F U 65 62 03
		Yayın Tarihi	20/05/2009
		Rev.No-Tarihi	00--
		Sayfa No	1/1
Toplantı Katılım Formu			

YIL/NO : 2019 / :  
KONUSU : ALAŞEHİR SULAMA REHABİLİTASYONU  
TALİP EDEN BİRİM/ÜNİTE : DSİ 2. BÖLGE PLANLAMA ŞUBE MÜD.  
TARİHİ VE SAATİ : 16.01.2019 SAAT:14:00  
YERİ : ALAŞEHİR ÜZÜM SULAMA BİRLİĞİ

Sıra No:	Adı Soyadı	Birimi/ Ünitesi	Görevi	İmza	e-Posta Adresi
1	Abdullah UYGUN	Alaşehir Sulama Birliği	Kaymakam	[İmza]	
2	Ali Fuat EKER	DSİ	Bölge Md.	[İmza]	
3	Levent GÖBÜR		Çiftçi	[İmza]	
4	İsmet Kökçinar		Çiftçi	[İmza]	
5	Hüseyin Toprak		"	[İmza]	
6	Ömer Arslan		"	[İmza]	
7	Mehmet Kalkan		"	[İmza]	
8	Mehmet Arslan		"	[İmza]	
9	Mustafa Tekeli			[İmza]	
10	Bekir Sahal			[İmza]	
11	Yusuf SİSİ			[İmza]	
12	Hamit Çelikkaya			[İmza]	
13	Ali ŞAHİN		"	[İmza]	
14	İsmail Ercan		"	[İmza]	
15	Ali Özdemir		"	[İmza]	
16	Ahmet Özdemir		"	[İmza]	
17	Fatih SAHİN		Makina Teknikeri	[İmza]	
18	Mesut ÇİTAK		Çiftçi	[İmza]	
19	Mehmet Arslan		Çiftçi	[İmza]	
20	Selçuk Çelikkaya		Çiftçi	[İmza]	



	<b>DSİ 2. BÖLGE MÜDÜRLÜĞÜ</b>	Doküman No	F 0 55 62 03
		Yayın Tarihi	20/05/2009
	Toplantı Katılım Formu	Rev.No-Tarihi	00-
		Sayfa No	2 /

YIL/NO : 2019 / 1  
KONUSU : ALAŞEHİR SULAMA REHABİLİTASYONU  
TALEP EDEN BİRİM/ÜNİTE : DSİ 2. BÖLGE PLANLAMA ŞİFRE MÜD.  
TARİHİ VE SAATİ : 16.01.2019 SAAT:14:00  
YERİ : ALAŞEHİR ÜZÜM SULAMA BİRLİĞİ

Sıra No:	Adı Soyadı	Birimi / Ünitesi	Görevi	İmza	e-Posta Adresi
21	Tarik Hulus	Alaşehir İKİCİ	İKİCİ MÜD.		tarikmehmet@hotmail.com
22	Ferit SAHN	Sulama Çiftçisi	Çiftçi		
23	Muammer Bilal	Çiftçi	Çiftçi		
24	Zafer SAHA	Çiftçi	Çiftçi		
25	Ali Şahin	Çiftçi	İSVEREN		
26	Bilal ÖMÜR	Çiftçi	Çiftçi		
27	Mehmet SÜREKAL	Çiftçi	Çiftçi		
28	Mehmet EK	Sarıgül Sulama Birliği	Çiftçi		
29	Osman Zengin	Sarıgül Sulama Birliği	Sulama Birliği		
30	Veli Sengeç	Sarıgül Sulama Birliği	Sulama Birliği		
31	Ali AKPAZ	Bay Sulama Birliği	Çiftçi		
32	Mehmet Feri	Çiftçi	Çiftçi		
33	Osman Bekir	Çiftçi	Çiftçi		
34	Akmal Uluçay	Çiftçi	Çiftçi		
35	Ali Taş	Sulama Birliği	Çiftçi		
36	Cemal Akdoğan	Çiftçi	Çiftçi		
37	Naim Engin	Çiftçi	Çiftçi		
38	Abdulhak BAHAN	Çiftçi	Çiftçi		
39	Tomaz Çoban	Çiftçi	Çiftçi		
40	VELELİ KÖKÇİ	Çiftçi	Çiftçi		



	<b>DSİ 2. BÖLGE MÜDÜRLÜĞÜ</b>	Doküman No	P 6 65 42 03
		Vayın Tarihi	20/05/2009
	<b>Toplantı Katılım Formu</b>	Rev. No-Tarihi	00-
		Sayfa No	3/1

VIL/NO : 2019 / 1  
KONUSU : ALAŞEHİR SULAMA REHABİLİTASYONU  
TALEP EDEN BİRİM/ÜNİTE : DSİ 2. BÖLGE PLANLAMA ŞUBE MÜD.  
TARİHİ VE SAATİ : 16.01.2019 SAAT:14:00  
YERİ : ALAŞEHİR ÜZÜM SULAMA BİRLİĞİ

Sıra No:	Adı Soyadı	Birimi / Ünitesi	Görevi	İmza	e-Posta Adresi
41	Abdullah ERGÖZ		Şube M. D.	[İmza]	
42	Özgür ASLAN		Sıfırlama	[İmza]	
43	Tuncay ÇUKUR		Şube M. D.	[İmza]	
44	Seyit KOŞ		Şube M. D.	[İmza]	
45	Bilge BAYIL	DSİ 22. Şube Müdürlüğü	İşletme ve Bakım Şube Müdürlüğü	[İmza]	
46	Bektaş KÖRİCİLİK	DSİ 22. Şube Müdürlüğü	İşletme ve Bakım Şube Müdürlüğü	[İmza]	
47	Feyyaz SEN	DSİ 22. Şube Müdürlüğü	İşletme ve Bakım Şube Müdürlüğü	[İmza]	
48	Rajup KEMERAS	DSİ 2. Bölge Planlama Ş. M.	İşletme ve Bakım Şube Müdürlüğü	[İmza]	
49	Mahmut İNÖZ			[İmza]	
50	Faiz Tuğrul	27. Şube Müd.	Şube M. D.	[İmza]	
51	Şehinşah SOY	Planlama Ş. M.	Şube M. D.	[İmza]	
52	Abdullah ASIL	Bilgi İşlem		[İmza]	
53	Fuat ÇOK	İşletme ve Bakım	İns. Müh.	[İmza]	
54	Ridvan ÖZALP	DSİ 2. Bölge	İns. Müh.	[İmza]	
55	Serhat DOĞAN	DSİ 2. Bölge	İns. Y. Müh.	[İmza]	
56					
57					
58					
59					
60					